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On Uberty: Legal Reasoning by Analogy and Peirce's Theory of Abduction

Stephen M. McJohn
Suffolk University, smcjohn@suffolk.edu

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STEPHEN M. MCJOHN*

INTRODUCTION

Traditional formulations of the inference procedure of reasoning by analogy have been logically and psychologically unsatisfactory. The classic formulation of analogical reasoning states that where one or more base entities have certain characteristics that another entity has, an additional characteristic of the base entities will be ascribed to the other entity. Such a formulation conceives reasoning by analogy to be a species of induction in this sense: Based on the fact that all entities sampled with certain characteristics have an additional characteristic, it forms the general law that all entities with those certain characteristics have the additional characteristic. It then applies this law to another entity with those certain characteristics.

The classic formulation has numerous shortcomings. It is not only conspicuously fallacious as a matter of logic, but also omits many of the features of reasoning by analogy as analogy is actually used, particularly in legal reasoning. This classic formulation fails to set forth the premises on which analogical reasoning relies, because we often consider other relevant or background information in addition to the shared characteristics. It also omits steps from the inferential process (confirming the existence of shared characteristics is not the only step in reasoning by analogy) and fails to consider competing analogies. Furthermore, the classic formulation does not account for the creative and explanatory uses of analogy. We use analogy not only to extrapolate characteristics to other entities, but also to hypothesize rules and facts. Finally, such a formulation ignores the psychological features often associated with a satisfying analogy, such as the feeling of a flash of insight.

Most legal scholars agree that analogical reasoning plays a role

* Visiting Assistant Professor of Law, Chicago-Kent College of Law, Illinois Institute of Technology; B.A. 1981, J.D. 1985, Northwestern University. The author would like to thank Ves Scekic, Lissa Schneider, Andre Carey, and Blair White for valuable conversations on the subject of this Article.

in legal reasoning, notwithstanding considerable disagreement about such basic matters as its role and its power. The shortcomings of the classic formulation have prompted a number of attempts to describe more accurately the use of analogy in legal reasoning, both to support and to criticize its role. This Article explores a potentially useful analytical framework for analyzing and comparing methods of legal reasoning.[1] It explores the views of Charles Sanders Peirce[2] on the nature of analogical inference and attempts to show that his views provide a better paradigm to describe and analyze legal analogical reasoning than does the classic formulation. It does so primarily by showing how Peirce's framework is more consistent with several notable writings on legal reasoning by analogy than is the classic formulation.

Peirce's theory of inference anticipates shortcomings and advantages that the classic formulation overlooks, and offers additional insights into the process. Peirce regarded analogy not as a form of induction, but as a mixture of induction and the form of inference he termed "abduction,"[3] which is the creative formation

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1. This Articles does not offer a formulation of analogical reasoning that would meet the requirements of deductive logic while accounting for the associated psychological phenomena. Nor does it attempt to present a theory that would satisfy all the criteria for a fully satisfactory theory of legal reasoning. For a delineation of such requirements, see Richard Warner, *Three Theories of Legal Reasoning,* 62 S. CAL. L. REV. 1523 (1989).

2. For discussions of Peirce and legal pragmatism, see RICHARD A. POSNER, THE PROBLEMS OF JURISPRUDENCE 26-33, 67-74, 454-69 (1990); Stanley Fish, *Almost Pragmatism: Richard Posner's Jurisprudence,* 57 U. CHI. L. REV. 1447 (1990); Richard A. Posner, *Symposium on the Renaissance of Pragmatism in American Legal Thought,* 63 S. CAL. L. REV. 1569 (1990); Steven D. Smith, *The Pursuit of Pragmatism,* 100 YALE L.J. 409 (1990).

For discussions of the relevance of Peirce's writings on semiotics to law, see, e.g., ROBERTA KEVELSON, PEIRCE, PARADOX, PRAXIS: THE IMAGE, THE CONFLICT AND THE LAW (1990); J. M. Balkin, *The Promise of Legal Semiotics,* 69 TEX. L. REV. 1831 (1991); Jeremy Paul, *The Politics of Legal Semiotics,* 69 TEX. L. REV. 1779 (1991); *Symposium: Law and Economics and the Semiotic Process,* 42 SYRACUSE L. REV. 1 (1991); *Symposium: Semiotics, Dialectic and the Law,* 61 IND. L.J. 915 (1986).

For an exposition of Peirce's writings on abduction, see K. T. FANN, PEIRCE'S THEORY OF ABDUCTION (1970). For general discussions of Peirce's views on abduction, see A.J. AYER, THE ORIGINS OF PRAGMATISM 74-80 (1968); WILLIAM PAUL HAAS, THE CONCEPTION OF LAW AND THE UNITY OF PEIRCE'S PHILOSOPHY 72-79 (1964).

3. Peirce used several different terms to refer to abduction, including hypothesis, hypothetic inference, retroduction, presumption, inference *a posteriori,* and originary argument. *See* FANN, *supra* note 2, at 5 n.19; Nancy Harrowitz, *The Body of the Detective Model, in* THE SIGN OF THREE 179, 181 (Umberto Eco & Thomas A. Sebeok eds., 1981). Peirce derived the term "abduction" from Aristotle's *Prior Analytics. See* FANN, *supra* note 3, at 30 & n.2. For a deeper discussion of, and hypotheses about, the meaning and use of the term, see Jeanne L. Schroeder, *Abduction from the Seraglio: Feminist Methodologies and the Logic of Imagination,* 70 TEX. L. REV. 109 (1991).

of hypotheses to explain and synthesize knowledge. Incorporating abduction into the process of analogy permits a view of analogical reasoning that includes aspects omitted by the classic formulation. The aspects are consistent with some of the more notable accounts of analogical reasoning in law. Because Peirce's framework permits an interplay between different aspects of analogy, it can also explain the diverse uses of analogy in legal reasoning.

Part I.A. of this Article describes Peirce's tripartition of inference, how reasoning by analogy fits into that paradigm, and how his view differs from the classic formulation. Peirce divided inference into three basic forms: deduction, induction, and abduction.[4] Deductive reasoning discloses conclusions that necessarily follow from the premises. Inductive reasoning gives support to statements by generalizing from the characteristics found in samples. Abductive reasoning produces explanatory hypotheses. The three types of inference vary as to security (how certain we are that a conclusion follows from the premises) and uberty (how fruitful the reasoning is in producing new knowledge). Deductive reasoning has high security because the conclusion necessarily follows from the premises, but low uberty for the same reason. Abductive reasoning has high uberty because it creatively produces explanatory hypotheses, but low security because such hypotheses may fail when tested. Induction falls between these two forms; compared to abduction, its reliance on regularity increases its security but restricts its uberty.

Part I.B. of this Article describes how Peirce's view of inference analyzes reasoning by analogy and compares that analysis to the classic formulation. As noted, the classic formulation views reasoning by analogy as induction; because one or more base entities with certain characteristics have an additional characteristic, we conclude that another entity with the initial base set of characteristics also has the additional characteristic. Peirce, however, saw analogy as a combination of induction and abduction, making the process of reasoning by analogy more complex and adding the properties of abductive reasoning.[5]

Part II compares Peirce's formulation of reasoning by analogy to specific discussions of how analogy is used in legal reasoning. It discusses whether Peirce's view accords with Edward Levi's and Steven Burton's theories of legal reasoning by analogy. Levi's view

4. *See infra* notes 13-90 and accompanying text.
5. *See infra* notes 99-105 and accompanying text.

of "reasoning by example" departs from the classical formulation of analogy in several ways that are consistent with Peirce.[6] Levi saw analogy as a creative and explanatory process, rather than simply the noting of generalities that the classic formulation suggests.[7] From a technical aspect, Levi's symbolic formulation is also similar to Peirce's formulation. Indeed, Levi's statements on how his formulation differed from deductive reasoning are strikingly similar to Peirce's reformulation of the syllogism, the epitome of deductive reasoning.[8] Burton's formulation also proves amenable to Peirce's framework. Burton's formulation departs even more than Levi's from the classic formulation. Under the classic formulation, the strength of analogy between entities depends on the number of observable similarities;[9] under Burton's "family resemblance" view, entities can be strongly analogous without any observable similarities.[10] Peirce's formulation accommodates such a view of analogy because analogy's abductive aspect serves to synthesize apparently disconnected facts.

Part III compares Peirce's views to other aspects of reasoning by analogy. Part III.A. analyzes similarities between Peirce's description of the subjective response to abduction and a number of descriptions of the psychological aspects of reasoning by analogy. Part III.B. examines the views of Richard Posner and James Murray on where reasoning by analogy fits if legal reasoning is divided between the logic of discovery and the logic of justification, and analyzes them in light of Peirce's framework. Under Peirce's view, generally speaking, the logic of discovery would be abductive reasoning, and the logic of justification would be inductive and deductive reasoning.[11] If analogy is essentially a mixture of abduction and induction, then analogical argument is both discovery and justification. Finally, this section addresses several of Posner's cogent criticisms of legal reasoning by analogy: that analogical reason is sometimes simply deductive reasoning using an implicit premise, or is fallacious, or is a weak form of induction. Under Peirce's view, such criticisms do indeed have some force, but fail to recognize compensating strengths of analogy. Thus, rather than simply being

6. *See infra* notes 109-50 and accompanying text.
7. *See infra* notes 109-21 and accompanying text.
8. *See infra* notes 125-27 and accompanying text.
9. *See infra* notes 93-97 and accompanying text.
10. *See infra* notes 155-60 and accompanying text.
11. *See infra* notes 201 and 220-30 and accompanying text.

deductive reasoning relying on a rule that is an implicit premise, an analogical argument actually may create the rule. Rather than being fallacious because it does not meet the standards of deductive reasoning, analogy should be measured by the standards of induction and abduction if it does not claim to have the certainty of deduction. And whether a given analogy is a weak induction or is something more will depend on which aspect of Peirce's formulation it relies on more. Thus, Peirce's framework provides a powerful analytical device for assessing the strengths and weaknesses of particular analogical arguments by breaking them down into their abductive and inductive components.

I. REASONING BY ANALOGY UNDER PEIRCE'S THEORY OF INFERENCE AND UNDER THE CLASSIC FORMULATION

A. Peirce's Tripartition of Inference: Deduction, Induction, and Abduction

A cornerstone of Peirce's thought is that there are three, and only three, irreducible forms of inference: deduction, induction, and abduction.[12] His views on the nature of deductive and inductive reasoning are largely consonant with the general views of others, although he had a somewhat restrictive view of induction.[13] His theory of abduction, however, is highly original with respect to both its scope and nature. Under Peirce's view that abduction is the only form of inference other than induction and deduction, its scope would cover areas that others would consider either different types of reasoning or even irrational processes.[14] His theory of the nature of abduction, the reasoning process through which we develop new ideas, is innovative and powerful enough to be considered his most outstanding contribution in logic.[15]

In deductive reasoning, the conclusion necessarily follows from the premises, as in mathematics and "logic" in a narrow sense.[16] If the premises are true and the argument has a valid de-

12. FANN, *supra* note 2, at 15-17.

13. For a somewhat broader view of induction than Peirce, see L. JONATHAN COHEN, AN INTRODUCTION TO THE PHILOSOPHY OF INDUCTION AND PROBABILITY (1989).

14. *See* FANN, *supra* note 2, at 1-7.

15. Paul Weiss, *Charles S. Peirce, Philosopher, in* CRITICAL ESSAYS ON CHARLES SANDERS PEIRCE 121, 124 (Richard J. Bernstein ed., 1965).

16. *See, e.g.*, CHARLES SANDERS PEIRCE, PHILOSOPHICAL WRITINGS OF PEIRCE 135-49 (Justus Buchler ed., 1955) [hereinafter PEIRCE, PHILOSOPHICAL WRITINGS] (discussing the nature of mathematics and logic and their relationship to deduction and abduc-

ductive form, the conclusion must also be true. To use an example from Peirce:

Deduction:	Rule:	All the beans from this bag are white.
	Case:	These beans are from this bag.
	Result:	These beans are white.[17]

If we know that all the beans in a bag are white, we can confidently conclude that any beans from the bag will be white. If the rule and the case are both true, the result must also be true. Peirce used as another example the most familiar syllogistic form, which is known as *Barbara*:[18]

All men are mortal.	(major premise)
Socrates is a man.	(minor premise)
Socrates is mortal.	(conclusion)[19]

In induction, we infer that if something is true of a sample of a class, the same is true of the entire class.[20] For example:

Induction:	Case:	These beans are from this bag.
	Result:	These beans are white.
	Rule:	All the beans from this bag are white.[21]

The proposition that all the beans in a bag are white gains inductive support if all the beans we have taken from a bag are white. Unlike the deductive inference above, however, the conclusion does not necessarily follow from the premises; rather, the strength of our conclusion rests on the strength of our belief that the same result will continue into the future. Peirce viewed induction as inferring the major premise (the Rule) of a syllogism from its minor premise (the Case) and its conclusion (the Result).[22] To rearrange the elements of Barbara:

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tion); CHARLES SANDERS PEIRCE, 8 COLLECTED PAPERS OF C.S. PEIRCE § 383 (Charles Hartshorne & Paul Weiss eds., 1960) [hereinafter PEIRCE, COLLECTED PAPERS]; AYER, *supra* note 2, at 64-65.

