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SOME EXAMPLES OF USING THE LEGAL RELATIONS LANGUAGE IN THE LEGAL DOMAIN: APPLIED DEONTIC LOGIC

Layman E. Allen*

The fundamental concept of the LEGAL RELATIONS Language (LRL) is the recursively-defined notion of LEGAL RELATION (LR). As LR is defined here, there is an infinite number of different LEGAL RELATIONS, and LRL is a language for precisely and completely describing each of those infinite number of different LEGAL RELATIONS. With its robust collection of different names, one for each of the different LEGAL RELATIONS, LRL provides adequate vocabulary for (1) describing every possible legal state of affairs, (2) accounting for every possible change from one legal state of affairs to another, (3) representing every possible legal rule, and (4) representing every possible legal argument. There are presented here some illustrations of how LRL can be used by lawyers, law students, judges, and expert system-builders to demonstrate how the systems crafted by deontic logicians can be applied in the legal domain.

I. INTRODUCTION

The infinite number of different LEGAL RELATIONS that can be expressed in the LEGAL RELATIONS Language (LRL) give LRL extraordinary expressive capability. It not only fulfills Hohfeld's dream of achieving the "lowest common denominators" of legal discourse capable of (1) describing every possible legal state of affairs, and (2) accounting for every change in every legal state of affairs,¹ but LRL can also be used (3) to represent every possible legal set of rules and (4) to represent every possible legal argument. This is a claim about LRL's expressive capability that is not susceptible to logical proof but which can easily be disconfirmed with a single counter-example. I have been challenging colleagues and students since the late

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1 Wesley N. Hohfeld, *Fundamental Legal Conceptions as Applied in Judicial Reasoning*, 23 YALE L.J. 16 (1913).

Hohfeld's Fundamental Legal Conceptions	LEGAL RELATIONS (LR)*		
	* Defined terms in the LEGAL RELATIONS Language (LRL) are in upper case.		
	Unconditional (Deontic)	CONDITIONAL	
		Capacitive	Other CONDITIONAL
duty	DUTY(s,a,b)		CONDITIONAL(c,DUTY(s,a,b))
right	RIGHT(s,b,a)		CONDITIONAL(c,RIGHT(s,b,a))
privilege	PRIVILEGE(s,a,b)		CONDITIONAL(c,PRIVILEGE(s,a,b))
no-right	NO_RIGHT(s,b,a)		CONDITIONAL(c,NO_RIGHT(s,b,a))
	There are 1588 other different deontic LRs.	There are an infinite number of other capacitive LRs.	There are an infinite number of other noncapacitive CONDITIONAL LR, i.e., CONDITIONAL(c,LR).
power		POWER(D2(x,b),LR)	CONDITIONAL(c,POWER(D2(x,b),LR))
liability		LIABILITY(LR,D2(x,b))	CONDITIONAL(c,LIABILITY(LR,D2(x,b)))
disability		DISABILITY(D2(x,b),LR)	CONDITIONAL(c,DISABILITY(D2(x,b),LR))
immunity		IMMUNITY(LR,D2(x,b))	CONDITIONAL(c,IMMUNITY(LR,D2(x,b)))

1950s to provide a counter-example of (1) or (2) to a fragment of LRL that is an extension of Hohfeld's fundamental legal conceptions; not a single counter-example has yet been identified. It is my current belief that the present version of LRL is complete in all four senses above.²

The terms from LRL most significant for the examples of legal application of LRL in this article are DUTY, POWER, and CONDITIONAL. Each of these is an operator in a LEGAL RELATION (LR) in LRL.

"DUTY(s,p1,p2)" is an abbreviation for a statement that expresses the DUTY that state_of_affairs_s be brought about for the benefit of person_1 by person_2, that is: Person_2 has a DUTY to person_1 to see to it that state_of_affairs_s is so. More briefly:

DUTY(s,p1,p2) =ab Person_2 has a DUTY to person_1 to see to it that state_of_affairs_s is so.

"POWER(D2(x,p),LR)" is an abbreviation for a statement that expresses the POWER of person_p (by exercising it) to create LEGAL_RELATION_LR, that is:

POWER(D2(x,p)) =ab Person-p has POWER (by exercising it) to create LEGAL_RELATION_LR.

2 Candidates that are thought to be counter-examples with respect to any of the four senses that may point to needed extensions of LRL are cordially invited to the following Internet site: <http://thinkers.law.umich.edu/lfiles/LRL> .

“CONDITIONAL(c,LR)” is an abbreviation for a statement that expresses the `CONDITIONAL_LEGAL_RELATION_LR` such that IF `condition_c` is fulfilled, `LEGAL_RELATION_LR` is created, that is:

CONDITIONAL(c,LR) =ab IF `condition_c` is fulfilled,
`LEGAL_RELATION_LR` is created.

“LEGAL RELATION” is defined contextually in a recursive definition:

- (1) DUTY-type propositions are LEGAL RELATIONS.
- (2) a. Equivalentents and NEGATIONS of LEGAL RELATIONS are LEGAL RELATIONS.
 - b. IF LR is a LEGAL RELATION and POWER(D2(x,p),LR) is a POWER-type proposition that indicates that LR will be created when person_p exercises that POWER, THEN POWER(D2(x,p),LR) is a LEGAL RELATION.
 - c. IF LR is a LEGAL RELATION and CONDITIONAL(c,LR) is a proposition that indicates that LR will be created upon fulfillment of some specified condition_c, THEN CONDITIONAL(c,LR) is a LEGAL RELATION.
- (3) IF a proposition is NOT a LEGAL RELATION by virtue of (1) or (2), THEN it is NOT a LEGAL RELATION.

The purpose of this article is not to further describe LRL,³ nor to further extend it or its underlying logic, which includes a relevance propositional logic along with alethic, deontic, action, and quantifier logics.⁴ Rather, here there are furnished some examples of the use of

3 LRL has been sufficiently described elsewhere. See Layman E. Allen, *Enriching the Deontic Fundamental Legal Conceptions of Hohfeld*, in ANNIVERSARY ANTHOLOGY IN COMPUTERS AND LAW (Jon Bing & O. Torvund eds., forthcoming 1998); Layman E. Allen, *From the Fundamental Legal Conceptions of Hohfeld to LEGAL RELATIONS: Refining the Enrichment of Solely Deontic LEGAL RELATIONS*, in DEONTIC LOGIC, AGENCY AND NORMATIVE SYSTEMS I (Mark A. Brown & Jose Carmo eds., 1996); Layman E. Allen, *Towards a Normalized Language to Clarify the Structure of Legal Discourse*, in DEONTIC LOGIC, COMPUTATIONAL LINGUISTICS AND LEGAL INFORMATION SYSTEMS 349 (Antonio A. Martino ed., 1982); Layman E. Allen, *Symbolic Logic: A Razor-Edged Tool for Drafting & Interpreting*, 66 YALE L.J. 833 (1957); Layman E. Allen, *Achieving Fluency in Modernized and Formalized Hohfeld: Puzzles and Games for the LEGAL RELATIONS Language*, Proceedings of the Sixth International Conference on Artificial Intelligence and Law, June 30–July 3, 1997, University of Melbourne Law School, Melbourne, Australia; Layman E. Allen & Charles S. Saxon, *Better Language, Better Thought, Better Communication: The A-HOHFELD Language for Legal Analysis*, Proceedings of the Fifth International Conference on Artificial Intelligence and Law, May 21–24, 1995, University of Maryland, College Park, Maryland.

4 See Layman E. Allen & Charles S. Saxon, *Analysis of the Logical Structure of Legal Rules by a Modernized and Formalized Version of Hohfeld’s Fundamental Legal Conceptions*, in AUTOMATED ANALYSIS OF LEGAL TEXTS: LOGIC, INFORMATICS, LAW 385 (Antonio A. Martino & Fiorenza Socci Natali eds., 1986); Layman E. Allen & Charles S. Saxon, A-

LRL in law that address the interests of deontic logicians about the application of their craft in the legal domain. What is presented below illustrates the uses of the LEGAL RELATIONS Language (the full current version of which is presented in Appendix A):

1. as a study aid to law students in generating "lean" pictorial briefs of, as well as facilitating deeper analysis of, appellate case opinions;
2. as a representation language for legal expert system builders to use in constructing MINT (Multiple INterpretation-assistance systems) for helping those who toil in the legal vineyards to better deal with problems of structural ambiguity
 - (a) by assisting interpreters of existing legal rules to detect structural ambiguities in their expression, and
 - (b) by assisting drafters of new legal rules to eliminate inadvertent structural ambiguities and to assure that any structural ambiguities that are included are there deliberately;
3. as a tool for practicing attorneys
 - (a) to analyze the expression of the logical structure of legal rules with the aim of ferreting out alternative structural interpretations of the rules,
 - (b) to describe the outcomes of, as well as the arguments advanced in, appellate court opinions in a more precise and complete language that facilitates a clearer portrayal of the issues involved and a deeper analysis of their resolution, and
 - (c) to adapt relevant existing MINT systems to become individualized practice systems for their own specialized practice, coordinating relevant rules, cases, and literature;
4. as an intellectual aid for appellate court judges to use in crafting written opinions that precisely and completely express the structure, scope, and limits of their decisions.