17. PEIRCE, 2 COLLECTED PAPERS, *supra* note 16, § 623.
18. PEIRCE, 2 COLLECTED PAPERS, *supra* note 16, § 620.
19. PEIRCE, 2 COLLECTED PAPERS, *supra* note 16, § 620.
20. PEIRCE, 2 COLLECTED PAPERS, *supra* note 16, § 624.
21. PEIRCE, 2 COLLECTED PAPERS, *supra* note 16, § 623.
22. PEIRCE, 2 COLLECTED PAPERS, *supra* note 16, § 623.

Socrates is a man.	(minor premise)
Socrates is mortal.	(conclusion)
All men are mortal.	(major premise)[23]

As discussed below, we would require a greater sample than one man before we placed much confidence in an inductive conclusion about all men.

Abduction is the construction and selection of hypotheses:[24]

Hypothesis:	Rule:	All the beans from this bag are white.
	Result:	These beans are white.
	Case:	These beans are from this bag.[25]

If we know that all the beans from a certain bag are white, and that certain beans in the proximity of the bag are also white, we may hypothesize that the beans came from the bag. There is an infinite number of decreasingly less apt hypotheses that would be consistent with the same facts (the beans came from a hidden bag of white beans, the beans came from a bag of otherwise black beans, the beans were left there by a friendly ghost). When faced with facts that could be explained by a multitude of theories, people are able to select good hypotheses, if not necessarily the perfect ones.[26] Peirce described this as the abductive reasoning process.[27] With abduction, we formulate and select an hypothesis that explains the known facts better than any other hypothesis we can construct.[28] In form, abduction infers the minor premise of a syllogism (the Case) from the major premise (the Rule) and the conclusion (the Result):[29]

All men are mortal.	(major premise)
Socrates is mortal.	(conclusion)
Socrates is a man.	(minor premise)

Thus, where induction simply infers that characteristics of a sample will apply to the whole (inferring a general law from particulars), abduction infers an explaining hypothesis from a body of

23. PEIRCE, 2 COLLECTED PAPERS, *supra* note 16, §§ 620, 623.

24. In some writings, Peirce referred to abduction as the construction of hypotheses, in other writings as the selection of the best hypothesis. *See* FANN, *supra* note 2, at 41.

25. PEIRCE, 2 COLLECTED PAPERS, *supra* note 16, § 623.

26. *See* FANN, *supra* note 2, at 42-43, 47-51.

27. *See* FANN, *supra* note 2, at 41-45.

28. To Peirce this did not always mean the logically simplest hypothesis, his acceptance of Ockham's razor notwithstanding. FANN, *supra* note 2, at 49.

29. PEIRCE, 1 COLLECTED PAPERS, *supra* note 16, § 89.

data (what Peirce termed inferring cause from effect): induction classifies, abduction explains.[30] Peirce viewed abduction as inference (that is, reasoning) because the reasons for adopting particular hypotheses can be regarded as good or bad.[31] He thus sharply differentiates himself from those who think the formulation of hypotheses is an irrational form of intuition or guessing, the study of which would be inapposite for logicians, although perhaps of interest to psychologists.[32]

Peirce stated the same form of inference in a manner that emphasizes both the explanatory and fallible character of abductive inference:

> The surprising fact, C, is observed.
> But if A were true, C would be a matter of course.
> Hence, there is reason to suspect that A is true.[33]

If we believe all men are mortal, we can explain the fact that Socrates is mortal with the hypothesis that he is a man. As discussed below, such reasoning would be fallacious if regarded as deductive reasoning, because it would be a syllogism with an undistributed middle.[34] The conclusion does not necessarily follow from the premises; consistent with such premises, Socrates could be a dog. However, it does provide a possibly fruitful hypothesis to explain and synthesize the two premises.

Peirce considered that the study of reasoning has two primary aims:

> 1st, to bring out the amount and kind of *security* (approach to certainty) of each kind of reasoning, and 2nd, to bring out the possible and esperable uberty, or value in productiveness, of each kind.[35]

As we move from deductive to inductive to abductive reasoning, the "security" of the conclusion decreases, while the possible "value in productiveness" increases.[36] Deductive reasoning is

30. FANN, *supra* note 2, at 10 (quoting PEIRCE, 2 COLLECTED PAPERS, *supra* note 16, § 636).

31. *See* FANN, *supra* note 2, at 8-9 (discussing relevant writings of Peirce).

32. For a discussion of philosophers who deny that the formation of hypotheses is susceptible of logical analysis, see FANN, *supra* note 2, at 1-3.

33. PEIRCE, 5 COLLECTED PAPERS, *supra* note 16, § 189.

34. *See infra* notes 125-28 and accompanying text.

35. PEIRCE, 8 COLLECTED PAPERS, *supra* note 16, § 384.

36. *See, e.g.*, PEIRCE, 5 COLLECTED PAPERS, *supra* note 16, § 188 (stating that although abduction's security is low, its uberty is high); FANN, *supra* note 2, at 8.

truth-preserving:[37] if the premises are true, the conclusion is necessarily true. Inductive and abductive reasoning do not inspire such confidence. If the premises of an inductive inference are true, the certainty of the conclusion being true depends on how well the sample reflects the whole.[38] For example, if the census for a particular year shows a higher proportion of a characteristic among a certain sector of the population than others, then inductive support exists for the proposition that the same difference would be true in other years.[39] But this is only support for the proposition, not irrefutable proof. In the extreme case, where the number of cases sampled is close to the total population, the certainty would be very high. Conversely, an inductive inference based on a single example would be weak. Evidence of Socrates' mortality alone would not provide great support for the proposition that all men are mortal, nor would examining a single bean provide much support to a proposition about the color of all the beans in a bag. Thus, inductive reasoning certainly depends on the number and variety of cases sampled.

In addition, for inductive reasoning to be reliable, we should randomly select the samples and designate the characteristics to be tested for before sampling.[40] If we examine the same samples repeatedly without predesignated characteristics, sheer chance dictates that common characteristics will be found. Peirce illustrated the skewed conclusions that a faulty inductive procedure yields. For example, in a given census, he found a correlation between illiteracy rates and January rainfall in selected towns.[41] To create an even more strained example, Peirce analyzed the ages at death of five poets consecutively listed in a biographical dictionary. The ages shared several characteristics, such as the fact that the first digit of each age raised to the power indicated by the second, and

37. In discussing legal reasoning, we could refer to "justification preserving" rather than "truth preserving." *See* Warner, *supra* note 1, at 1530. Such terminology avoids the issue whether legal statements can have truth values (i.e., are true or false) or simply state rules that are neither true nor false.

38. *See* PEIRCE, 8 COLLECTED PAPERS, *supra* note 16, §§ 384-388.

39. *See* PEIRCE, PHILOSOPHICAL WRITINGS, *supra* note 16, at 152.

40. PEIRCE, PHILOSOPHICAL WRITINGS, *supra* note 16, at 152, 329. This rule is not without exception: "Random sampling and predesignation of the character sampled for should always be striven after in inductive reasoning, but when they cannot be attained, so long as it is conducted honestly, the inference retains some value." PEIRCE, PHILOSOPHICAL WRITINGS, *supra* note 16, at 329.

41. PEIRCE, PHILOSOPHICAL WRITINGS, *supra* note 16, at 214.

then divided by three, left a remainder of one.[42] Naturally, such "induction" gives little support to the proposition that the same would hold for the next poet in the book or poets in general.

With respect to abductive reasoning, the certainty of the conclusion may be much lower than that of the premises; indeed, as discussed below, an essential part of reasoning with abduction is to test the conclusion.[43] Although an abductive inference has the least security, it has the greatest value in productiveness (the potential to increase our knowledge). In contrast, deductive reasoning cannot produce conclusions that increase knowledge. Rather, it can only disclose through analysis conclusions that necessarily follow from the premises. Thus, Peirce classified deduction as the form of inference that is explicative (analytic), as opposed to ampliative (knowledge increasing).[44]

In Peirce's early writings, he viewed induction as ampliative in the sense of providing new knowledge in a linear way.[45] If we draw a handful of beans from a bag and two-thirds are white, we could infer that two-thirds of the rest of the beans are white. Such an inference is commonly viewed as induction. Peirce, however, subsequently concluded that the three forms of inference serve different steps of the process of increasing knowledge.[46] Abduction generates hypotheses and selects those worth considering. Deduction predicts the necessary consequences of the hypotheses selected. Induction tests these predictions.[47] Finding that two-thirds of the sample beans are white prompts the abduction that two-thirds of all the beans are white, which we can test inductively with another sample.

According to Peirce, inductive reasoning can increase knowledge only in the sense that it increases our confidence in particular propositions.[48] An inductive inference serves only to predict that

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42. PEIRCE, PHILOSOPHICAL WRITINGS, *supra* note 16, at 207.

43. *See* PEIRCE, 5 COLLECTED PAPERS, *supra* note 16, § 171 ("Deduction proves that something *must* be; Induction shows that something *actually is* operative; Abduction merely suggests that something *may be.*").

44. *See* FANN, *supra* note 2, at 7.

45. *See* FANN, *supra* note 2, at 7-10.

46. *See* FANN, *supra* note 2, at 9-10, 31-35.

47. In his later work, Peirce divided induction into three processes for testing hypotheses: crude induction, quantitative induction, and qualitative induction. *See* FANN, *supra* note 2, at 32-33.

48. PEIRCE, PHILOSOPHICAL WRITINGS, *supra* note 16, at 152.

known characteristics will be true of a more general population.[49] The proposition that gains strength from an inductive test must be itself the product of abduction.[50] This view of induction makes it complementary to the other forms of inference and helps foreclose the sampling risks discussed above.[51] If we happen to note a regularity in a sample, we should not base an inductive inference on the observation because we did not predesignate that character for testing. However, we could use the observation as a basis for an abduction that the regularity holds true more generally. Then we should randomly select another sample, rather than rely on the sample on which we based the abduction. For example, the hypotheses on the correlation between January rainfall and illiteracy rates or the mathematical characteristics of the death ages of poets requires further inductive support through additional sampling. This view also preserves the linear nature of induction.[52] Before we infer anything from a correlation between rainfall and local illiteracy rates, we should consider additional relevant information. We should also consider possible alternative hypotheses to explain the facts. Under Peirce's view, such a search for synthesis is characteristic of abduction rather than induction.[53]

According to Peirce, abduction is the only form of inference that adds to our knowledge.[54] Abduction permits us to infer the existence of "something of a different kind from what we have directly observed."[55] We can hope for and expect abductive reasoning to have the greatest value in productiveness; as Peirce more euphonically held, abduction has more possible and esperable uberty[56] than the other forms of inference.[57] Of course, as dis-

49. *See supra* notes 20-21 and accompanying text.

50. *See* FANN, *supra* note 2, at 31-35.

51. FANN, *supra* note 2, at 31-35.

52. *See supra* note 46 and *infra* note 243 and accompanying text.

53. *See* FANN, *supra* note 2, at 34-35.

54. "[Abduction] is the only logical operation which introduces any new ideas; for induction does nothing but determine a value, and deduction merely evolves the necessary consequences of a pure hypothesis." PEIRCE, 5 COLLECTED PAPERS, *supra* note 16, § 171. "[T]he essence of an induction is that it infers from one set of facts to another set of similar facts, whereas [abduction] infers from facts of one kind to facts of another." PEIRCE, 2 COLLECTED PAPERS, *supra* note 16, § 642.

55. PEIRCE, 2 COLLECTED PAPERS, *supra* note 16, § 640.

56. "Esperable," a word possibly coined by Peirce, means "expected" or "hoped for." Thomas A. Sebeok, *One, Two, Three Spells UBERTY*, *in* THE SIGN OF THREE 1, 1 (Umberto Eco & Thomas A. Sebeok eds., 1983). "Uberty" is an archaic word used by Peirce in the sense of "rich growth, fruitfulness, fertility; copiousness, abundance." *Id.*

cussed above, the price of uberty is lost security. Abductions have a certain amount of reliability, although never the complete certitude of deduction.[58]

Abduction is synthetic,[59] seeking to form general laws and bring order to apparently disconnected facts. An abductive inference provides a way to see order and unity in what was previously confusing.[60] The facts themselves prompt us to seek a theory to explain them, which theory we can test inductively to determine if the facts are consistent with it.[61] Thus, abduction considers facts themselves to have meaning, in the sense that they prompt fruitful hypotheses. Induction seeks to determine whether the facts accord with the hypothesis. Inductive testing checks whether the hypothesis suggested by the facts holds true for other facts.[62]

Abduction is also the form of inference that benefits most from other relevant or background knowledge. Because deductive reasoning is truth-preserving and analytical, any knowledge other than the premises is irrelevant. This extraneous knowledge has no effect on either the deductive inference or the confidence we place in the conclusion. Alternatively, knowledge other than the premises is of limited relevance in induction because it focuses on predesignated characteristics. In testing the hypothesis that all of the beans in a bag are white, we focus on whether the beans sampled are white. However, background knowledge (how many colors of beans there

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Thus, "esperable uberty" means the fruitfulness that one expects or hopes to come from an inference.

57. *See* FANN, *supra* note 2, at 34-35.

58. *See* Umberto Eco, *Horns, Hooves, Insteps: Some Hypotheses on Three Types of Abduction*, *in* THE SIGN OF THREE 198, 203-04 (Umberto Eco & Thomas A. Sebeok eds., 1983).

59. *See, e.g.*, PEIRCE, 5 COLLECTED PAPERS, *supra* note 16, § 276 (stating that abduction substitutes "for a great series of predicates forming no unity in themselves, a single one . . . which involves them all."); Massimo A. Bonfantini & Giampaolo Proni, *To Guess or Not To Guess?*, *in* THE SIGN OF THREE 119, 131 (Umberto Eco & Thomas A. Sebeok eds., 1983).

60. Abduction is "a process by which a confused concatenation of predicates is brought to order under a synthesizing predicate." PEIRCE, PHILOSOPHICAL WRITINGS, *supra* note 16, at 198; *see also* CHARLES SANDERS PEIRCE, 3 WRITINGS OF CHARLES S. PEIRCE: A CHRONOLOGICAL EDITION 330 (Max H. Fisch et al. eds., 1986) [hereinafter PEIRCE, WRITINGS].

61. "Abduction seeks a theory. Induction seeks for facts. In abduction the consideration of the facts suggests the hypothesis." PEIRCE, 7 COLLECTED PAPERS, *supra* note 16, § 218.

62. "In induction the study of the hypothesis suggests the experiments which bring to light the very facts to which the hypothesis had pointed." PEIRCE, 7 COLLECTED PAPERS, *supra* note 16, § 218.

are, how many beans are in the bag) affects how we evaluate the certainty of the inductive inference.

With abduction, it is much more difficult to circumscribe the relevant knowledge. First, abduction is synthetic. If we have several white beans and a bag of white beans, background information helps determine whether we form the hypothesis that the beans came from the bag. Such information as how near the beans are to the bag, other possible sources of the beans, and so on, are all candidates for consideration and inclusion in the synthesis.[63] Second, because little work has been done toward formulating a logic of abduction (unlike deduction and induction),[64] it remains unclear which facts serve as premises of an abductive inference. Thus, we do not know where to draw the boundary between facts used in making the abduction and irrelevant facts. In the bean example, we could not separate all the information we have about the beans into facts used as premises of the abduction and irrelevant facts.

Under Peirce's view, we use abduction in all types of cognition, from the commonplace to the most abstract. He regarded the extreme case of abduction to be the interpretation inherent in the perceptive judgment.[65] For example, we might observe an object with several predicates. We know that a familiar kind of object has the same predicates. We form the hypothesis that the observed object is of that kind, because if that fact were true, the observations would be a matter of course. Then, we can test it by seeing if other observations are consistent with the hypothesis.

At the other extreme, in Peirce's view, are the series of abductions made by Johann Kepler in constructing his theory of planetary motion.[66] Kepler consistently modified his theory to account for facts that were "surprising" in that they differed from what the existing theory predicted.[67] Many abductions made in every day life fall between the perceptual judgment and the diligent brilliance

63. *See* Eco, *supra* note 58, at 198, 203-04.

64. *See infra* note 252.

65. PEIRCE, PHILOSOPHICAL WRITINGS, *supra* note 16, at 305. Peirce formulated the perceptual abduction as follows:

> A well-recognized kind of object, M, has for its ordinary predicates P_1, P_2, P_3, etc., indistinctly recognized. The suggesting object, S, has these same predicates, P_1, P_2, P_3, etc.
>
> Hence, S is of the kind M.

PEIRCE, PHILOSOPHICAL WRITINGS, *supra* note 16, at 305.

66. PEIRCE, PHILOSOPHICAL WRITINGS, *supra* note 16, at 154-56.

67. PEIRCE, PHILOSOPHICAL WRITINGS, *supra* note 16, at 154-56.

of Kepler's theorizing. For instance, we might suppose that an individual was a Catholic priest to explain his dress, expression of countenance, and bearing.[68] Thus, abduction has a possible role in many types of cognitive interpretation.[69]

Because abduction seeks to explain and synthesize previous cognitions, the conclusion of an abductive inference may be what we commonly regard as a fact or a law. We may form an hypothesis that Socrates is a man (a "fact") or that planets move according to a certain mathematical formula (a "law"). Whether the conclusion is a fact or a law, it is an hypothesis adopted for its explanatory power.[70]

In addition to explaining the role of abduction in logic, Peirce described its psychological aspects:[71] "The abductive suggestion comes to us like a flash. It is an act of *insight,* although of extremely fallible insight."[72] He repeatedly suggested that abduction successfully increases our knowledge because we are likely to formulate fruitful hypotheses.[73] Yet Peirce differentiated between the psychological and logical aspects of abduction.[74] His view of the reasoned insight of abduction is also sharply different from the view that intuition provides nonreasoned insights.[75]

If all reasoning is deductive, inductive, or abductive, and if reasoning plays any part in legal decisionmaking, then these forms of inference figure in legal reasoning. Unless we know general principles from which we can deduce new rules to decide every case, abductive reasoning must figure in legal reasoning to provide new ideas. Catharine Wells argued convincingly that Oliver Wendell

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68. PEIRCE, PHILOSOPHICAL WRITINGS, *supra* note 16, at 151.

69. The vast role of abduction in cognitive interpretation accounts in part for the interest in abduction displayed by those in the field of semiotics. *See, e.g.*, UMBERTO ECO, SEMIOTICS AND THE PHILOSOPHY OF LANGUAGE 39-45, 124-27 (1986); UMBERTO ECO, A THEORY OF SEMIOTICS 131-33 (1979).

70. "This explanation is present to the mind of the reasoner, too; so much so, that we commonly say that the hypothesis is adopted *for the sake of* the explanation." PEIRCE, PHILOSOPHICAL WRITINGS, *supra* note 16, at 199.

71. For a paper concluding that the psychological and logical aspects of Peirce's account of abduction are not in conflict, see Douglas R. Anderson, *The Evolution of Peirce's Concept of Abduction*, 22 TRANS. PEIRCE SOC. 145 (1986).

72. PEIRCE, 5 COLLECTED PAPERS, *supra* note 16, § 181.

73. FANN, *supra* note 2, at 37 (quoting Peirce extensively).

74. *See* FANN, *supra* note 2, at 38.

75. *See supra* note 32 and accompanying text. What has been described as intuition in legal reasoning is consistent with a reasoning process. *See infra* notes 179-93 and accompanying text.

Holmes, Jr. held a view of legal reasoning similar to Peirce's view of abduction.[76] Holmes viewed legal generalizations as heuristics that explained law by unifying diverse legal conceptions.[77] Under such a view, and contrary to Langdellian formalism,[78] legal reasoning does not work syllogistically by simply applying the facts of a given case (the minor premise) to a general rule (the major premise) and deducing the result. A legal concept does not exist before its application to the facts of any given case. Rather, a legal concept begins as a theory to explain the results of particular cases and is subject to modification in light of the facts of other cases.[79]

To recast Holmes' analysis in Peircian terms, the result of a given case is a fact to be explained, and the formulation of a rule is the hypothesis resulting from abduction:

> Analogously, Holmes might say: we see that Jones must return Smith's horse; if we had a principle that a person cannot retain another's property against her will, the result in the Smith case would be a matter of course; thus we have reason to suspect that such a principle governs our relations. The principle explains the result but is subject to revision in the light of later cases.[80]

Holmes' conception of legal reasoning thus resembles the abductive inference. Both are explanatory and synthetic, seeking to form general laws that bring order to apparently disconnected facts. In accordance with Holmes' predictive view of the law, we can deduce the results of future cases from the formed hypotheses. However, these hypotheses are subject to falsification and modification in light of the results of future cases.

Peirce's view on the role of abduction in the formulation of perceptual judgments illuminates Holmes' view on what Wells termed the "embeddedness" of legal concepts.[81] Embeddedness is the constraining effect that legal concepts have on our imagination.[82] In Holmes' words, continuity with the past "simply limits

76. Catharine Wells Hantzis, *Legal Innovation Within the Wider Intellectual Tradition: The Pragmatism of Oliver Wendell Holmes, Jr.*, 82 NW. U. L. REV. 541, 567-75 (1988).

77. *Id.* at 569-70.

78. Holmes opposed the view of Christopher Columbus Langdell that legal principles could be inferred deductively from relatively few fundamental legal doctrines. *See id.* at 562-63.

79. *Id.* at 568.

80. *Id.* at 570.

81. *Id.* at 570-74.

82. *Id.* at 571.

the possibilities of our imagination, and settles the terms in which we shall be compelled to think."[83] Embeddedness springs from the lack of a dichotomy between facts and legal concepts.[84] It is misleading to think of a case as a set of purely factual circumstances. Rather, the inferences that lead to our understanding of what we consider to be "the facts" are guided by the legal concepts formed by previous cases.[85] Thus, in the process of considering the case, what we believe to be the starting point is actually several steps along the inferential way. Alternative methods of viewing the case that would have been available earlier along the inferential path are thereby preempted. For example, in deciding whether plaintiff motorist was contributorily negligent in failing to stop, look, and listen before crossing a railroad track, the judge's view of the facts will be implicity influenced by the judge's existing factual and normative judgments.[86] In turn, the judge's view of the facts cannot be separated from his application of the law to the facts.[87] Because the judge has already implicitly accepted some theoretical views, the adoption of certain other theoretical views is foreclosed.

Similarly, under Peirce's view, what we take to be "facts" in other aspects of life already embody theory.[88] As discussed above, even a perceptual judgment involves a synthesizing hypothesis that unifies several sensations. Thus, naked facts do not exist within our cognition from which we can construct theories, just as the embeddedness of legal concepts makes impossible legal reasoning with elementary facts.

Wells discussed whether Holmes' implicit philosophical views were like Peirce's explicit views, not with how legal reasoning generally would be viewed under Peirce's analysis.[89] Moreover, Holmes never articulated a comprehensive theory of legal reasoning. Analyzing legal reasoning under Peirce's framework requires some additional steps. First, the above takes as given the result in a particular case, where a more general analysis would inquire into the nature of the inferential process that leads to a result in the

83. *Id.* at 571 (quoting OLIVER WENDELL HOLMES, COLLECTED LEGAL PAPERS 211 (1920)).

84. *Id.* at 572.

85. *Id.* at 571-74.

86. *Id.* at 572-73.

87. *Id.* at 572.

88. *Id.* at 571-72.

89. *Id.* at 543-44.

particular case. Second, the above accounts for the formation of legal concepts and for the modification of such concepts in light of the facts of subsequent cases. But new cases are not decided simply on the basis of the general concepts and their own facts. In the case-law system, the process of deciding cases and formulating legal concepts typically employs (as at least one method) analogical reasoning[90] to apply and distinguish the facts of precedents. A more extensive analysis of legal reasoning needs to examine the way the facts of precedents or hypothetical cases are used in analogical reasoning, together with the analysis of how the result is reached in any particular case. Finally, because abduction is the least certain form of inference, a comprehensive analysis would discuss whether the more reliable forms, induction and deduction, figure in legal reasoning.

B. Reasoning by Analogy: The Classic Formulation and Peirce's Formulation

The classic formulation of reasoning by analogy is simple. Where an entity has several characteristics, and another entity demonstrates all but one of those characteristics, we infer that it also has the additional characteristic of the first entity. More formally:

(i) *x* has characteristics F, G, . . .
(ii) *y* has characteristics F, G, . . .
(iii) *x* also has characteristic H.
(iv) Therefore, *y* has characteristic H.[91]

Frequently, the analogy derives from not just one entity, but many. In the formulation above, x could be replaced by several entities, such as x1, x2, x3. So formulated, analogical reasoning is often described as inductive.[92] Under such a view, analogical reasoning is based on an expectation of regularity. We infer that, because the sampled entities have characteristics F, G, and H, another entity with characteristics F and G also will have characteristic H.

90. Holmes recognized that analogical reasoning figured in legal reasoning: "The training of lawyers is a training in logic. The processes of analogy, discrimination, and deduction are those in which they are most at home. The language of judicial decision is mainly the language of logic." Oliver Wendell Holmes, *The Path of the Law*, 10 HARV. L. REV. 457, 465 (1897).