The MINT system for § 552(a)(4)(A)(iii) of the Freedom of Information Act⁵ (FOIA) presented in Part II will illustrate 2(a), 2(b), and 3(a). Following that, in Part III the analysis of *Larson v. CIA*⁶ is the first effort at a pictorial "lean" brief to illustrate 1, which, in turn, combines with the MINT system generated to illustrate 3(c). In the

Hohfeld: A Language for Robust Structural Representation of Knowledge in the Legal Domain to Build Interpretation-Assistance Expert Systems, in DEONTIC LOGIC IN COMPUTER SCIENCE: NORMATIVE SYSTEM SPECIFICATION 205 (John-Jules Ch. Meyer et al. eds., 1991); Layman E. Allen, *Formalizing Hohfeldian Analysis to Clarify the Multiple Senses of 'Legal Right': A Powerful Lens for the Electronic Age*, 48 S. CAL. L. REV. 428 (1974).

5 Freedom of Information Act, 5 U.S.C. § 552(a)(4)(A)(iii) (1994).

6 843 F.2d 1481 (D.C. Cir. 1988).

concluding part, there is a more lengthy consideration of *James Baird Co. v. Gimbel Bros.*⁷ to illustrate 3(b) and 4.

II. A MINT SYSTEM FOR FOIA § 552(A)(4)(A)(iii)

The MINT system is a set of computer programs that, from an input file constructed by a builder of MINT systems from the present text of a set of legal rules, will generate a MINT system for those rules, which, in response to user resolution of structural ambiguities specified in the constructed input file, will generate alternative interpretation-assistance expert systems of those rules for application to user-defined legal problem situations. The most difficult and important task of such a system builder is to detect and specify the structural ambiguities that occur in the present text of the rules, and it is with respect to this task that LRL plays a crucial role.

A. Present Version of FOIA § 552(a)(4)(A)(iii)

The relevant part of the present text of § 552(a)(4)(A)(iii) of the Freedom of Information Act is the following:

Documents *shall* be furnished without any charge or at a charge reduced . . . *if* disclosure of the information is in the public interest *because* it is likely to contribute significantly to public understanding of the operations *or* activities of the government *and* is not primarily in the commercial interest of the requester.⁸

B. Seven Structural Ambiguities in the Present Version

There are at least seven structural ambiguities in the text of the section above. Three of them have to do with the scope of reference of the terms “and,” “because,” and “or,” and the other four have to do with substantive content of the terms “if,” “because,” “shall,” and the negative of “shall.”

Question 1: Interpretation of the Scope of Reference of “And”

In determining the scope of the “and,” it is clear that the present text of the section is elliptical for (with the parts left out shown in corner brackets) the following elaborated statement:

<(a)> Documents *shall* be furnished without any charge or at a charge reduced . . . *if* <(b)> disclosure of the information is in the public interest *because* <(c)> it is likely to contribute significantly to

7 64 F.2d 344 (2d Cir. 1933).

8 5 U.S.C. § 552(a)(4)(A)(iii) (emphasis added).

public understanding of the operations *or* activities of the government *and* (d) [it] is not primarily in the commercial interest of the requester.⁹

In the most appropriate interpretation of the scope of reference of the term “and” in the above statement, which of the following should the elaborated statement be interpreted as asserting: A or B?

- A) (a) if (b) because [(c) and (d)] ■Support1A
 B) [(a) if (b) because (c)] and [(a) if (d)].

When a user engages in the structural interview in the MINT system and is answering this question the “■Support1A” entry to the right of alternative A indicates a hypertext link to information that supports choosing this alternative. Clicking on this entry might lead to text like the following:

1. The omission of the “it” after the “and” to include (c) and (d) ((d) without the “it”) in one sentence can be interpreted as the drafter’s signaling that (d) is meant to have a close relationship to (c) as in A, and not the distant relationship indicated by B. The omitted ‘it’ should raise a refutable presumption that A is the most appropriate interpretation, subject to someone’s showing that the policy being pursued in this provision is better served by another interpretation.

Question 2: Interpretation of the Reference of “If”

The elaborated statement clearly asserts at least the following conditional statement:

IF (b) because (c) and (d), THEN (a).

In the most appropriate interpretation of the reference of the term “if” in the elaborated statement above, does it express a single conditional or a biconditional? Which of the following should the statement be interpreted as asserting: A or B?

- A) “.” (Just a period and nothing more. The overall statement does not assert anything more than the conditional statement above.)
 B) “, BUT OTHERWISE, in the circumstances where the antecedent of the conditional is not fulfilled, something further is being provided for.”

Question 3: Interpretation of the Scope of Reference of "Because"

In the most appropriate interpretation of the reference of the term "because" in the elaborated statement above, does it refer only to (c) or does it refer to both (c) and (d)? Which of the following should the statement be interpreted as asserting: A or B?

- A) (a) if (1) (b) because (c) and (2) (d).
- B) (a) if (b) because (1) (c) and (2) (d).

Question 4: Interpretation of the Reference of "Because"

Consider the occurrence of the term "because" in the "(b) because (c) and (d)" part of the elaborated statement above. In the most appropriate interpretation of the reference of the term "because" in this part, which of the following should the part be interpreted as asserting: A or B or C?

- A) (b) AND (c) AND (d).
- B) (b) AND (c) AND (d) AND IF (c) AND (d) THEN (b).
- C) (c) AND (d) AND IF (c) AND (d) THEN (b).

Question 5: Interpretation of the Scope of Reference of "Or"

Consider the occurrence of the term "or" in the (c) part of the elaborated statement above, that is, the sentence:

[I]t is likely to contribute significantly to public understanding of the operations *or* activities of the government.

Clearly, this sentence is elliptical for a disjunction comprised of the sentence "it is likely to contribute significantly to public understanding of the *operations* of the government" with a second sentence about the *activities* of the government. In the most appropriate interpretation of the reference of the term "or" in this part, which of the following should that second sentence be interpreted as expressing: A or B or C?

- A) It is likely to contribute significantly to public understanding of the activities of the government.
- B) It is likely to contribute significantly to public activities of the government.
- C) It is likely to contribute significantly to activities of the government.

Question 6: Interpretation of the Reference of "Shall"

Consider the occurrence of the term "shall" in the (a) part of the elaborated statement above, that is, the sentence:

Documents *shall* be furnished without any charge or at a charge reduced

This passive voice version of the conclusion specifies neither who shall do the furnishing nor to whom. If both parties to the transaction are specified, the alternative structural interpretations are articulated in DUTY terms, but if only the party doing the furnishing is specified, the alternatives are stated in terms of what that party **MUST** do, leaving unsaid for the benefit of whom. The latter option is pursued here.

In the most appropriate interpretation of “shall,” which should (a) be interpreted as asserting: A or B or C or D?

- A) The agency furnishes the documents without charge or at a charge reduced.
- B) The agency **MUST** furnish the documents without charge or at a charge reduced.
- C) The agency has **POWER** to furnish the documents without charge or at a charge reduced and **MUST** exercise that **POWER**.
- D) The agency has **POWER** to furnish the documents without charge or at a charge reduced and **MAY, BUT NEED NOT**, exercise that **POWER**.

Question 7: Interpretation of the Reference of Negative of “Shall”

There are two possible negatives of “. . . shall . . .”—namely:

- (1) “it is not so that . . . shall . . . ,” and
- (2) “. . . shall not”

So, consider first the interpretation of the words “it is not so that . . . shall” in the following statement:

It is not so that documents shall be furnished without charge or at a charge reduced.

Consider next the interpretation of the words “shall not” in the following statement:

Documents shall not be furnished without charge or at a charge reduced.

Choose which of the above two statements is most appropriately regarded in this context as the negative of sentence (a) and then specify in the most appropriate interpretation of the words “it is not so that . . . shall” and the words “shall not,” which of the following the negative of (a) should be interpreted as asserting:

- A) **IT IS NOT SO THAT** documents are furnished without charge or at a charge reduced.
- B) Documents **MUST NOT** be furnished without charge or at a charge reduced.

- C) The government agency has POWER to furnish documents without charge or at a charge reduced and MUST NOT exercise that POWER.
- D) The government agency has POWER to furnish documents without charge or at a charge reduced and MAY, but NEED NOT, exercise that POWER.
- E) Documents MAY, but NEED NOT, be furnished without charge or at a charge reduced.
- F) The government agency lacks POWER to furnish documents without charge or at a charge reduced and MUST NOT engage in action that would exercise such POWER were the agency to have such POWER.
- G) The government agency lacks POWER to furnish documents without charge or at a charge reduced and MAY, but NEED NOT, engage in action that would exercise such POWER were the agency to have such POWER.

For each of these questions there is a residual "other" alternative response which the user can add to the list. This is used to detect alternatives that the system builder may have overlooked. Given the number of alternative responses for each question, if all of the responses to all of the questions were independent of each other, there would be a total of $2 \times 2 \times 2 \times 3 \times 3 \times 4 \times 7 = 2016$ different structural interpretations of § 552(a)(4)(A)(iii). But the many dependencies reduce the actual number for this set of seven questions to 210 different interpretations.

C. Determination of Structural Interpretations

Specific structural interpretations of the set of rules expressed by this provision are determined by the responses that users give to the above seven structural questions specified in the MINT input file. The following is the structural interpretation determined by the MINT system for § 552(a)(4)(A)(iii) for the ABBC_CC responses to the six of the seven questions that are asked for this pattern of responses.

1. Clear Normalized Version of Interpretation ABBC_CC

IF

1. all other relevant conditions are fulfilled for the application of § 552(a)(4)(A)(iii) of the Freedom of Information Act,

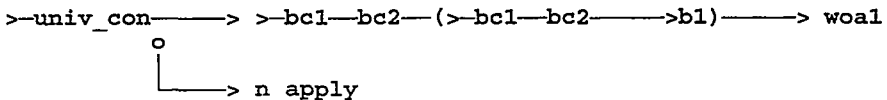
THEN

2. IF

- A. disclosure of the information is in the public interest because it is likely to contribute significantly to public understanding of the operations or activities of the government, AND
 - B. disclosure of the information is in the public interest because it is not primarily in the commercial interest of the requester, AND
 - C. IF
 - 1. disclosure of the information is in the public interest because it is likely to contribute significantly to public understanding of the operations or activities of the government, AND
 - 2. disclosure of the information is in the public interest because it is not primarily in the commercial interest of the requester, THEN
 - 3. disclosure of the information is in the public interest, THEN
 - D. the government agency has POWER to furnish documents without charge or at a charge reduced and MUST exercise that POWER, BUT OTHERWISE,
 - E. the government agency lacks POWER to furnish documents without charge or at a charge reduced and MUST NOT engage in action that would exercise such POWER were the agency to have such POWER, BUT OTHERWISE,
3. Section 552(a) (4) (A) (iii) of the Freedom of Information Act is not applicable in this situation.

The MINT system also automatically generates an arrow diagram picture of this interpretation:

2. Clear Arrow Diagram of Interpretation ABBC_CC



The arrow diagram shows the structure of this interpretation with its sentence constituents abbreviated by alpha-numeric names. The universal set of triggering conditions that is incorporated into every MINT-determined interpretation is abbreviated by "univ_con." It represents the sentence here: "All other relevant conditions are fulfilled for the application of § 552(a) (4) (A) (iii) of the Freedom of Information Act."

With these normalized versions of an interpretation of a set of legal rules, a user could relate her situation to the normalized version to determine how § 552(a)(4)(A)(iii) applies to the situation. Alternatively, she can engage in a situational interview with the MINT system for this provision, and the system will provide her with a summary of the results that occur with respect to this interpretation and the reasons for each result.

In this manner LRL is usable as a representation language by MINT system builders (2a) to help interpreters detect structural ambiguities in the expression of legal rules, (2b) to help drafters to eliminate inadvertent structural ambiguities, and (3a) to help lawyers analyze the structure of rules and discern alternative structural interpretations of them. *Larson v. CIA* in the next part provides opportunity (3c) to show how law firms specializing in areas of law can build their own specially-tailored practice systems, as well as (1) to present the first example ever of a lean brief for use by law students.

III. A LEAN BRIEF OF *LARSON V. CIA*¹⁰

In this case, Larson filed a complaint in federal district court on the CIA's denial of his request for waiver of fees under § 552(a)(4)(A)(iii) for information he requested from the CIA. The district court granted the CIA's motion for summary judgment, and the decision was affirmed on appeal.¹¹ As a relatively simple case involving statutory interpretation of the FOIA provision for which a MINT system has been built, the *Larson* case is a good candidate both (1) to construct a lean brief of and (2) to illustrate how information from different sources can be coordinated in a specialized individual practice system.

A. A Complete LEGAL RELATIONS Brief of Larson

In order to do a lean brief of any case, the analyst must understand the complete brief that the lean brief is abbreviating. A complete brief of *Larson* in LEGAL RELATIONS terms is shown below in Figure 1, in which the occurrence of events in time is shown horizontally from left to right and the changes in LEGAL RELATIONS that result from each occurrence are indicated vertically from top to bottom.

The complete brief begins with a chronological event-by-event description of the precipitating events that led to the litigation and a

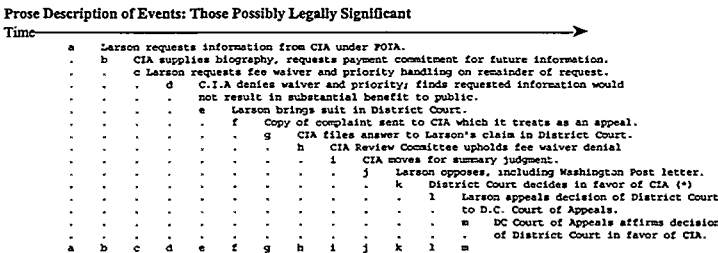
10 843 F.2d 1481 (D.C. Cir. 1988).

11 *Id.* at 1482.

pictorial representation of them. That is followed by a picture of the legal state of affairs in LEGAL RELATIONS terms at each point in time that an event occurs. At the outset Larson has DISCRETIONARY_POWER_1 to request that information be provided to him by the CIA, which he exercises to create OBLIGATORY_POWER_2 of the CIA to decide whether or not to transfer legal possession of the requested documents and DISCRETIONARY_POWER_4 of the CIA to request payment for furnishing the documents requested and to authorize Larson to request waiver of such payment. The CIA exercises both of these POWERS: the first by giving Larson some of the documents to create for Larson the bundle_of_LEGAL_RELATIONS_3 that constitute legal possession, and the second by requesting Larson to assure payment for the remaining documents to create DISCRETIONARY_POWER_5 of Larson to commit to pay and DISCRETIONARY_POWER_7 of Larson to request waiver of fees.¹² Ordinarily, the exercise of a POWER terminates it; that is what happens to POWER_2 and POWER_3. However, it is unclear with respect to POWER_1 whether Larson's request terminates his POWER to make further requests for the same material, but a decision on that was not required for purposes of this case. Larson then exercises his POWER_2 (terminating it) for waiver of the fees, creating OBLIGATORY_POWER_8 of the CIA to decide on the waiver. The CIA complies by exercising POWER_8 to create an agency-determined lack of DUTY_9 of the CIA to furnish the documents free or at reduced charge.¹³ It is this decision of the CIA that Larson litigates unsuccessfully in district court and fails similarly on appeal to the circuit court of appeals.¹⁴

In a complete LEGAL RELATIONS brief of *Larson*, there would be in addition to the pictorial account of the dispute shown in Figure 1 both (1) a pictorial account of the losing party's argument(s), and

Figure 1. Graphic Representation of LEGAL RELATIONS Analysis of Court's Decision *Larson v. C.I.A.*, 843 F2d 1481 (Court of Appeals, D.C. Circuit, 1988)

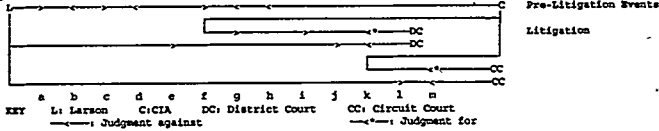


12 *Id.* at 1481.

13 *Id.* at 1482.