91. MARTIN P. GOLDING, LEGAL REASONING 45 (1984).

92. *See, e.g.*, JOSEPH HOROVITZ, LAW AND LOGIC: A CRITICAL ACCOUNT OF LEGAL ARGUMENT 18 (1972).

J.S. Mill took this approach to its extreme. He believed that analogical reasoning was simply a form of inductive reasoning, not an intrinsically different form of reasoning.[93] Under Mill's approach, the certainty of a given analogical inference depends solely on the number of similarities between the entitles.[94] This approach does not provide additional weight to more important similarities or disregard irrelevant similarities.[95] Thus, two cases would be considered to have similarities if the plaintiffs happened to have the same name or if an urn was involved in both cases, even if those similarities were irrelevant. The more similarities found, the greater the analogy between the cases. Such a view is obviously inappropriate for legal reasoning.

Scholars generally have not accepted this formulation of analogical reasoning as either logically or psychologically satisfying.[96] In addition to its formal weaknesses, the classic formulation is not psychologically compelling, in contrast to both the syllogism, which captures the essence of deductive reasoning, and inductive formulations, which seem to account for our reliance on regularity. Nor does the classic formulation address why one analogy would be chosen over other possible or competing analogies, which is an essential feature of legal reasoning analogy. Finally, it does not account for the creative and explanatory uses of analogical reasoning.

Peirce's theory on inference offers a view of analogical reasoning that accommodates the criticisms of the classic formulation and

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93. *See* L. JONATHAN COHEN, AN INTRODUCTION TO THE PHILOSOPHY OF INDUCTION AND PROBABILITY 36 (1989) (discussing J.S. MILL, AN EXAMINATION OF SIR WILLIAM HAMILTON'S PHILOSOPHY AND OF THE PRINCIPAL PHILOSOPHICAL QUESTIONS DISCUSSED IN HIS WRITINGS 402 (1865)).

94. *Id.*

95. Golding revised the classic analogical formulation for purposes of legal reasoning as follows:

(i) *x* has characteristics F, G, ...
(ii) *y* has characteristics F, G, ...
(iii) *x* also has characteristic H.
(iv) F, G . . . are H-relevant characteristics.
(v) Therefore, *y* has characteristic H.

GOLDING, *supra* note 92, at 45.

96. With respect to analogical reasoning in general, Rudolf Carnap regarded the problem of giving the proper weight to analogy as the most unyielding problem in inductive logic. *See* HILARY PUTNAM, THE MANY FACES OF REALISM 73 (1987). With respect to the use of analogy in legal reasoning, Joseph Horovitz's *Law and Logic* discusses the shortcomings of attempts by scholars (predominantly European) to formalize legal analogical reasoning. HOROVITZ, *supra* note 93, at 32-44, 65-68, 70-76, 101-04.

illustrates the innate uncertainty of analogical inference.[97] Peirce did not view analogy as one of the three primary forms of inference, but rather as a mixture of induction and abduction, and a tincture of deduction, which he formulated as follows:

> Every *X* is, for example, *P'*, *P"*, *P"'*, etc. *Q* is found to be *P'*, *P"*, *P"'*, etc. Hence, hypothetically, *Q* is an *X*.
>
> *S'*, *S"*, *S"'*, etc., are sample of the *X*'s. *S'*, *S"*, *S"'*, etc., are found to be *R*'s. Hence, inductively, every *X* is an *R*.
>
> Hence, deductively, *Q* is an *R*.[98]

To paraphrase the foregoing: We know that Q shares certain characteristics that every X shares. By abduction, we form the hypothesis that (i) Q is an X. This abduction both explains (by accounting for Q having such characteristics) and synthesizes (by substituting the single predicate of being an X for the various predicates of having those characteristics). Next, we independently conclude from induction that (ii) every X is an R. If we accept conclusions (i) and (ii) as premises, we can deduce that (iii) Q is an R.

To give a simplified example: All X's are battery cases and every X has certain facts. If Q also has those facts, then we hypothesize that Q is a battery case. In every battery case sampled, the plaintiff received damages. This provides inductive support to the rule that the plaintiff receives damages in every battery case. Thus, applying the rule deductively to Q, we conclude that the plaintiff in Q will receive damages. Even in this simplified example, the reasoning could break down in any step. For example, although Q has all the facts found in X, Q may not be an X (e.g., Q does not have what we decide are the elements of battery). Additionally, every X may not be R, such that damages are not appropriate in all battery cases. Finally, external circumstances may preclude application of the rule to Q (e.g., there is another rule providing that no damages will be awarded if the battery was in self-defense).

This Article will refer to the inferential processes resulting in conclusions (i), (ii), and (iii), respectively, as the abductive, induc-

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97. Peirce aptly stated the shortcomings of a purely inductive view of analogical reasoning like that of Mills: "There is no greater nor more frequent mistake in practical logic than to suppose that things which resemble one another strongly in some respects are any the more likely for that to be alike in others." PEIRCE, 3 PHILOSOPHICAL WRITINGS, *supra* note 16, at 330.

98. PEIRCE, 4 PHILOSOPHICAL WRITINGS, *supra* note 16, at 433 (structure of example altered); PEIRCE, 2 PHILOSOPHICAL WRITINGS, *supra* note 16, at 47.

tive, and deductive stages of Peirce's formulation of analogy. For example, we could make the abduction that all X's are R. Because induction alone does not produce rules,[99] an additional abductive step would precede the inductive stage. For example, we could make the abduction that all X's are R. This abduction could be tested inductively by sampling S', S", S"', etcetera. If such testing is consistent with the hypothesis, then we could infer inductively that all X's are R. Including an abductive step in the inductive stage of the analogy permits interplay between the abductive and inductive stages. An abduction at either stage could explain the conclusion of the other stage. Thus, one of the reasons that we form the hypothesis that Q is an X could be that it helps explain why all X's are R's. Conversely, one reason that we conclude that all X's are R's could be that Q is an X.[100]

By adding an additional abductive step to his formulation, Peirce highlighted reasons a strict analogical inference could lack security. As set forth above, the step of concluding likeness between entities is purely abductive. However, this conclusion lacks certainty without further support. Such support could come from induction.[101] In any case, because it has components of both induction and abduction, the security of the analogical conclusion is subject to the hazards of both.[102] The number of examples influences whether any particular analogical inference relies more on abduction than induction. Thus, if the analogy is the product of many

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99. *See supra* notes 46-59 and accompanying text.

100. Thus recast, the role of analogy in scientific reasoning, for example, could be to suggest by analogy fruitful hypotheses about the general application of physical laws. Thus, an analogy between the moon and an apple might suggest that similar laws of gravitation apply to both, which inductive testing could bear out. *See* PEIRCE, PHILOSOPHICAL WRITINGS, *supra* note 16, at 43.

101. An abduction of similarity could also be tested by what Peirce termed "abductory induction," which includes estimating the significance of characteristics. PEIRCE, PHILOSOPHICAL WRITINGS, *supra* note 16, at 151.

102. "Owing to its double character, analogy is very strong with only a moderate number of instances." PEIRCE, 4 WRITINGS, *supra* note 60, at 433. In the extreme case, where every possible example is examined, security becomes complete as the inference becomes deductive:

> An argument from analogy may be strengthened by the addition of instance after instance to the premises, until it loses its ampliative character by the exhaustion of the class and becomes a mere deduction of that kind called *complete induction,* in which, however, some shadow of the inductive character remains, as this name implies.

PEIRCE, 4 WRITINGS, *supra* note 60, at 433. The uberty of such an inference would correspondingly drop to zero, because it would tell us nothing that we do not already know.

examples, the inference then reduces to an abduction with the support of a strong induction. On the other hand, where an analogy is made from a single example, the inference reduces to an abduction coupled with a weak induction. Fortunately, other means of testing the conclusion to bolster its certainty are available.

As well as emphasizing that analogy is subject to the double hazards of induction and abduction, Peirce's view permits creative use of analogies[103] and selection from competing analogies, which are neglected by the sterile inductive classic formulation. The synthetic aspect of abduction, including its use of background knowledge, accounts for analogy's incorporation of such background information. In addition, abduction accounts for other logical and psychological aspects of analogical reasoning. The following sections discuss whether Peirce's view is more consistent with the use of analogy in legal reasoning than is the classic formulation.

II. A COMPARISON OF PEIRCE'S THEORY TO SPECIFIC DISCUSSIONS OF ANALOGY IN LEGAL REASONING

A. Levi: Analogy as Reasoning by Example

Edward Levi's subtle and elegant *An Introduction to Legal Reasoning*[104] is still recognized as the standard account of the analogical model of legal reasoning.[105] His views move away from the classic formulation and fit smoothly into Peirce's formulation. Levi saw the basic pattern of legal reasoning as reasoning by example from case to case:

> It is a three-step process described by the doctrine of precedent in which a proposition descriptive of the first case is made into a rule of law and then applied to a next similar situation. The steps are these: similarity is seen between cases; next the rule of law inherent in the first case is announced; then the rule of law is made applicable to the second case.[106]

Levi's formulation differs from the classic formulation in several ways. Most important is the order of the steps. In the classic formulation, if an entity is like another entity in one or more ways, then an additional characteristic of the first entity will be ascribed

103. In his discussion of the doctrine of necessity, Peirce refers to "non-deductive or ampliative inference" as comprising induction, hypothesis, and analogy. PEIRCE, PHILOSOPHICAL WRITINGS, *supra* note 16, at 326.

104. EDWARD H. LEVI, AN INTRODUCTION TO LEGAL REASONING (1949).

105. *See, e.g.*, Warner, *supra* note 1, at 1552.

106. LEVI, *supra* note 104, at 1-2.

to the other entity. In other words, if the present case is held to be similar to a precedent, then the rule of the precedent would be applied to the case. However, Levi insisted that the formulation of the rule to be applied could not be made until after the similarity was seen.[107] Indeed, the rule announced by the first court could be completely ignored.[108] Although law is a system of rules, those rules are discovered only through the process of determining similarity or difference.[109] Accordingly, Levi viewed analogical reasoning as a creative process, which is a hallmark of abductive reasoning, but not of the sterile inductive classic formulation of analogy.

To Levi, the most important step was the first, the finding of similarity or difference between cases.[110] In the classic formulation, the finding of similarity or difference is largely mechanical and indeed practically trivial. For example, under Mill's view, an inference amounts to little more than counting similarities.[111] However, Levi and Peirce both afforded greater weight to the finding of similarity. For Peirce, the inference of similarity constituted the abductive stage of analogy, without which analogy would be impossible.[112]

Levi examined the case of *Winterbottom v. Wright,*[113] which addressed the issue whether lack of privity barred an injured coachman from recovery from the seller of a defective coach pursuant to a contract with the Postmaster General.[114] A previous case, *Langridge v. Levy,*[115] held that the seller of a defective gun was liable to the purchaser's injured son because the seller knew that someone other than the purchaser would use the gun. Similarly, in *Winterbottom,* the seller of the coach knew that a coachman, not the Postmaster General, would use the coach. However, the court ignored the rule announced in *Langridge.* Instead, it formulated a new rule to deny liability where the court considers the possible

107. LEVI, *supra* note 104, at 2-3.

108. LEVI, *supra* note 104, at 2-3.

109. LEVI, *supra* note 104, at 3.

110. LEVI, *supra* note 104, at 2 (describing the first step as the key to the legal process).

111. *See supra* notes 95-96 and accompanying text.

112. *See supra* note 16 and accompanying text.

113. 152 Eng. Rep. 402 (1842).

114. *Id.* at 402-03; *see also* LEVI, *supra* note 104, at 10-13.

115. 150 Eng. Rep. 863 (1837).

exposure excessive.[116] Thus, although the *Winterbottom* rule may have been inherent in the *Langridge* case, its discovery was prompted only by comparing the facts of both cases.

Levi's three-step process breaks down into two abductive steps (the second using the conclusion of the first as a premise) and a deductive step (using the conclusion of the second abductive step as its major premise). The first step consists of finding a similarity between cases. The present case is hypothetically placed in the same class as the precedent because it shares certain characteristics of the precedent: "A falls more appropriately in B than in C. It does so because A is more like D which is of B than it is like E which is of C."[117] This step thus involves both finding and explaining the similarity with a given precedent by placing them in the same class and selecting that precedent over other possible competing precedents.[118]

Under the classic formulation, once similarity is determined, an existing characteristic of the first case is attributed to the second. Under Peirce's formulation of analogy, after the abductive step of supposing similarity, a rule independently found through induction is applied.[119] If there is only a single case as precedent, such an induction would be weak; indeed, it could consist of selecting any characteristic of the precedent and making that a general rule. But Levi's rule formation has another abductive step, which echoes the need for an abduction in the inductive stage of Peirce's formulation. Levi followed the finding of similarity by announcing a rule inherent in the first case,[120] a step that requires an increase of possible knowledge. Thus, Levi used the conclusion of the first step as a premise for an abduction in the second. This process takes advantage of the interplay afforded by recognizing an abductive aspect in the inductive stage of analogy. In Peirce's terms, if the rule is accepted, it is a matter of course that the present case is similar to the precedent. Thus, there is reason to believe that the rule is a correct statement of the law. Finally, in a deductive step, the rule is applied to the facts of the present case.