14 *Id.*

Diagram of Events in the Case



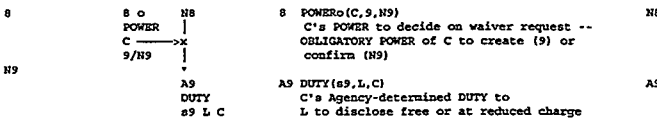
Changes in Legal States of Affairs

States Prior to Events that Precipitated the Dispute		States After Events and Litigation	
	a b c d e f g h i j k l m		Descriptions of Legal States
1	1 d POW L→x		1 POWER(L,2,3) L's d_POWER to make request -- DISCRETIONARY POWER of L to create (2,3)
N2	2 o POW C→x		2 POWER(C,4/N4a) C's d_POWER to decide -- OBLIGATORY POWER of C to decide whether or not to give L the requested information
N4	4/ N4a LEGAL POSSESSION		4 (L's legal possession of documents) The bundle of LEGAL RELATIONS that L's legal possession constitutes
N3	3 d POW C→x		3 POWER(C,5,7) C's d_POWER to request commitment from L and to create L's d_POWER to request waiver of costs, i.e., to create (5,7)
N5	5 d POW L		5 POWER(L,6) L's d_POWER to make commitment to pay -- DISCRETIONARY POWER of L to create (6)
N6	6		N6 N(DUTY(s9,L,C)) L's lack of DUTY to C to pay for documents furnished
N7	7 d POW L		7 POWER(L,8) L's d_POWER to request waiver -- DISCRETIONARY POWER of L to create (8)
N8	8 o POW C→x		8 POWER(C,9a/N9a,10) C's o_POWER to decide on waiver request -- o_POWER of C to create (9a/N9a,10)
N9	9a/ N9a N(DUTY) s9 L C		N9a N(DUTY(s9,L,C)) C's Agency-determined lack of DUTY to L to disclose free or at reduced charge
N10	10 d POW L	N10	10 POWER(L,11) L's DISCRETIONARY POWER to appeal within the agency, denial of its waiver request
N11	11 o POW C→x	N11	11 POWER(C,12) C's OBLIGATORY POWER to review the denial of the waiver request -- to create (12)
N12	12 d POW L→x		12 POWER(L,13,14,15) L's DISCRETIONARY POWER to file complaint to compel C to waive fee - create (13,14)
N13	13 d POW C→x	N13	13 POWER(C,16) C's DISCRETIONARY POWER to answer complaint - to create (15)
N15	15 d POW L	N15	15 POWER(L,8) L's d_POWER to respond and lead to pre-trial discovery (not pursued and terminated)
N14	14 d POW C→x	N14	14 POWER(C,16) C's DISCRETIONARY POWER to move for Summary judgment
N16	16 d POW L→x	N16	16 POWER(L,18) L's DISCRETIONARY POWER to oppose motion For summary judgment
N17	17 d POW DC→x	N17	17 POWER(DC,18dc,18/9dc) DC's DISCRETIONARY POWER (a) to affirm C's denial to waive fee and create L's POWER to appeal or (b) to deny C's denial and create C's DUTY to L to waive fee
N19	N9dc N(DUTY) s9 L C	N19	N9dc N(DUTY(s9,L,C)) C's DC-determined lack of DUTY to L to waive fee
N18	18 d POW L→x	N18	18 POWER(L,19) L's DISCRETIONARY POWER to appeal DC's decision to Circuit Court of Appeals. CC to create (19)
N19	19d POW CC→x	N19	19 POWER(CC,N9cc/(9cc,20)) CC's DISCRETIONARY POWER (a) to affirm DC's decision or (b) to deny it and OBLIGATORY POWER of DC to create DUTY of C to L to waive fee, i.e., to create (9cc,20)
N9	N9cc N(DUTY) s9 L C	N9cc	N9cc N(DUTY(s9,L,C)) C's CC-determined lack of DUTY to L to waive fee
N20		N20	N20 N(POWER(DC,DUTY(s9,L,C))) DC's lack of OBLIGATORY POWER to create DUTY of C to L to waive fee

(2) a LEGAL RELATIONS account of the court's decision about the dispute resulting from the precipitating events.

The pictorial account of Larson's argument would be identical to Figure 1 except for the final determination made by the CIA in exercise of its POWER_8. Instead of determining that there was a *lack* of DUTY by the CIA to Larson to furnish the information free, he argued that it should have determined that there *was* such a DUTY, that is:

Figure 1a. Graphic Representation of Larson's Argument that the CIA Should Exercise its Obligatory Power to Create its DUTY to Furnish the Information Free or at Reduced Cost



The LEGAL RELATIONS account of the court's decision is the following:

When

- (a) Larson requests information from the CIA under FOIA, he exercises (1) his DISCRETIONARY POWER to make an official request for such information, thereby creating LEGAL RELATIONS LR_2 and LR_3, namely:
 - (2) DISCRETIONARY POWER of the CIA to request commitment by Larson to pay for additional information beyond the biographical data requested, and
 - (3) OBLIGATORY POWER of the CIA to decide whether or not to create LEGAL POSSESSION (a bundle of LEGAL RELATIONS) by Larson of the biographical data requested by him.

When

- (b) the CIA supplies the requested biography and requests commitment from Larson to pay for future information to be furnished, the CIA
 - A. exercises its POWER_3 to grant Larson LEGAL POSSESSION of the biographical information furnished, thereby creating LR_4, namely:
 - (4) the bundle of LEGAL RELATIONS with respect to the information furnished that constitute LEGAL POSSESSION by Larson, and
 - B. exercises its POWER_2 to request payment commitment, thereby creating LR_5 and LR_7, namely:
 - (5) Larson's DISCRETIONARY POWER to make commitment to pay for such information, and
 - (7) Larson's DISCRETIONARY POWER to request waiver of charges for providing such information.

When

- (c) Larson requests waiver of the fee for the remainder of the information, he exercises his DISCRETIONARY POWER to request waiver of the charges for providing such information, thereby creating LR_8, namely:

(8) OBLIGATORY POWER of the CIA to decide whether or not to grant the request for waiver of payment of the fee for providing the additional information.

When

- (d) the CIA denies the request for waiver of the charges by finding that providing the requested information would not result in substantial benefit to the public, it exercises its POWER to grant or deny the request, thereby creating LR_9, namely:

(9) an official agency-determined lack of DUTY of the CIA to Larson to furnish the requested information free or at a reduced charge.

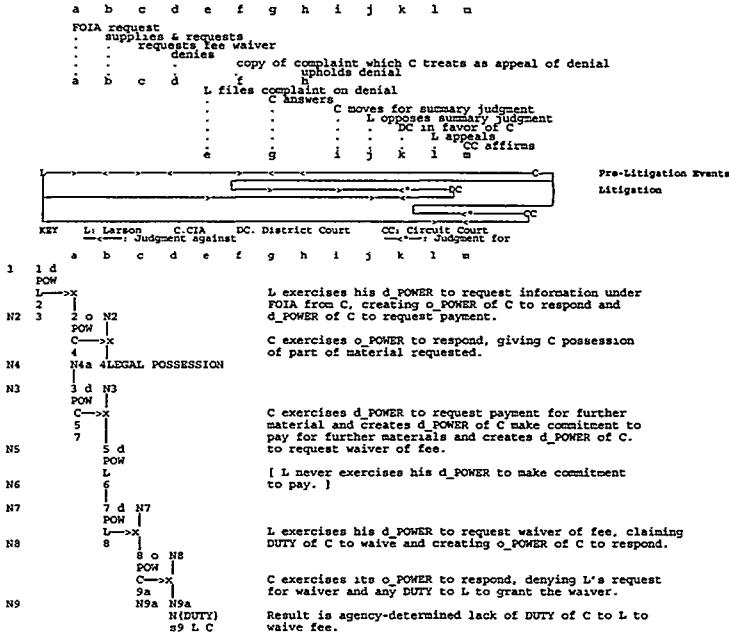
In order for a law student to do such a complete brief of a case such as the one above *in her mind*, rather than writing it out on paper, she must be fluent in the LEGAL RELATIONS Language. So equipped, after reading the case opinion she will be ready to concisely and precisely summarize it with a lean brief picture.

B. *The Lean Brief Derived from the Complete Brief*

In preparation for writing the lean brief, the law student draws a circle in the margin beside the text of the case opinion that describes each event that is potentially legally significant. After completing the first reading of the case, she goes back and inserts lower-case letters alphabetically in the circles in chronological order to clearly mark the order of the sequence of events in the case. She then is ready to construct in her mind and write out the following lean brief of *Larson* as shown below in Figure 2.

That is it—a complete and precise account of the court’s decision. It can be done readily by the fluent student who has achieved a full understanding of the case by reading it. For those who are fluent in LRL and know how to build and understand a lean brief, it is a handy form for reviewing the case and for comparing it with other cases. Even more important, a significant aspect of the case that might easily pass unnoticed is glaringly apparent in the lean brief. Ordinarily, the precipitating and litigating events are clearly separated in time and, thus, can be presented in a single row. In this case, they overlapped with events (e) and (h) being “out of order” in order for the litigating events to all be subsequent in time to the events that precipitated the litigation. The legal effect of this overlap is that the

Figure 2. A Lean Brief in LEGAL RELATIONS: Larson v. CIA, 843 F2d 1481 (D.C. Cir. 1988)



plaintiff had not exhausted his administrative remedies before going to the district court. Thus, the following single sentence in Footnote 3 of the court of appeals opinion would have been sufficient to dispose of this case: “Larson had failed to exhaust his administrative remedies.”¹⁵ That he went to court before seeking appeal within the CIA stands out in the temporal sequence so clearly displayed in the lean brief. The CIA’s treating the filing of the complaint in the district court as an appeal within the CIA and their ruling on it, and the court of appeals’ analysis of the application of § 552(a) (4) (A) (iii) to this dispute as though the appeal had been timely made are actions by the CIA and the court that would not have been necessary for achieving the result of this case. The affirmation of the district court’s judgment to deny Larson’s complaint could have been justified on the grounds of Larson’s failure to exhaust his administrative remedies. The CIA’s processing of the complaint as an appeal and the court of appeals’ detailed analysis were probably done to get and furnish some clarification of application of § 552(a) (4) (A) (iii) to such requests to provide guidance to other agencies and requesters.

As users become fluent in analyzing and constructing the LEGAL RELATIONS Diagrams, the explanatory text to the right of the dia-

15 *Id.* at 1482 n.3.

gram in Figure 2 can be omitted; such text (and perhaps other parts) will then be redundant.

*C. Coordinating Rules and Cases and Other Literature
(within MINT Systems)*

The court of appeals' analysis of the application of § 552(a)(4)(A)(iii) to Larson's request furnishes evidence of at least one aspect of this court's structural interpretation of the section. In this respect it helps to resolve the ambiguity addressed in Question 1 of the MINT system built for this section above. The court does not address the ambiguity explicitly in its analysis, but it is clear that the court is presuming that the appropriate response to Question 1 is alternative A. The court clearly assumes that the requirement of contribution to public understanding and the requirement for lack of commercial interest must both be satisfied for the requester to qualify for the fee waiver; neither alone will be sufficient. Thus, the following would be made as Entry 2 to ■Support1A of Question 1 in the § 552(a)(4)(A)(iii) MINT system structural interview:

2. In *Larson v. CIA*, the court proceeded on the assumption that Alternative A is the appropriate response to this question. The court states the following:

To guide agencies in their determinations as to whether the requester has met the burden, the new fee waiver test provides a two-pronged analysis. One prong demands that the requester not have a commercial interest in the disclosure of the information sought. The other prong of the test requires that the disclosure of the information be "likely to contribute significantly to public understanding of the operations or activities of the government." Concededly, nothing in the record indicates that Larson had a commercial interest in obtaining information about Yurchenko and his defections. Therefore, Larson satisfies the first prong of the new test. Thus, the second prong becomes the dispositive factor in this case.¹⁶

This illustrates how cases are coordinated with rules. Information presented in case opinions that is related to any of the alternatives or any of the terminology used in structural questions about legal rules is explicitly linked to those alternatives and terminology by hypertext links. There are provisions for similar links between the terminology used in situational questions and the information presented in cases, and there are similar provisions for linking other legal literature to cases and rules by such links to them. This is how law firms can accu-

¹⁶ *Id.* at 1483 (citations omitted).

ulate relevant rules, cases, and literature in their own specifically-tailored practice systems.

Such lean brief pictures of the LEGAL RELATIONS analysis of disputes in legal transactions can be useful, not only to law students, but to lawyers and judges as well, as is illustrated in the next section.

IV. A LEGAL RELATIONS ANALYSIS OF *JAMES BAIRD CO. v. GIMBEL BROS., INC.*

One of the landmark decisions in American contract law governing the relations between general contractors and subcontractors is the case of *James Baird Co. v. Gimbel Bros., Inc.*,¹⁷ in which the plaintiff-general contractor unsuccessfully sued the defendant-subcontractor for damages suffered on an alleged breach of contract. A complete LEGAL RELATIONS description and analysis of the opinion of Judge Learned Hand, one of the nation's most distinguished jurists, is presented below, along with lean brief pictures of the plaintiff's unsuccessful arguments.

In the LR analysis of the court's decision that follows, only event b, event c, event d, and event f are legally significant; the other events are given no legal effect in the decision of the court—despite defendant's losing arguments to the contrary.

Everything that occurs after Baird receives the telegram revoking the offer is of null legal effect for purposes of the dispute in this case. It mattered not for the Baird-Gimbel dispute that Baird submitted a bid to the Highway Department, which was accepted, nor that Baird subsequently explicitly communicated acceptance of the Gimbel offer.¹⁸ The court's decision is summarized below in the LR analysis of Figure 3.

When

- (b) Gimbel posted the letter to Baird and others offering to sell linoleum at mistakenly low prices, it exercised its DISCRETIONARY POWER_1 to make offers, thereby creating CLR_2, namely:
 - (2) CONDITIONAL LEGAL RELATION (condition upon fulfillment of condition_c2) LR_3 and LR_4, namely: (3) Baird's POWER_3 to accept and (4) Gimbel's POWER_4 to make a conditional revocation

When

- (c) Baird received the letter from Gimbel the condition_c2 was fulfilled, thereby creating LR_3 and LR_4.

17 64 F.2d 344 (2d Cir. 1933).

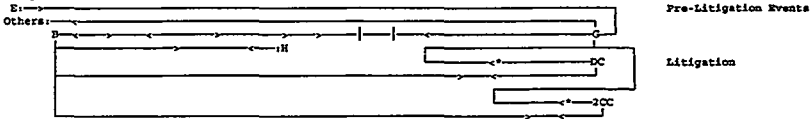
18 *Id.* at 345.

Figure 3. Graphic Representation of LEGAL RELATIONS Analysis of Court's Decision BAIRD v. GIMBEL, 64 F.2d 344 (CCA-2 1933)

Sequence of Events Described in Court's Opinion that are Potentially of Legal Significance

- a Gimbel employee mistakenly estimates linoleum requirements.
- b 12/24 Gimbel mails offers (one to Baird) based on mistaken estimate.
- c 12/28 Baird receives offer.
- d 12/28 Gimbel discovers mistake and sends telegrams & letters withdrawing offers.
- e 12/28 Baird submits bid to highway department.
- f 12/28 Baird receives telegram withdrawing the offer
- g 12/30 Highway Department accepts Baird's offer.
- h 12/31 Baird receives letter withdrawing Gimbel's offer.
- i Baird formally accepts Gimbel's offer.
- j Baird's deadline to accept expires (sometime before K)
- k Time for Gimbel's performance arrives.
- l Gimbel refuses to recognize existent of contract.
- m Baird sues Gimbel in District Court for breach.
- n District Court rules for Gimbel.
- o Baird appeals to 2nd Circuit Court.
- p 2nd Circuit Court affirms.

Diagram of Events in the Case



KEY B: Baird G: Gimbel E: Employee of Gimbel H: Highway Department DC: District Court
 2CC: Second Circuit Court B→G: B does c with respect to G B←G: G does b with respect to B, etc.
 ←*: Judgment for ←: Judgment against

Changes in Legal States of Affairs

States Prior to Events that Precipitated the Dispute		States After Those Events	
↓		↓	
v		Descriptions of Legal States in Terms of LEGAL RELATIONS	v
1	1 d N1 1	1 POWER(G,2) G's POWER to make an offer1 DISCRETIONARY POWER of G to create 2	1
N2	2 2 N2 2	2 CON(c2,3,4) B's CONDITIONAL POWER to accept CONDITIONAL (upon c2) LEGAL RELATIONS 3,4	N2
N3	3 3 d N3 3	3 POWER(B,1,6) B's POWER to accept DISCRETIONARY POWER of B to create 1,6	N3
N4	4 d N4 4	4 POWER(G,2) G's POWER to conditionally revoke DISCRETIONARY POWER of G to create 5	N4
N5	5 5 N5 5	5 CON(c5,1,N3) CONDITIONAL (upon c5) LEGAL RELATIONS 1,N3	N5
N6	. . . . . 6	6 6 CON((c6,7) G's CONDITIONAL DUTY to B to perform	N6
N7	. . . . . 7	7 7 DUTY(s7,B,G) G's DUTY to B to perform	N7
N8	. . . . . 8	8 8 DUTY(s8,B,G) G's DUTY to B to pay damages	N8
N9	. . . . . 9	9 9 POWER(B,10)d B's POWER to create POWER_10	N9
N10	. . . . . 10	10 10 POWER(B,6)d H's POWER to create 6	N10
N11	. . . . . 11	11 11 POWER(B,14)d B's POWER to terminate POWER_4	N11
N12	. . . . . 12	12 12 POWER(B,N5)d B's POWER to terminate 5	N12
N13	. . . . . 13	13 13 POWER(B,14)d B's POWER to create POWER_14	N13
N14	. . . . . 14	14 14 POWER(H,N1,3)d H's POWER to create POWER_3	N14

When

(d) Gimbel sent the telegram withdrawing the offers at the mistaken prices, it exercised its POWER_4, thereby creating CLR_5, a conditional revocation of Baird's POWER_3 to accept.