To use a battery example, assume Smith struck Jones with a rock in the first case. The court could decide on the facts that

116. *Winterbottom*, 152 Eng. Rep. at 404-05.
117. LEVI, *supra* note 104, at 5 n.8.
118. LEVI, *supra* note 104, at 5.
119. *See supra* notes 98-100 and accompanying text.
120. *See supra* note 106 and accompanying text.

Smith must be liable and announced the rule that one who strikes another is liable for battery. In the second case, Jones sees Smith coming and strikes Smith first. The court could see the similarity between the cases. Then the court could explain the similarity with an explanatory abduction, announcing the rule inherent in the first case that one who strikes another *without good reason* is liable for battery. The court could then apply that to the second case.

Peirce's rearrangement of the syllogism to reflect the form of the abductive inference anticipates Levi's comparison of Levi's formulation with deduction. Levi noted that the creative formulation of a rule through the process of analogy to decide the present case would not meet the standards of deductive reasoning.[121] This is true because deductive reasoning permits only the application of a rule that necessarily follows from existing rules. If regarded solely as deductive reasoning, Levi's formulation would contain an undistributed middle, which is the fallacy of assuming the antecedent is true because the consequent is true.[122] Here Levi is completely in accord with Peirce's discussion of abduction and the forms of the syllogism.

The following is an example of an invalid syllogism containing an undistributed middle:

> Every member of the Labour Party is a socialist.
> He is a socialist.
> ---
> Therefore, he is a member of the Labour Party.[123]

This takes the same form as Peirce's rearrangement of the syllogism to reflect the form of abduction: it infers the Case from the Rule and the Result. The following is a valid syllogism:

> All socialists are members of the Labour Party.
> He is a socialist.
> ---
> Therefore, he is a member of the Labour Party.[124]

Thus, the invalid syllogism above infers the minor premise of a

121. LEVI, *supra* note 104, at 3.

122. LEVI, *supra* note 104, at 3-4 & n.5. Levi's formulation has been criticized: "Nothing in Levi's discussion indicates the nature of the first or second steps of the process." Vincent A. Wellman, *Practical Reasoning and Judicial Justification: Toward an Adequate Theory*, 57 U. COLO. L. REV. 45, 82 (1985). This Article attempts to address this criticism.

123. A DICTIONARY OF PHILOSOPHY 359 (Antony Flew ed., 1984).

124. *Id.*

valid syllogism from its major premise and its conclusion, which is how Peirce characterized abduction.

Levi also characterized this fallacy as assuming that the antecedent is true because the consequent has been affirmed.[125] This echoes the formulation of abduction used by Wells to show the affinity between the theories of Holmes and Peirce:

> The surprising fact, C, is observed.
> But if A were true, C would be a matter of course.
> Hence, there is reason to suspect that A is true.[126]

This argument tentatively and fallaciously infers "A" from the premises "C" and "If A, then C." But the second premise need not simply be a preexisting rule. Rather, it could be constructed in order to explain C.[127] Thus, when measured by the standards of deduction, abduction is not simply fallacious, it is creatively fallacious. Moreover, as long as we do not claim for abduction the certainty of deduction, the standards of deduction are not the appropriate measuring stick.

To place much reliance on the results of analogical reasoning, we would want it to have greater reliability than abduction alone yields. Because Levi's three-step process requires only a single analog, it relies much more on the abductive than the inductive aspects of analogy.[128] That is, analogy is used to form a rule using abduction but tests it inductively against only two cases. Although the bare formulation of the three-step process does not appear to include induction, Levi's framework admits induction both as part of the three-step process and in the broader use of reasoning by anal-

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125. MONROE C. BEARDSLEY, THINKING STRAIGHT 50 (3d ed. 1966).

126. *See supra* notes 33, 81 and accompanying text.

127. The fact that the fallacy could be reconciled by inferring an appropriate rule has been recognized before: "To reach the proposed conclusion validly by this sort of route it would be necessary to have as a premise a distributed assertion about socialists: 'All socialists are members of the Labour Party.' " A DICTIONARY OF PHILOSOPHY, *supra* note 123, at 359.

128. Levi stated that reasoning by example was not inductive because it formed rules from single instances:

> With case law the concepts can be created out of particular instances. This is not truly inductive, but the direction appears to be from particular to general. It has been pointed out that the general finds its meaning in the relationship between the particulars. Yet it has the capacity to suggest by the implication of hypothetical cases which it carries and even by its ability to suggest other categories which sound the same.

LEVI, *supra* note 104, at 27. Levi also quoted Aristotle on the difference between reasoning by example and induction. LEVI, *supra* note 104, at 1-2 & n.2.

ogy. Rather than simply using analogy between the cases before the court and a single precedent, Levi contemplated the use of many precedents.[129] In the first step of Levi's formulation, the conclusion that the case before the court is similar to a particular precedent could be tested by seeing if other cases actually were more similar.[130] The second step, formulation of the rule, also permits testing by induction. For example, parties could bring forward counter-examples to defeat proposed rules. The counter-examples could be the facts of previously decided cases or applications of other legal rules obtained deductively. In some instances, counter-examples would be generated deductively from other hypotheses, such as statements of legal policy. Finally, after any given case is decided, examples will arise in subsequent cases to test the rule formulated.

Levi's formulation thus further differs from the classic formulation of analogical reasoning in that he specifically contemplated the process to be used repeatedly over time, as he explained how reasoning by example creates, uses, and discards legal concepts.[131] Levi envisioned three stages. In the first stage, courts create a concept through comparison of cases and selection among competing concepts. In the second stage, the concept remains more or less fixed, while the courts continue to use reasoning by example to determine whether items should be covered by the concept. In the third stage, the court abandons the concept because reasoning by example has analytically outdistanced it.[132] Such a three-stage process closely resembles Peirce's theory of the acquisition of knowledge through the creative formulation of concepts. As with induction, concepts are tested and modified in light of the facts.[133]

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129. *See* LEVI, *supra* note 104, at 5-6.

130. LEVI, *supra* note 104, at 5 and n.8.

131. LEVI, *supra* note 104, at 8-9.

132. LEVI, *supra* note 104, at 8-9.

133. Cardozo, among others, was attracted by the analogy of the development of the law to the development of science through the testing of hypotheses:

> In their effort to give to the social sense of justice articulate expression in rules and in principles, the method of the lawgiving experts has always been experimental. The rules and principles of case law have never been treated as final truths, but as working hypotheses, continually retested in those great laboratories of the law, the courts of justice. Every new case is an experiment; and if the accepted rule which seems applicable yields a result which is felt to be unjust, the rule is reconsidered.

BENJAMIN N. CARDOZO, THE NATURE OF THE JUDICIAL PROCESS 23 (1921) (quoting MUNROE SMITH, JURISPRUDENCE 21 (1909)).

Levi used as an example the line of cases leading to Cardozo's opinion in *MacPherson v. Buick*,[134] which discussed the *Winterbottom* and *Langridge* decisions.[135] The basic issue in these cases was the extent of liability of a defendant who sells an object that subsequently injures someone other than the purchaser. In the first stage (where the courts create the legal concept), the courts tried several different methods of imposing liability: when the object was sold in a condition that could injure someone; when the sale was fraudulent; or when there was privity between the plaintiff and defendant.[136] In the second stage (where the concept is relatively fixed), courts adopted the rule that liability would be imposed for the sale of objects "dangerous in themselves."[137] Levi saw *MacPherson* as the beginning of the third stage (where the concept is broken down through reasoning by example).[138] In that case, Cardozo used examples from previous cases to show that the concept of objects "dangerous in themselves" was at best conclusory and that the concept of negligence would constitute a better rule.[139] Thus, over time, rules formed by abduction are subjected to testing by induction. In other words, a rule formulated through abduction may initially have sufficient explanatory power to satisfy a court, but later inductive testing may show the rule's infirmity.

Although Levi's three-step, three-stage process leaves ample opportunity for inductive testing of hypotheses, the available methods of inductively testing legal concepts are not nearly as precise or controllable as those available in the empirical sciences.[140] The courts do not allow testing with the exactitude of science. More-

134. 111 N.E. 1050 (N.Y. 1916).

135. LEVI, *supra* note 104, at 10-25.

136. LEVI, *supra* note 104, at 10-13.

137. LEVI, *supra* note 104, at 13-19.

138. LEVI, *supra* note 104, at 20-24.

139. LEVI, *supra* note 104, at 24-25.

140. *See, e.g.*, KARL LLEWELLYN, THE BRAMBLE BUSH 52 (1965). For a more recent discussion of how jurisprudence could gain from the modern scientific method, see Nancy Levit, *Listening to Tribal Legends: An Essay on Law and the Scientific Method*, 58 FORDHAM L. REV. 263 (1989).

There have been some attempts to apply methods of inductive support to legal propositions as well as propositions from other fields less susceptible to scientific experimentation: "Disappointingly, none of the aforementioned inductive systems has turned out to be applicable to the existing empirical fields, except in a tentative and fragmentary way." HOROVITZ, *supra* note 92, at 10. Horovitz noted that L. Jonathan Cohen had delineated an "original inductive procedure, involved in a theory of 'inductive support from variety of circumstances,' " and that Cohen stated that although the procedure was designed for scientific hypotheses, it would also be applicable to " 'legal arguments from judicial prece-

over, under the case-law system, it would be difficult to adhere strictly to Peirce's precepts about random sampling and predesignation of sampling characteristics.[141]

However, we can still test legal hypotheses. Just as we use abduction in many other areas of nonscientific reasoning, we must rely on less specific and controllable testing than inductive tests of specific characteristics. The recognition, however, that the abductive inference often carries with it the feeling of insight should caution us to be particularly aware that analogical legal reasoning is fallible and difficult to test. Daniel Farber has made a similar point in a more general sense. He has stated that in legal theory, we should be cautious of "brilliant" ideas (paradigm-shifting theories that, although attractive in the abstract, do not accord with common sense).[142] Unlike science, which can test brilliant abductions under controlled conditions, legal reasoning must place great reliance on common-sense behavior in testing theory. Thus, we should be wary of theories in law that, although novel, surprising and unconventional, run counter to common experiences.[143]

Finally, Levi's three-stage process fleshes out Holmes' views on embeddedness. It provides a mechanism for legal concepts to move from being possibly fruitful results of abduction to the limiting premises of abduction. In Levi's first stage, the legal concept that is the conclusion of an abduction arises as a useful and possibly fruitful means to bring order to a mass of facts.[144] For example, the rule that extends liability in the absence of privity when the item sold is "dangerous in itself" gives the court some guidance for analysis. In the second stage, the legal rule itself is a limitation as well as a guide. The legal rule becomes a fact to be explained as the premise of an abduction. Inferences inconsistent with the legal concept must be excluded.[145] Embeddedness circumscribes the legal analysis. The rule that an object "dangerous in itself" gives

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dents'. . . ." HOROVITZ, *supra* note 92, at 10 n.7 (quoting L. JONATHAN COHEN, THE IMPLICATIONS OF INDUCTION 155-71 (1970)).

141. For example, legal theorizing has often been criticized for relying far too heavily on reported appellate decisions.

142. Daniel A. Farber, *The Case Against Brilliance*, 70 MINN. L. REV. 916 (1986).

143. *See id.* at 917-20.

144. *See supra* notes 128-33 and accompanying text.

145. "As Judge Cardozo suggested in speaking of metaphors, 'the word starts out to free thought and ends by enslaving it . . . . Thus the connotation of the word for a time has a limiting influence.' " Farber, *supra* note 142, at 918 (quoting Berkey v. Third Ave. Ry. Co., 155 N.E. 58, 61 (N.Y. 1926)).

rise to liability changes from an aid to a limit on the court's reasoning. In the third stage, the rule's ill fit with cases and other legal rules becomes a fact prompting an explanatory hypothesis.[146] Thus, in *MacPherson,* the very analytical clumsiness of the "dangerous in itself" rule became a fact prompting Cardozo's formulation of the negligence rule to explain and synthesize the earlier cases.