When

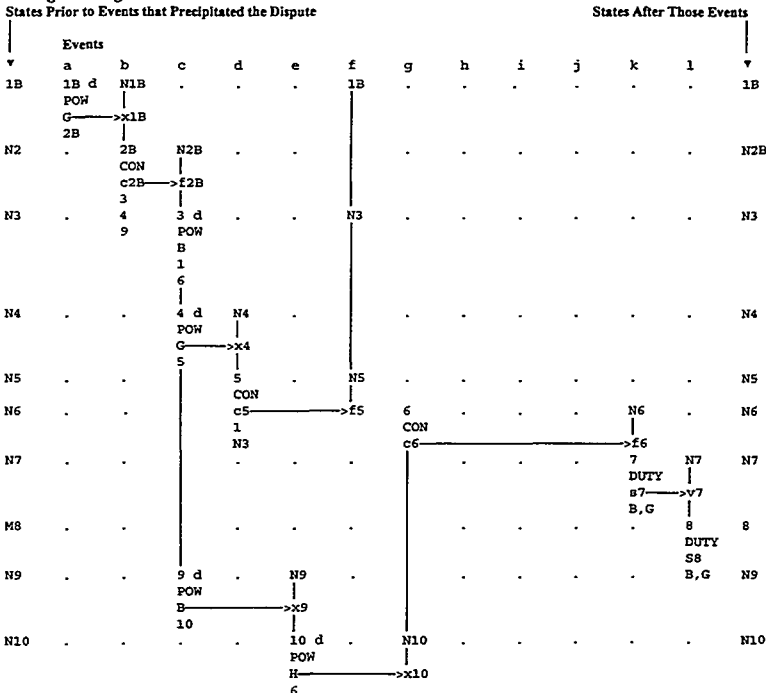
(f) Baird received the telegram withdrawing the offer, condition_c5 of CLR_5 was fulfilled, thereby terminating Baird's POWER_3 to accept, which meant that Baird's subsequent effort to accept had no legal effect.

The crucial part of Judge Hand's opinion, as represented above in the LEGAL RELATIONS language, is the determination that it is

POWER_1A that was exercised by the letter Gimbel sent offering to sell linoleum (event b). The losing arguments offered by Baird treat event b as the exercise of different kinds of POWERS to offer, and they are represented by different pictures. The exercise of the POWER_1A of the court's decision resulted in CLR_2, the fulfillment of whose condition results in the creation of LR_3 and LR_4.

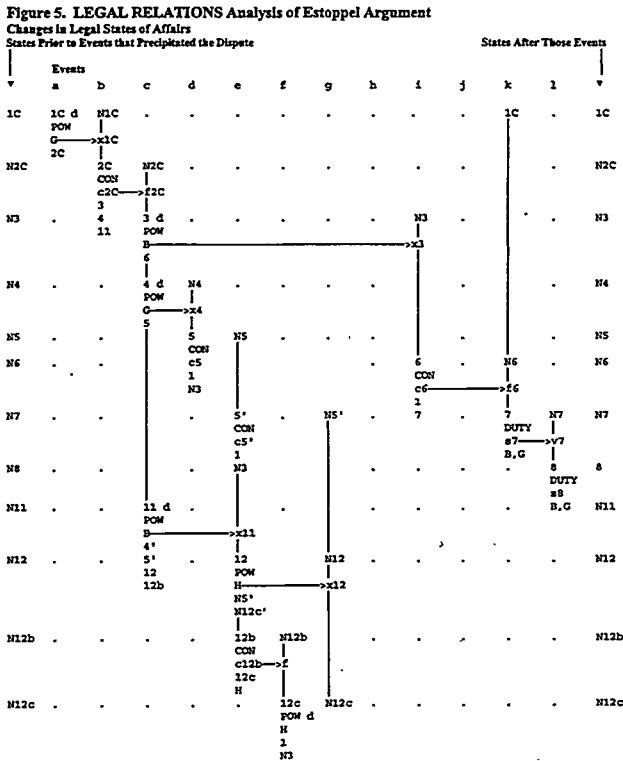
It is a different POWER to offer, namely POWER_1B that is exercised in the argument that Baird's submission operates as an acceptance of Gimbel's bid. When POWER_1B is exercised, it leads to a CONDITIONAL LEGAL RELATION 2B whose fulfillment results in creation of LR_3, LR_4, and LR_9, where LR_9 is a POWER of Baird to make a conditional acceptance. The exercise of POWER_9 creates POWER_10 in the Highway Department to create a CONDITIONAL DUTY of Gimbel to deliver the linoleum to Baird at the quoted prices. The exercise of POWER_10 creates CLR_6, whose condition c6 is fulfilled when time for performance arrives, creating Gimbel's DUTY to deliver to Baird. Gimbel's refusal to deliver violates its DUTY to Baird to do so and creates a remedial DUTY to pay damages. The lean brief picture of this argument is shown in Figure 4.

Figure 4. LEGAL RELATIONS Analysis of Argument of Submission of Bid as Acceptance Changes in Legal States of Affairs



Judge Hand rejected this argument in the following terms:

[I]t seems entirely clear that the contractors did not suppose that they accepted the offer merely by putting in their bids. If, for example, the successful one had repudiated the contract with the public authorities after it had been awarded to him, certainly the defendant could not have sued him for a breach. If he had become bankrupt, the defendant could not prove against his estate. It seems plain therefore that there was no contract between them.¹⁹



What might have motivated this rejection is that acceptance of this argument would have put Gimbel in the position of having a DUTY to deliver to Baird at the quoted prices, leaving Baird not bound to buy from Gimbel but free to shop around to other suppliers for lower prices. Baird's estoppel argument suffered a similar defect—and fate.

The second unsuccessful argument made by Baird is that Gimbel was bound to deliver under the doctrine of promissory estoppel to avoid the harsh results of allowing the promisor to repudiate, when the promisee has acted in reliance upon the offer. There is involved in the estoppel argument yet a third POWER to offer, POWER_1C.

19 *Id.* at 346.

The exercise of POWER_1C creates CONDITIONAL LR_2C whose fulfillment creates LR_3, LR_4, and LR_11. When POWER_4 is exercised, Baird's POWER of acceptance, POWER_3, is conditionally revoked, thereby creating CONDITIONAL LR_5 whose fulfillment recreates LR_1C and terminates LR_3 and LR_12. When Baird submits the bid to the Highway Department, its POWER_11 is exercised, (1) modifying the conditions necessary for fulfillment of CONDITIONAL LR_5 to include rejection of its bid by the Highway Department as well as receipt of the telegram from Gimbel revoking the offer, and (2) creating POWER_12 of the Highway Department's POWER to terminate Gimbel's conditional revocation by accepting Baird's bid. When the Highway Department exercises POWER_12 by accepting Baird's bid, the conditional revocation, CLR_5 is terminated, so that despite the arrival of the telegram (event f) and letter (event h) withdrawing the offer, POWER_3 is left intact until Baird exercises it by accepting Gimbel's offer (event i). The lean brief picture of this LEGAL RELATIONS analysis is shown below in Figure 5.

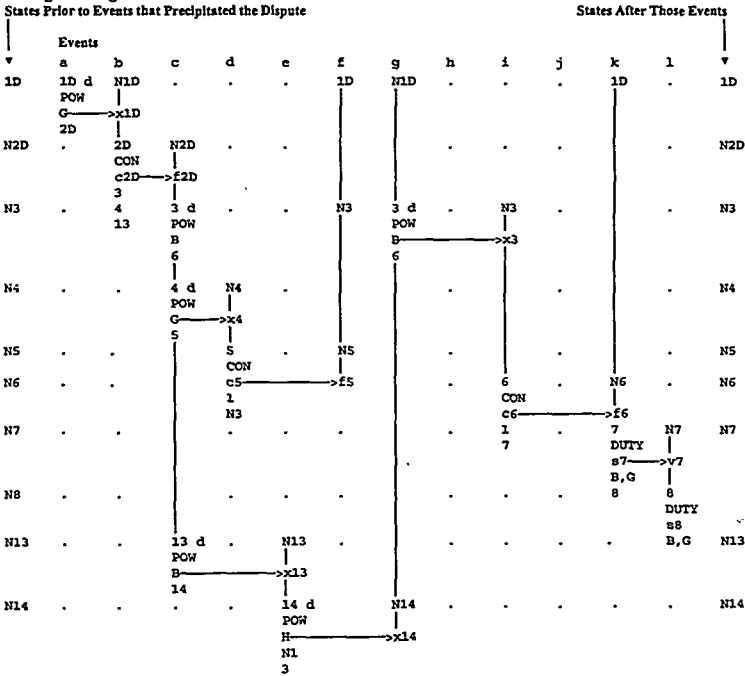
But this argument did not pass muster with Judge Hand either since its result would also have Gimbel bound (to keep the offer open) and Baird free (to reject the offer) until Baird's POWER_3 of acceptance was exercised.

The final unsuccessful argument characterized Gimbel's letter as an offer for an option to Baird that could be conditionally accepted by submitting a bid to the Highway Department; the posting of the letter being an exercise of POWER_1D, creating CLR_2D. When CLR_2D is fulfilled by the arrival of the letter, POWER_3, POWER_4, and POWER_13 are created. Then POWER_13 is exercised by Baird's submission of the bid, creating POWER_14 of the Highway Department. After that Gimbel's POWER_4 is exercised to create a conditional revocation of POWER_3, *i.e.*, CLR_5, whose c5 is fulfilled by the arrival of the telegram to terminate Baird's POWER of acceptance, LR_3. However, POWER_3 is recreated by the Highway Department's exercise of POWER_14 with its acceptance of Baird's bid. By accepting Gimbel's offer, Baird exercises POWER_3 to create CLR_6 and wind up with Gimbel having a remedial DUTY to pay damages.

This result was still unpalatable to Judge Hand, his justification for rejecting the offer-for-an-option argument pictured below in Figure 6 was in the following terms:

Nor can the offer be regarded as an option, giving the plaintiff the right [*i.e.*, POWER] seasonably to accept the linoleum at the quoted prices if its bid was accepted, but not binding it to take and pay, if it could get a better bargain elsewhere. There is not the least reason

Figure 6. LEGAL RELATIONS Analysis of Argument of Offer for an Option
Changes in Legal States of Affairs



to suppose that the defendant meant to subject itself to such a one-sided obligation.²⁰

In American contract law it is clear in terms of LEGAL RELATIONS that subcontractors like Gimbel have POWERS to make all four offers above: POWER_1A, POWER_1B, POWER_1C, and POWER_1D. If Gimbel had clearly specified so in the letter, it could have exercised any one of the four of its choices. The fundamental question of this case in LR terms is just which POWER is it appropriate to treat the letter as exercising, given that it does not expressly specify just which one is intended. The choice of which is most appropriate is a policy choice between (1) the avoidance of allowing the beating down of subcontractors' prices and (2) safeguarding general contractors' reliance on prices quoted in making bids. Judge Hand picks POWER_1A, giving preference by his choice to the avoidance of price-beating-down.²¹ The results of this choice leave general contractors in the unhappy state of having relied upon submissions by subcontractors in preparing the amounts of their bids, only to discover after being awarded the general contract that the submissions are un-

20 *Id.*

21 *See id.*

enforceable. Although this choice may to some extent forestall post-award shopping by awardees among subcontractors to try to beat down subcontractors' prices, it leaves general contractors unprotected, unless the subcontractor's offer explicitly provides some equivalent of nonrevocability upon the general contractor's making its bid.

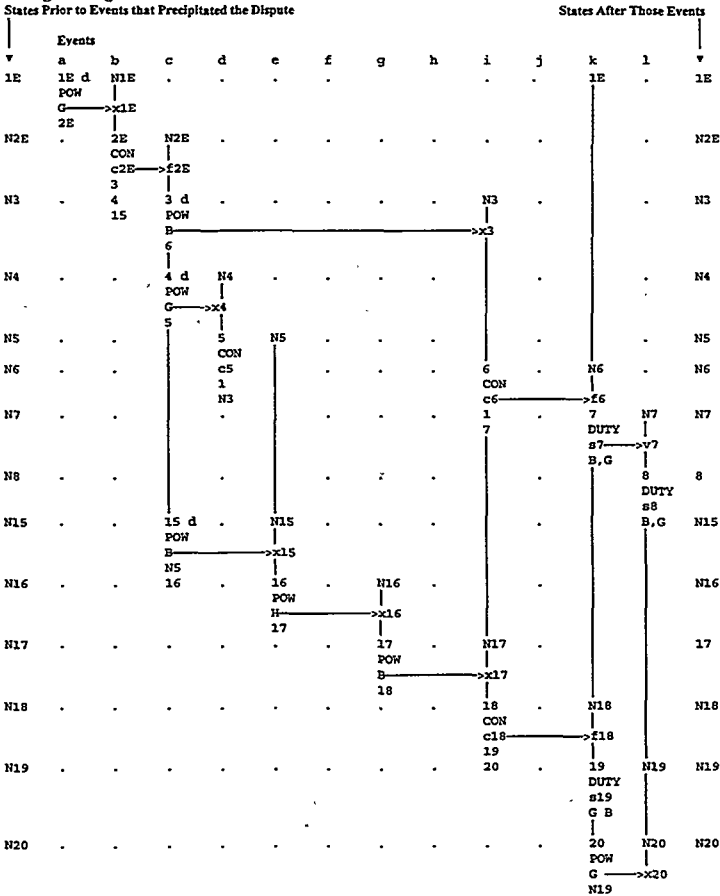
Since 1986 the State of California has legislatively protected both parties to such agreements and safeguarded its own interest as well by (1) requiring general contractors to submit a list of subcontractors who will perform more than one-half of one percent worth of the total bid of the general contractor,²² and (2) requiring that the work will be done by those subcontractors specified by the awardee.²³ In that context, a subcontractor is locked in when the bid is made by the awardee, and upon receiving the award the awardee is bound to use the services of the subcontractors listed. A scheme similar to this California legislative remedy is set forth in Figure 7 with respect to *Baird*; it differs in that the general contractor's final DUTY to use the services of the subcontractor is to the subcontractor, while in the California approach that DUTY is to the awarding authority. The suggested manner of dealing with the general contractor-subcontractor problems is pictured below in Figure 7.

Gimbel's sending the letter (b) is an exercise of POWER_1E, creating CLR_2E whose c2E condition is fulfilled upon receipt of the letter (c) by Baird. That results in creating Baird's POWER_3 of acceptance and POWER_15, along with Gimbel's POWER_4 of conditional revocation, which was exercised by Gimbel's sending the telegram withdrawing the offer (d), creating CRL_5. Baird's submitting a bid to the highway department (e) based on Gimbel's offer and including Gimbel as a listed subcontractor exercises his POWER_15 to terminate CRL_5 and creates the Highway Department's POWER_16. The arrival of Gimbel's telegram withdrawing the offer (f) does not have any legal effect, since CRL_5 has been terminated. The Highway Department's acceptance of Baird's bid (g) exercises its POWER_16, creating Baird's POWER_17 and converting Baird's DISCRETIONARY POWER_3 into an OBLIGATORY POWER_3 that MUST be exercised. When Baird formally accepts Gimbel's offer (i), his o_POWER_3 of acceptance is still intact and is thereby exercised, creating CRL_6. That same action also exercises Baird's POWER_17 and thereby creates CRL_18. When time for performance arrives (k), the

22 See CAL. PUB. CONT. CODE § 4104 (West Supp. 1998).

23 See *id.* § 4107; see also *id.* § 4101 (containing the legislature's findings concerning the effects of bid shopping and bid peddling).

Figure 7. LEGAL RELATIONS Analysis of the California Legislative Remedy Changes in Legal States of Affairs



conditions c6 and c18 are fulfilled, thereby creating (1) Gimbel's DUTY_7 to deliver the linoleum to Baird, and also (2) Baird's reciprocal DUTY_19 to pay Gimbel the quoted price for it along with (3) a POWER_20 of Gimbel to violate his DUTY_7 by refusing to deliver the linoleum at the quoted price (l) and thereby create his DUTY_8 to pay Baird damages and terminate Baird's DUTY_19 to pay for the linoleum.

Does it require brilliant insight to devise a legislative remedy like California's to the dilemma of being compelled to sacrifice the legitimate commercial interests of either the generals or the subs in the kind of bidding situations illustrated by *Baird v. Gimbel*—as Judge Hand apparently felt forced to do? The contention here is that for analysts fluent in the LEGAL RELATIONS, who will be able to form such LR pictures readily, it will be much easier to deal in exceptionally

competent ways with such subtle problems than it will be for those who do not have such fluency. Quality of thought is enhanced by command of precise and complete analytic tools, and the language in which thought is conducted has profound influence.

Consider whether counsel for Baird, if they had been able to construct Figure 7 after considering the risks of the alternatives portrayed by Figures 3, 4, 5, and 6, might not have advised Baird (1) to include the names and prices of the subcontractors in the bid submitted, and (2) to declare his intention to be bound to use the services of the subcontractors listed at the prices specified? Might Baird have fared better with Judge Hand and his colleagues if Baird had done so?

Consider whether Judge Hand, if he had access to Figures 3 through 7, might have volunteered the kind of advice evident from Figure 7 in the manner that the CIA and the D.C. Circuit Court of Appeals did in *Larson*—even while continuing to decide the case exactly as before? Would the wheels of commerce have rolled more smoothly in the final two-thirds of the twentieth century, if Judge Hand had tendered such guidance?

This LR analysis of the decision and arguments in *Baird* is delivery on the expectations generated in the introduction section about 3(b) and 4. My suggestion is that the pictorial lean briefs such as Figures 1 through 7 can be powerful analytic tools, not only for law students, but also for judges and practicing attorneys. And it would not require much imagination to sketch their usefulness to legal scholars and other toilers in the legal vineyards, as well.