B. Burton: Analogy as Family Resemblance

Levi's basic three-step process contemplates reasoning by analogy between the present case and a single precedent, but his broader view contemplates analogy with multiple cases.[147] Similarly, Steven Burton's concept of a "family-style" resemblance among cases explicitly contemplates from the outset analogies between the present case and a number of other actual or hypothetical cases that are members of a class.[148] The inclusion of more cases for comparison is not intended to seek the regularity in repetition that strengthens an inductive conception of analogical reasoning. That is, it does not test legal concepts by requiring every case to which the concept applies to have the same characteristics. Rather, Burton's view of analogical reasoning between cases with few or no observable similarities moves even further away from the inductive nature of the classic formulation and relies even more on the synthetic and creative aspects of analogy.

Burton's framework arose from his consideration of analogical reasoning with legal concepts that appear to apply to cases that do not share relevant facts.[149] For example, two cases may apply the requirement of "good faith" in the performance of contracts.[150] In *Vanadium Corp. of America v. Fidelity & Deposit Corp.*,[151] a contract for the sale of mining rights provided that the buyer would not be obligated to consummate the sale if the necessary approval of the Secretary of the Interior was not obtained within six

146. *See* Eco, *supra* note 58, at 217 (this sort of inference has been described as a meta-abduction).

147. *See supra* notes 131-46 and accompanying text.

148. STEVEN J. BURTON, AN INTRODUCTION TO LAW AND LEGAL REASONING 85-99 (1985).

149. *See* Steven J. Burton, *More on Good Faith Performance of a Contract: A Reply to Professor Summers*, 69 IOWA L. REV. 497 (1984); Steven J. Burton, *Breach of Contract and the Common Law Duty to Perform in Good Faith*, 94 HARV. L. REV. 369 (1980).

150. *See* BURTON, *supra* note 148, at 90-91.

151. 159 F.2d 105 (2d Cir. 1947).

months.[152] The buyer's failure to secure related mining rights made the deal less attractive to the buyer.[153] As a result, the buyer took several steps to cause the Secretary not to approve the sale.[154] In *Fry v. George Elkins Realty Co.*,[155] a contract for the sale of a home contained a contingency releasing the buyer who failed to receive financing on specified terms from a bank.[156] A real estate agent told the buyer that no bank would extend financing on such terms, but that a mortgage company would.[157] The buyer delayed application and applied to only two banks, both of which denied the applications.[158] The buyer intended to move to Hawaii and lost interest in the purchase.[159] Under Burton's view, both cases illustrate a failure to perform the contract in good faith, but they have no single nontrivial fact in common.[160]

To conclude that the cases are similar, despite lacking common facts, Burton stated that they belong to a class pragmatically defined by a family-style relation: they are considered similar because they appear to belong to the same family of cases.[161] For example, if A, B, and C are members of a legal class, A and B may share characteristics, B and C may share characteristics, but A and C may share no nontrivial characteristics.[162] The two contract cases discussed above both illustrate a failure to perform a contract

152. *Id.* at 106.

153. *Id.* at 106-07.

154. *Id.*

155. 327 P.2d 905 (1958).

156. *Id.* at 906.

157. *Id.*

158. *Id.* at 907.

159. *Id.* at 906-07.

160. Burton's distinction between observable facts and theory thus appears to differ from Peirce's view of abduction, although the rest of his analysis is generally consistent with Peirce. To Peirce, as discussed above, even the simplest perceptual judgment embodies an implicit theory about the sensations on which it is premised. *See supra* note 66 and accompanying text. By the time the appellate courts wrote the decisions Burton discussed, the original perceptual judgments of the witnesses in the cases would have passed through many inferential processes. David Schum and Peter Tillers have discussed the role of abduction in the process of determining facts for the purposes of resolving legal cases. *See* David Schum & Peter Tillers, *A Theory of Preliminary Fact Investigation*, 24 U.C. DAVIS L. REV. 931 (1991); David Schum, *Probability and the Processes of Discovery, Proof and Choice*, 825 B.U. L. REV. 825, 838-40 (1986).

161. BURTON, *supra* note 148, at 91 ("It is useful to think that the cases falling within a legal class are alike as the members of a family are alike."); *see also* H.L.A. HART, THE CONCEPT OF LAW 13-17 (1961) (discussing the family resemblance analysis from LUDWIG WITTGENSTEIN, PHILOSOPHICAL INVESTIGATIONS §§ 65-76 (1953)).

162. BURTON, *supra* note 148, at 92.

in good faith but share no nontrivial fact. There could be a third case illustrating the same concept that shared some nontrivial facts with each of the two. For example, a contract for the sale of a house contained a contingency releasing the buyer if the buyer did not receive necessary approval of a government agency within six months. The buyer's failure to obtain the rights to purchase adjoining property made the deal less attractive, and the buyer took several steps that caused the government agency not to approve the sale. Such a case belongs in the same class as the other contract cases.

Burton's view is far removed from Mills' equation of induction and analogy. To Mills, an analogy is exactly as strong as the number of observable similarities.[163] Under such a view, a class of cases illustrating a failure to perform in good faith would have to share common characteristics. To Burton, however, an analogy can be strong although there are no observable similarities.[164] Although some general principles apply to facts shared by some members of a class, no universal principle applies to facts shared by all members of the class.[165] Burton does not go so far as to say that the only unifying aspect of the class is membership in the class; a legal concept, such as a rule (e.g., the requirement to perform contracts in good faith), applies to all members of a class.[166] Indeed, judges assign membership to a legal class by applying legal concepts.[167]

Burton's inferential analysis takes advantage of the possible interplay between the abductive aspects in different stages of Peirce's formulation of the analogical inference. Under Peirce's formulation, we make the initial conclusion of analogy on the basis that the present case has characteristics that every member of a given legal class has.[168] Under Burton's view, however, no such shared characteristics necessarily exist, other than the legal concept that unifies the class.[169] Accordingly, we could place the present case in that

163. *See supra* notes 96-97 and accompanying text.

164. BURTON, *supra* note 148, at 93.

165. BURTON, *supra* note 148, at 92-93.

166. BURTON, *supra* note 148, at 94.

167. BURTON, *supra* note 148, at 94 ("The rules encompass the cases, rather than any particular fact or facts in common among all cases in a legal class.").

168. *See supra* notes 98-102 and accompanying text.

169. *See* BURTON, *supra* note 148, at 93.

legal class with either of two abductions, both of which involve the synthetic aspect of viewing the facts of the case as a whole.

First, we could explain the fact that the case shares certain characteristics within the class with the hypothesis that, viewing its facts as a whole, it belongs in that class. The present case would be compared to individual members of an existing set of cases. If sufficient (not in terms of quantity but of character) similarities are found, then the case would be hypothetically included in the set. To use Burton's example, we could compare the present case to cases illustrating a failure to perform a contract in good faith. If it is sufficiently like those cases, we could include it in the class.

Second, we could explain the facts of the case, viewed as a whole, with the hypothesis that the legal concept that unifies the class also applies to our case. For example, we could view the facts of the case as a whole (without referring to other cases) and make the synthesizing and explanatory abduction that the defendant failed to perform the contract in good faith.

In considering how such an inferential analysis could be constructed, Burton recognized that the conclusion of a synthesizing inference could be considered either a fact or a rule. In his view, individual cases can be linked either by general principles that subsume the cases or by hypothetical cases that conceptually connect the cases.[170] Thus, we could link the two cases above by concluding that they both illustrate the general concept of a failure to perform in good faith, or we could link them with a third case that has facts that fall between the two cases. The facts of the third case would really be a conclusion, in the sense that we use them to synthesize and explain the facts of the previous two cases. Either type of inference (linking with a concept or with the facts of another case) is an abduction that can explain and synthesize with conclusions that are considered facts or rules.

Burton's formulation also places more emphasis on the abductive step in what this Article calls the inductive stage of Peirce's formulation of analogy. Burton views the legal concept associated with the class as a unifying theory: "The common law rule is a symbolic summary of the precedents in a class."[171] The inference of such a concept must be ampliative, because it cannot be formulated in the factual terms that already describe the cases. This ab-

170. *See* BURTON, *supra* note 148, at 93-94.

171. BURTON, *supra* note 148, at 63.

duction consists of attributing a general character to the members of the set.[172] Where the set is formed by members all sharing common characteristics, the hypothesis about the general character could be formulated simply by noting regularity. At the least, it could be inductively tested by seeing if the next member of the set shared those particular characteristics. Under Burton's view, however, where the members of the set do not necessarily share common characteristics, a more creative abduction is required and inductive testing becomes more problematic. It is difficult to test the concept of good faith when there is no characteristic that a case must possess to be covered by the concept.

Burton's formulation also permits us to bolster the certainty of the abductive stage of Peirce's formulation of analogy. Under Peirce's formulation, we hypothesize that Q is an X because it has characteristics that every X has. If Q shares certain characteristics with a member of X, we hypothesize that Q is an X. It does not make sense to test the hypothesis inductively against other members of X, because we know by definition that they also share the characteristics in question.[173] Under Burton's formulation, however, Q may profitably be compared to other members of X, because they do not necessarily share common characteristics. Thus, if similarity between the present case and a previous case of failure to perform a contract in good faith prompts us to hold the hypothesis that the present case belongs in the same legal class, we can test that hypothesis by adducing another case under the rule. However, the security of such inductive testing is reduced to the extent of our uncertainty in grouping the cases together as a legal class.

Burton accordingly provided more varied testing of conclusions as part of what he has termed a "[w]orkable [m]ethod of [l]egal [i]nterpretation."[174] This provides a method for classifying a

172. *See supra* notes 53, 60-61 and accompanying text.

173. This is not to say that the hypothesis cannot be tested. We could use what Peirce termed an abductory induction. *See* PEIRCE, PHILOSOPHICAL WRITINGS, *supra* note 16, at 152. Such an inference occurs where an hypothesis (arrived at through induction) cannot be tested with purely inductive means. "But suppose we wish to test the hypothesis that a man is a Catholic priest, that is, has all the characters that are common to Catholic priests and peculiar to them. Now characters are not units, nor do they consist of units, nor can they be counted, in such a sense that one count is right and every other wrong. Characters have to be estimated according to their significance. The consequence is that there will be a certain element of guess-work in such an induction; so that I call it an *abductory induction*." PEIRCE, PHILOSOPHICAL WRITINGS, *supra* note 16, at 152.

174. BURTON, *supra* note 148, at 94.

case into existing case families.[175] Burton viewed such a process as attempting to determine which of several precedents has the most important factual link with the present case.[176] Such an interpretative method uses theories about the nature and purposes of the law to decide which facts in a particular case are most important in resolving the case.[177] In Peircean terms, this reasoning would rely not only on simple inductive testing, but also would test hypotheses by their consistency with other hypotheses that have won a certain degree of acceptance through previous testing. The increased interplay between all aspects of the abductive and inductive stages of analogy discussed above promotes the Peircian method by providing the flexibility to use any available theories or facts.[178]

III. A COMPARISON OF PEIRCE'S ANALYSIS TO OTHER ASPECTS OF LEGAL REASONING BY ANALOGY

A. Analogy and Intuition

The classic formulation of analogical reasoning does not capture the persuasive feeling of the analogical inference[179] the way the syllogism describes deduction or the way induction appeals to common sense. First, the classic formulation does not include the background knowledge that we consider in making an analogy.[180] Second, the classic formulation does not acknowledge the feeling of insight that is often associated with a good analogy. Descriptions of legal reasoning often place insight and background knowledge under intuition rather than reasoning, in the sense that an insight brings a great deal of knowledge to bear in suddenly coming to a result. Peirce, however, regarded insight and background knowl-

175. BURTON, *supra* note 148, at 94.

176. BURTON, *supra* note 148, at 94.

177. *See* BURTON, *supra* note 148, at 122.

178. For a discussion of the application of other Peircean concepts in legal interpretation, see Drucilla L. Cornell, *Institutionalization of Meaning, Recollective Imagination and the Potential Transformative Legal Interpretation*, 136 U. PA.. L. REV. 1135, 1197-1229 (1988).

179. *See, e.g.,* POSNER, *supra* note 2, at 92 ("The mere assertion of analogy may, it is true, have persuasive force in a psychological sense. Metaphors are often persuasive in that sense, and they are a form of analogy.").

180. Joseph Horovitz has described the discrepancy between the logic and the feeling of analogical reasoning: "The impression of cogency given by certain analogies is due to a background of relevant knowledge which, though not explicitly stated in the argument, is psychologically effective." HOROVITZ, *supra* note 92, at 18. Burton's formulation would account for this by considering all the facts of a case as part of the comparison. *See* discussion *supra* part II.B.

edge as part of the process of abduction, rather than an irrational flash or reflexive application of ingrained beliefs.[181]

Burton's concept of legal reasoning does not require judges to provide logically unimpeachable reasons for their decisions, but rather seeks a decision that the judge feels is right. He quoted Roscoe Pound:

> It is an everyday experience of those who study judicial decisions that the results are usually sound, whether the reasoning from which the results purport to flow is sound or not. The trained intuition of the judge continually leads him to right results for which he is puzzled to give unimpeachable legal reasons.[182]

Karl Llewellyn agreed with Pound and further analyzed the intuitive aspect of legal reasoning:

> Certain aspects of [intuition] can be defined more precisely, particularly with regard to the new meanings words take on in changed circumstances. If one observes a new fact situation *and is sensitive to its real-life meaning,* then there is a sudden and (so to speak) ex post facto change in the meaning of one's prior life experience in that area, and thus a change of content in the words used to describe and regulate the area. I cannot explain this process; I only record its existence: the new illuminates and *at the same time changes* the old. The "intuition" in this process lies in the judge's subconsciously using his prior experience and his sensitivity to the meaning of new fact situations . . . . A judge's intuition extends only as far as his experience and sensitivity.[183]

Llewellyn thus described the lawyer's intuition as a flash of insight, as Peirce described abduction. This intuition also resembles an abduction if it illuminates and at the same time changes "the old," whether "the old" refers to the facts of a precedent or to a legal concept. An abduction illuminates by its explanatory nature. Unlike induction, which accepts the facts and checks to see if they accord with a theory, abduction changes the old in the sense that it changes the character of the facts by forming theories that give or-

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181. *See supra* notes 72-76 and accompanying text.

182. BURTON, *supra* note 148, at 95 (quoting Roscoe Pound, *The Theory of Judicial Decision*, 36 HARV. L. REV. 940, 951 (1923)).

183. KARL LLEWELLYN, THE CASE LAW SYSTEM IN AMERICA 79 (Paul Gewirtz ed. & Michael Ansaldi trans., 1989). This book is a recent translation of a book, PRAEJUDIZIENRECHT AND RECHTSPRECHUNG IN AMERIKA, which Llewellyn wrote in German in connection with a course he gave while visiting on the Leipzig Faculty of Law in 1928 and 1929.

der to apparently disconnected facts.[184] In speaking of the "meaning" of new factual situations, Llewellyn's theory also parallels Peirce's view that facts have meaning in the sense that they prompt fruitful hypotheses.[185]

Llewellyn also discussed the other side of intuition, which he termed "fact-guided decision making," stressing the fruitful nature of theorizing from facts.[186] He emphasized the possible productive value of such intuition, stressing that once a judge begins to let the facts, rather than the rules, guide decisions, the judge will realize how fertile legal concepts can be.[187] Under this approach, if no legal formula governs a new fact situation, a judge would first understand the facts, then reach a decision based on the facts, and *then* "twist and turn" relevant legal rules until they conform to the desired result.[188] Thus, the judge should first arrive at the result and then decide what the legal rule is. This approach echoes Wells' abductive formulation of Holmes' view of legal reasoning, in which the judge first decides how the case should be decided and then formulates a legal rule to explain the result.[189] It also echoes Levi's insistence that the formulation of the rule follows the finding of similarity between cases and cannot be done without contemplation of the facts of the present case.

Other perceptive descriptions of intuition in legal reasoning also reflect the foregoing similarities to Peirce's views on abduction. Federal district Judge Joseph Hutcheson's description of the "judicial hunch" matches Peirce's description of abduction as a flash of insight offering explanation and synthesis.[190] This parallels Peirce's

184. *See supra* notes 61-62 and accompanying text.

185. *See supra* note 62 and accompanying text.

186. LLEWELLYN, *supra* note 140, at 79.

187. LLEWELLYN, *supra* note 140, at 79. Peirce's view of the nature of the abductory inference might also be used to analyze Llewellyn's elusive concept of "situation sense." For a discussion of Llewellyn's uses of the term, see WILLIAM TWINING, KARL LLEWELLYN AND THE REALIST MOVEMENT 219-29 (1973). "*Situation—Sense* will serve well enough to indicate the type-facts in their context and at the same time in their pressure for a satisfying working result, coupled with whatever the judge or court brings and adds to the evidence, in the way of knowledge and experience and values to see with, and to judge with." *Id.* at 217 (quoting KARL LLEWELLYN, THE COMMON LAW TRADITION: DECIDING APPEALS 60-61 (1960)).

188. LLEWELLYN, *supra* note 140, at 79.

189. *See supra* note 81 and accompanying text.

190. Joseph C. Hutcheson, Jr., *The Judgment Intuitive: The Function of the "Hunch" in Judicial Decision*, 14 CORNELL L. REV. 274 (1929). Llewellyn also emphasized the importance of "good hunching power" in legal reasoning, which he regarded as a product of "good sense, imagination, and *much* knowledge." LLEWELLYN, *supra* note 140,

description of abduction in both feeling and function. After carefully reading all the briefs, authorities, and the record, the Judge would wait and hope to apprehend suddenly a unifying meaning in the material: "[I]f there was the flash of invention in the device my mind would give back an answering flash."[191] Hutcheson described the "judicial hunch" as intuition, as imagination, as "this power to cast in ever widening circles to find a fresh scent, instead of standing baying where the track was lost."[192] Hutcheson relied on Cardozo's suggestion that legal analogical reasoning employs a form of inference common to creative thinking, just as, under Peirce's view, analogy employs abduction, the only type of inference that potentially increases knowledge:

> Repeatedly, when one is hard beset, there are principles and precedents and analogies which may be pressed into the service of justice, if one has the perceiving eye to use them. It is not unlike the divinations of the scientist. His experiments must be made significant by the flash of a luminous hypothesis. For the creative process in law, and indeed in science generally, has a kinship to the creative process in art. Imagination, whether you call it scientific or artistic, is for each the faculty that creates.[193]

Thus, including abduction in analogical reasoning provides a place for familiar psychological phenomenona and illuminates descriptions of the role of "intuition" in legal reasoning. This consonance does not refute the possibility that such decisionmaking is actually arbitrary, but further demonstrates the utility of Peirce's theories and adumbrates the effect that further development of his framework would have on the discussion of legal reasoning.

B. Analogy in the Logic of Discovery and Justification: Murray and Posner

Both Richard Posner and James Murray have analyzed where

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at 113. For a more recent discussion also characterizing intuition as a reasoning process, see Charles Fried, *The Artificial Reason of the Law or: What Lawyers Know*, 60 TEX. L. REV. 35, 57 (1981) ("Analogy is the application of a trained, disciplined intuition where the manifold of particulars is too extensive to allow our minds to work on it deductively. This is not a denial of reason; on the contrary, it is a civilized attempt to stretch reason as far as it will go.").

191. Hutcheson, *supra* note 190, at 280.

192. Hutcheson, *supra* note 190, at 280.

193. Hutcheson, *supra* note 190, at 281 (quoting BENJAMIN N. CARDOZO, PARADOXES OF LEGAL SCIENCE 59 (1928)). For a discussion of abduction in creative thinking, see Paul Weiss, *The Logic of the Creative Process*, *in* STUDIES IN THE PHILOSOPHY OF CHARLES SANDERS PEIRCE 166 (Philip P. Wiener & Frederic H. Young eds., 1952).

analogical reasoning fits into legal reasoning if legal reasoning is conceptually divided into the logic of discovery (how we arrive at new ideas) and the logic of justification (how we form arguments to convince others that our new ideas are right).[194] Murray argued that analogical reasoning plays little role in discovery,[195] while Posner argued that it plays little role in justification.[196] Murray borrowed from Carl Kordig's writings on the philosophy of science to outline an account of the validity of legal reasoning by analogy.[197]

In Murray's view, although analogical reasoning is the most prevalent form of legal reasoning, legal scholars have not subjected the process to sufficient analysis.[198] In Posner's view, however, legal scholars overemphasize legal reasoning by analogy in several ways. First, they overstate its uniqueness.[199] Legal reasoning by analogy is not a distinctive form of reasoning. Rather, use of analogy is necessary in areas in which a theory is not sufficiently developed to provide sure guidance, such as law, advertising, and military science.[200] Second, legal scholars overstate the justificatory power of analogical reasoning.[201] Analogy (when it is not simply induction or disguised deductive reasoning) belongs to the logic of discovery, not the logic of justification.[202] Therefore, it has no power to justify legal conclusions. Posner is consistent with Peirce in many respects, but he undervalues analogy by sharply separating its different uses without permitting an interplay between its aspects.[203]

Ironically, Murray's arguments in support of analogy may be ultimately less supportive of the role of analogy in legal reasoning than Posner's critical position, because Murray assigned to irrational processes much of its creative and explanatory power. Murray, borrowing from Carl Kordig's model of scientific inquiry, equated discovery with a phase of "initial thinking" and justifica-

194. *See* POSNER, *supra* note 2, at 86-100; James R. Murray, *The Role of Analogy in Legal Reasoning*, 29 UCLA L. REV. 833 (1982).

195. *See infra* notes 209-12 and accompanying text.

196. *See infra* notes 238-41 and accompanying text.

197. Murray, *supra* note 194, at 838-46.

198. *See* Murray, *supra* note 194, at 833.

199. *See infra* notes 228-31 and accompanying text.

200. POSNER, *supra* note 2, at 90.

201. *See infra* notes 238-42 and accompanying text.

202. *See infra* notes 240-42 and accompanying text.

203. *See infra* notes 223-42 and accompanying text.

tion with phases of "plausibility" and "acceptability."[204] "Initial thinking" includes imagining, guessing, conjecturing, and the creative intuitive hypotheses of scientists.[205] No logic of initial thinking would be possible because initial thought does not involve reasoning.[206] Rather, as soon as we adduce reasons to support an initial thought, we have fallen into the area of plausibility. Here we accept that a theory is worth more consideration and therefore explore it in more serious detail.[207] In the end, some theories are accepted because their hypotheses have survived many empirical tests.[208]

Under Murray's view of legal reasoning, a judge's initial thinking occurs prior to writing an opinion and includes things like intuition, feelings for the case, and a sense of justice.[209] Acceptability in its strongest form occurs in legal reasoning only in clear cases, where the judge can simply apply deductive reasoning.[210] These cases involve no novel or competing analogies.[211] According to Murray, analogical reasoning occurs only in the area of plausibility.[212] Thus, he viewed analogy as a logical tool used only after the creation of hypotheses, but before the application of deductive reasoning (if the case is one of the few in which deductive reasoning applies). Murray's view thus differs sharply from Peirce's, which would place abduction as the first, and part of the second, stage of analogical reasoning. Therefore, Murray's concept of "initial thinking" would generally fall under abduction for Peirce. Peirce insisted that abduction was a form of reasoning and that one could evaluate the logic of choice of hypotheses.[213] Murray believed, however, that logic and reasoning were irrelevant to initial thought.[214] If such matters as intuition, feelings for the case, and a sense of justice are indeed irrational, then the role of reason in legal decisionmaking may be as limited as critics have contended.

Murray placed analogical argument beyond the initial think-

204. Murray, *supra* note 194, at 839-41.
205. Murray, *supra* note 194, at 840.
206. Murray, *supra* note 194, at 840.
207. Murray, *supra* note 194, at 840.
208. Murray, *supra* note 194, at 840-41.
209. Murray, *supra* note 194, at 843.
210. Murray, *supra* note 194, at 843.
211. Murray, *supra* note 194, at 843.
212. Murray, *supra* note 194, at 844.
213. *See supra* notes 24-32 and accompanying text.
214. *See supra* notes 204-06 and accompanying text.

ing stage because he distinguished between the "perception of analogies" and analogical argument (the supporting of a conclusion with reasons that are subject to logical scrutiny).[215] The perception of analogies would be simply an alogical phenomenon, irrelevant to whether the analogy perceived is of any use in the process of justifying a particular conclusion.[216] Thus, finding an analogy between the present case and a previous one would be "initial thinking," but not analogical argument.[217] Murray accordingly criticized Levi because Levi's characterization of reasoning by example (seeing the similarity between cases) as the key first step did not properly belong to analogical reasoning at all.[218] Because he assigned this step to the realm of the mechanical, Murray viewed Levi's formulation as rigid and incapable of allowing for the creative use of analogy.[219] As discussed above, however, Levi did allow for the creative influence of abduction in his three-step, three-stage process.[220] Indeed, Murray does not supply a basis for characterizing analogy as creative *reasoning,* because he placed much of its creative power in the realm of the irrational.

Murray also viewed Levi's second step as induction,[221] presumably seeing it as simply inferring that the rule applicable in the precedent will apply in the present case, which is the classic inductive form of analogy. However, Levi viewed the second step as formulating the rule of the precedent in light of the present case,[222] a more creative step than simply applying an existing rule. Murray would essentially remove the formulation of analogies and the use of analogy to formulate legal rules from the process of reasoning.

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215. Murray, *supra* note 194, at 844 n.36.

216. Murray, *supra* note 194, at 844 n.36.

217. Murray, *supra* note 194, at 844 n.36. Murray stated that a judge's intuition would fall within plausibility rather than initial thinking if the judge is so extremely familiar with the subject area that the judge "knows" the answer to a case immediately, thereby employing "reasons and reasoning from many previous cases in a direct, immediate fashion." Murray, *supra* note 194, at 844 n.36.

218. Murray, *supra* note 194, at 850.

219. Murray, *supra* note 194, at 850. Murray did follow Levi in regarding analogical reasoning as Aristotelian reasoning by example. Murray, *supra* note 194, at 847-48. However, he took this rather far to draw a fundamental difference between such analogical reasoning and scientific reasoning: "Its real focus is not, like that of science, on generalization, but in inducing a particular belief or a particular conclusion." Murray, *supra* note 194, at 847-48. For analogical reasoning to play a role in explanation and synthesis, formulation of general rules is a vital component.

220. *See* discussion *supra* part II.A.

221. Murray, *supra* note 194, at 850.

222. *See supra* notes 106-16 and accompanying text.

Thus, although Murray wrote to support the role of analogy in legal reasoning, he gives it a quite limited role.

If Posner undervalued analogical legal reasoning, it arose not from denying the possibility of a logic of discovery but from too sharply separating the roles analogy can play in discovery and justification. Posner has referred to Peirce's concept of abduction in *The Problems of Jurisprudence,* but did not discuss its role in legal reasoning or in analogical reasoning generally.[223] Rather, he analogized between interpretation and the "process by which scientists choose which hypotheses to test, the process Charles Sanders Peirce called 'abduction.' "[224] Much of what Posner considers interpretation Peirce would have called abduction. For Peirce, abduction did figure in creating scientific hypotheses.[225] However, as the only one of the three irreducible forms of inference that could increase knowledge, abduction plays a greater role in reasoning (including most, if not all, of the categories of reasoning that Posner groups under the term "practical reasoning").[226] Indeed, Posner's analysis and critique of the common view of the role of analogy in legal reasoning is largely part consistent with Peirce's early formulation of analogical argument. In addition, Posner's denial that analogical legal reasoning is a distinct form of reasoning fits Peirce's view that there are only three irreducible forms of inference. In his division of analogy into separate types of argument, however, Posner regarded analogical reasoning principally as a form of induction or as disguised deductive reasoning.[227] This led him to emphasize its shortcomings at the expense of its explanatory, synthetic, and creative aspects.

Posner directed his analysis against those who consider legal analogical reasoning a distinctive and powerful form of argument, such as Levi and Murray.[228] Posner first repeated two common criticisms of analogical reasoning: that it is often either enthymematic (meaning that it is actually deductive reasoning using

223. POSNER, *supra* note 2, at 105. In discussing the future of the use of hypotheses in legal reasoning, Posner has referred to abduction as "a mystery and also a detail, although an important one." Richard A. Posner, *The Future of Law and Economics: A Comment on Ellickson*, 65 CHI.-KENT L. REV. 57, 61 (1989).

224. POSNER, *supra* note 2, at 105.

225. *See supra* notes 67-68 and accompanying text.

226. *See* POSNER, *supra* note 2, at 72-100.

227. *See infra* notes 229-37 and accompanying text.

228. *See infra* notes 230-37 and accompanying text.

an implicit premise) or fallacious.[229] Both criticisms are literally true under Peirce's analysis, but they omit important considerations. In many instances, analogical reasoning uses an implied premise only in the sense that a more general rule is created abductively and then applied. To regard this simply as disguised deductive reasoning shifts the focus away from a full analysis of the steps taken. Similarly, analogical reasoning is always fallacious if measured in terms of deductive reasoning, but nevertheless has merits that deductive reasoning lacks. Indeed, Posner recognized useful roles for analogical reasoning, although those roles were more modest and varied than certain of its advocates claim.[230] Rather than a single methodology used by lawyers, reasoning by analogy "denotes an unstable class of separate reasoning methods."[231]

According to Posner, some methods considered to be reasoning by analogy are simply a common sense form of induction; if a rule has worked well in similar cases, one might infer that it would work well in the present case.[232] Posner agreed that such reasoning is not objectionable or particularly useful because it is so modest.[233] This reasoning could be applied more ambitiously, such as nineteenth-century formalists' attempts to create an inductive science of law.[234] However, the linear nature of induction cautions against pronouncing rules whose generality takes them beyond their reasonable scope.[235] Peirce would view such rule formation not as induction but as an abduction based on the observation of regularity, which would indeed caution us to test the rule.

Posner also described analogies as a stock of instances similar to the present case that could be used as the basis for an inductive inference.[236] Where cases are so viewed, they can be used as induction is used to test principles against facts.[237] To Peirce, this would not be a separate form of analogical reasoning, but would be the inductive aspect of the analogical inference. In addition, analogical reasoning can better use this stock of instances.

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229. POSNER, *supra* note 2, at 87, 89.

230. POSNER, *supra* note 2, at 86-98.

231. POSNER, *supra* note 2, at 86.

232. POSNER, *supra* note 2, at 87-88.

233. POSNER, *supra* note 2, at 87-88 (terming such reasoning "a bit low-keyed to be the core of legal reasoning in a sense flattering to the legal profession.").

234. POSNER, *supra* note 2, at 15, 88-89.

235. POSNER, *supra* note 2, at 88-89.

236. POSNER, *supra* note 2, at 89.

237. POSNER, *supra* note 2, at 91.

Finally, Posner addressed the importance of analogy in the scientific and legal imagination.[238] Seeing an analogy between the present case and a previous one, about which we have more information, may help explain the present case.[239] This would place the use of analogy solely within the logic of discovery and outside the logic of justification.[240] Posner views analogical reasoning in this manner because he has removed the inductive, justificatory aspect.[241] What Posner regarded as a separate type of analogy may simply be analogy with more reliance on the creative aspects of abduction. More importantly, Posner restricted the creative use of analogy to a simple inference that the present case might be amenable to the same solution as a previous one.[242] This restriction omits several creative uses of analogy, such as formulating rules to explain similarities between cases (as Levi discussed) and using abduction to synthesize and explain the facts of cases from the stock of cases (as Burton discussed). Thus, although Posner is in many respects consistent with Peirce, his sharp separation between different aspects of analogy gives short shrift to the powerfully flexible interplay between its different aspects.

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238. POSNER, *supra* note 2, at 91-92.

239. Posner noted that one appeal of analogical reasoning may spring from the apparent fact that human beings have an innate capacity for recognizing pattern and similarity, which, for example, permits us to recognize faces. POSNER, *supra* note 2, at 91 (citing HOWARD MARGOLIS, PATTERNS, THINKING, AND COGNITION: A THEORY OF JUDGMENT 113-14 (1987) and W.V.O. Quine, *Natural Kinds*, *in* NATURALIZING EPISTEMOLOGY 31 (Hilary Kornblith ed., 1985)). As discussed above, Peirce would view such a faculty as one example of the innate ability to make abductions (which underlies the family resemblance discussion). In addition, such a faculty would not simply recognize analogies, but select from among them, as abduction selects from competing analogies.

240. POSNER, *supra* note 2, at 91. William Twining divided the judicial process into "judicial reasoning (the logic of justification)" and "judicial decision-making (the process of decision)[.]" TWINING, *supra* note 187, at 229-30. He viewed the former as an object of study for logic and philosophy, the latter for psychology. TWINING, *supra* note 187, at 230. Peirce's views would aid the study of the role of analogy by using both sets of concepts and techniques.

241. Posner's view of analogy is similar to the restrictive view of Monroe Beardsley, who would limit the scope of analogical reasoning to inference that is, by definition, both creative and unsound: inference based on "a complex set of similarities between two things of basically different kinds." BEARDSLEY, *supra* note 125, at 131. Beardsley's definition removes analogy from induction because induction applies only where things are basically of the same kind, just as Posner implicitly considered the inductive aspects of analogy to be different kinds of reasoning from its creative use. Beardsley also viewed his definition as removing analogy from the realms of generalization and explanation by hypothesis. BEARDSLEY, *supra* note 125, at 133. However, such a restrictive definition of analogy is not consistent with the actual use of reasoning by analogy or with Peirce's formulation.

242. *See supra* notes 238-39 and accompanying text.

IV. CONCLUSION

Although the advances in deductive logic rank among the highest intellectual achievements of the last century and substantial work has been done in inductive logic,[243] logicians have not comparably worked toward a logic of discovery, which would disclose the mechanism of abduction.[244] Indeed, opinions vary as to whether such a project could succeed, and whether the creation and selection of hypotheses is even rational.[245] The utility of further exploration of legal reasoning employing Peirce's paradigm, however, does not depend on resolution of such issues. Peirce regarded pragmatism as "nothing else than the question of the logic of abduction."[246] Thus, accounting for the role of abduction in legal reasoning fits the mounting interest among legal scholars in pragmatism generally and Peirce in particular.[247] Moreover, Peirce's

243. For a recent discussion of the fundamental philosophical issues of inductive logic, see generally COHEN, *supra* note 140.

244. *See, e.g.*, Weiss, *supra* note 193, at 125 ("Much work needs to be done in this area. It is regrettable that logicians are not yet ready to follow Peirce into this most promising field."). In a discussion that illustrates the possible benefits for legal scholars from the elaboration of Peirce's work, Umberto Eco has discussed whether there are different types of abduction; abductions to general laws and abductions hypothesizing particular facts. *See* Eco, *supra* note 59, at 202-06. Eco further discussed whether abductions to general laws would be more suitable to scientific reasoning about the nature of the universe, while abductions hypothesizing general facts would be more suitable to reasoning about a text, a "coherent series of propositions, linked together by a common topic or theme." Eco, *supra* note 59, at 204. If so, then abduction as it is used in legal reasoning would fall into the second category (although we can certainly argue about the extent of the coherence and commonality of legal texts). Eco, however, ultimately found the distinction illusory, which accords with the experience of lawyers who use reasoning by analogy both in reasoning with rules and in reasoning with specific facts, as in Levi's description.

245. *See* FANN, *supra* note 2, at 1-3. For a brief discussion of, and citation to, arguments on whether abduction is a form of inference distinct from induction, see Schum, *supra* note 160, at 838-40. For a discussion of Peirce's theory of abduction and an argument that, while an hypothesis emerges in the course of reasoning through a problem, it is not the conclusion of an inference, see Tomis Kapitan, *In What Way is Abductive Inference Creative?*, TRANS. PEIRCE SOC. 499-512 (1990).

246. PEIRCE, 5 COLLECTED PAPERS, *supra* note 16, § 196. "That is, pragmatism proposes a certain maxim which, if sound, must render needless any further rule as to the admissibility of hypotheses to rank as hypotheses, that is to say, as explanations . . . held as hopeful . . . ." PEIRCE, 5 COLLECTED PAPERS, *supra* note 15, § 121. For a discussion of the importance of Peirce's theory of abduction to his concept of pragmatism, see FANN, *supra* note 2, at 44-47 and HJALMAR WENNERBERG, THE PRAGMATISM OF C.S. PEIRCE 170 (1962); see also GIDON GOTTLIEB, THE LOGIC OF CHOICE 23 (1968) (stating that a complete account of models for the judicial process would have to include discussions of a number of theoretical frameworks not discussed in that book, including Peirce's theory of abduction).

247. *See generally* Warner, *supra* note 1.

framework provides an extremely useful analytical device, even if we are presently unsure about the character of the steps that such analysis would classify as abduction.

Legal argument is often a bewildering mixture of different types of arguments. For example, Posner considered analogical reasoning simply to be one of a number of reasoning methods that belong under the rubric of practical reasoning.[248] These reasoning methods are used to form beliefs where deduction or exact scientific observation are unavailable:[249] "a grab bag that includes anecdote, introspection, imagination, common sense, empathy, imputation of motives, speaker's authority, metaphor, analogy, precedent, custom, memory, 'experience,' intuition and induction (the expectation of regularities, a disposition related both to intuition and to analogy)."[250] As Posner noted, the foregoing are not separate categories, but overlap considerably. Moreover, the purposes for which they are used vary; for example, some are used more in discovery than justification. As with analogy, the Peircean paradigm could be used to analyze those types of arguments.[251] Its application would improve our awareness of the inferential steps a legal argument takes, the level of confidence we should invest in them, and the criteria available to evaluate them. In short, the Peircean paradigm would help us analyze what sort of reasoning is involved in legal decisionmaking and whether legal reasoning should be termed reasoning at all.

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248. POSNER, *supra* note 2, at 72-73.

249. POSNER, *supra* note 2, at 72.

250. POSNER, *supra* note 2, at 73.

251. Peirce regarded failure to break down inferences into their components as a fruitful source of error:

> Nothing has so much contributed to present chaotic or erroneous ideas of the logic of science as failure to distinguish the essentially different characters of different elements of scientific reasoning; and one of the worst of these confusions, as well as one of the commonest, consists in regarding abduction and induction taken together (often mixed also with deduction) as a simple argument.

PEIRCE, 7 COLLECTED PAPERS, *supra* note 16, at 228.