V. CONCLUSION

As increasing numbers of workers in the legal domain become fluent in the comprehensive and precisely-defined LEGAL RELATIONS language, the effects upon legal discourse and legal literature will unfold in step with the increasing fluency. The Internet is an extraordinary means for accelerating the pace at which those interested can become articulate in LRL. My colleague, Charles Saxon, and I are putting up a series of puzzles and games on LRL and other fundamental reasoning skills to facilitate the process.²⁴ The series of illustrations of the usefulness of LRL in coping with problems in the expression and interpretation of the logical structure of legal documents is intended as a stimulant to motivate law students, practicing lawyers, drafters, judges, legal scholars, and other miners of the intellectual lode of the law to have the kind of look at LRL that will equip

²⁴ You can find us and locate others like-minded at: <http://thinkersleague.law.umich.edu/files/law.htm>.

them to seriously try to use it on some of their toughest problems. The illustrations are also, hopefully, a welcome reminder to those who know the exhilaration of pursuing precise ideas to ever higher levels of abstraction that their labors have important practical significance. Deontic logicians can point proudly to what their craft can do to assist those in other fields, if the law is at all representative in this respect. The LEGAL RELATIONS Language would not have seen birth but for the tools and techniques provided by logicians, deontic and otherwise, but now in the early phases of its evolution the LEGAL RELATIONS Language is designed to provide:

- For law students, pictorial representations of LRL analysis of appellate court opinions to deepen understanding;
- For practicing lawyers, more comprehensive and precise tools for structurally interpreting important legal documents, such as their own professional liability insurance policies;
- For rules drafters, a means of checking the ambiguity in the logical structure of regulations, statutes, constitutions, corporate by-laws, contracts, and other sets of legal rules to assure that such ambiguity is deliberate, rather than inadvertent;
- For appellate court judges, to craft written opinions that precisely and completely express the structure, scope, and limits of their decisions;
- For legal scholars, a tool for the more precise and comprehensive analysis and expression of legal doctrine for the benefit of students and others whom they serve;
- Finally, for those other workers in law who are seeking to build computer systems to assist the legal profession, a representational language for expert and other systems whose expressive power covers all of legal discourse.

But deontic and other logicians should stay with those of us in law who are interested in these matters. If the past is any indication, we will need your help even more in the twenty-first century.

APPENDIX: THE (CURRENT) LEGAL RELATIONS LANGUAGE

The 43 Structural Definitions of the LEGAL RELATIONS Language (as of November 1997)
AND
BUT OTHERWISE
CONDITIONAL DISABILITY
CONDITIONAL DUTY
CONDITIONAL IMMUNITY
CONDITIONAL LIABILITY
CONDITIONAL LEGAL RELATION
CONDITIONAL NO_RIGHT
CONDITIONAL POWER
CONDITIONAL PRIVILEGE
CONDITIONAL RIGHT
DISABILITY
DISCRETION
DISCRETIONARY POWER
DONE_BY
DONE_FOR
DUTY
FORBIDDEN
FORBIDDEN POWER
IF
IF...THEN
IF AND ONLY IF
IMMUNITY
IT IS NOT SO THAT
LEGAL RELATION
LIABILITY
MAY
MAY BUT NEED NOT
MUST
MUST NOT
NEED NOT
NEG
NON_OBLIGATORY
NO_RIGHT
NOT
OBLIGATORY
OBLIGATORY POWER
OR
PERMITTED
POWER
PRIVILEGE
RIGHT
UNCONDITIONAL LEGAL RELATION

AND

“a AND b.” means

“The state of affairs described by sentence_a is so, and the state of affairs described by sentence_b is so.”

BUT OTHERWISE

“IF a THEN b BUT OTHERWISE c.” means

“IF a THEN b, AND IF NEG a THEN c.”

CONDITIONAL DISABILITY

“p1 has CONDITIONAL DISABILITY to create LEGAL_RELATION_LR.” means

“p1 has POWER to create legal LEGAL_RELATION_LR, AND there is an event_e such that

1. it is naturally possible for event_e to occur, AND

2. IF event_e occurs, THEN condition_c is fulfilled, AND
3. IF condition_c is fulfilled, THEN p1's DISABILITY to create LEGAL_RELATION_LR is created (which is another way of saying that p1's POWER to create LEGAL_RELATION_LR is terminated)."

CONDITIONAL DUTY

"p1 has a CONDITIONAL DUTY to p2 do s." means

"p1 has a PRIVILEGE with respect to p2 to do NEG s, AND there is an event_e such that

1. it is naturally possible for event_e to occur, AND
2. IF event_e occurs, THEN condition_c is fulfilled, AND
3. IF condition_c is fulfilled, THEN p1's DUTY to p2 do s is created (which is another way of saying that p1's PRIVILEGE with respect to p2 to do NEG s is terminated)."

CONDITIONAL IMMUNITY

"LEGAL_RELATION_LR has CONDITIONAL IMMUNITY from being created by p1." means

"LEGAL_RELATION_LR has LIABILITY of being created by p1, AND there is an event_e such that

1. it is naturally possible for event_e to occur, AND
2. IF event_e occurs, THEN condition_c is fulfilled, AND
3. IF condition_c is fulfilled, THEN LEGAL_RELATION_LR's IMMUNITY from being created by p1 (which is another way of saying that LEGAL_RELATION_LR's LIABILITY of being created by p1 is terminated)."

CONDITIONAL LEGAL RELATIONS

"There is a CONDITIONAL_LEGAL_RELATION_CLR that LEGAL_RELATION_LR will be created by the fulfillment of condition_c." means

- "1. LR is NOT so, AND
2. there is an event_e that the legal system will treat as fulfilling condition_c, AND
3. it is naturally possible for e to occur, AND
4. IF e occurs, THEN c is treated by the legal system as fulfilled, AND
5. IF c is fulfilled, THEN LR is created, AND CLR is terminated."

Thus, the following is so:

- IF
1. person_p1 has a CONDITIONAL RIGHT upon fulfillment of condition_c that person_p2 bring about the state_of_affairs_s, AND
 2. event_e occurs, AND

3. IF *e* occurs, THEN *c* is treated by the legal system to be fulfilled,
- THEN 4. *c* is fulfilled, AND
5. *p*1's RIGHT that *p*2 bring about *s* is created, AND
6. *p*1's CONDITIONAL RIGHT that *p*2 bring about *s* is terminated.

CONDITIONAL LIABILITY

"LEGAL_RELATION_LR has CONDITIONAL LIABILITY of being created by *p*1." means

"*p*1 has CONDITIONAL POWER to create LEGAL_RELATION_LR." which, in turn, means

"*p*1 lacks POWER to create legal LEGAL_RELATION_LR, AND there is an event_*e* such that

1. it is naturally possible for event_*e* to occur, AND
2. IF event_*e* occurs, THEN condition_*c* is fulfilled, AND
3. IF condition_*c* is fulfilled, THEN *p*1's POWER to create LEGAL_RELATION_LR is created (which is another way of saying that LEGAL_RELATION_LR's LIABILITY is created)."

CONDITIONAL NO_RIGHT

"*p*1 has a CONDITIONAL NO_RIGHT that *p*2 do *s*." means

"*p*1 has a RIGHT that *p*2 do *s*, AND there is an event_*e* such that

1. it is naturally possible for event_*e* to occur, AND
2. IF event_*e* occurs, THEN condition_*c* is fulfilled, AND
3. IF condition_*c* is fulfilled, THEN *p*1's NO_RIGHT that *p*2 do *s* is created (which is another way of saying that *p*1's RIGHT that *p*2 do *s* is terminated)."

CONDITIONAL POWER

"*p*1 has CONDITIONAL POWER to create LEGAL_RELATION_LR." means

"*p*1 lacks POWER to create legal LEGAL_RELATION_LR, AND there is an event_*e* such that

1. it is naturally possible for event_*e* to occur, AND
2. IF event_*e* occurs, THEN condition_*c* is fulfilled, AND
3. IF condition_*c* is fulfilled, THEN *p*1's POWER to create LEGAL_RELATION_LR is created."

CONDITIONAL PRIVILEGE

"*p*1 has a CONDITIONAL PRIVILEGE with respect to *p*2 to do *s*." means

"*p*2 has a CONDITIONAL NO_RIGHT that *p*1 do NEG *s*."

which, in turn, means

"*p*2 has a RIGHT that *p*1 do NEG *s*, AND there is an event_*e* such that

1. it is naturally possible for event_e to occur, AND
2. IF event_e occurs, THEN condition_c is fulfilled, AND
3. IF condition_c is fulfilled, THEN p2's NO_RIGHT that p1 do NEG s is created (which is another way of saying that p2's RIGHT that p1 do NEG s is terminated, which in turn is another way of saying that p1's PRIVILEGE with respect to p2 to do s is created)."

CONDITIONAL RIGHT

"p1 has a CONDITIONAL RIGHT that p2 do s." means

"p2 has a CONDITIONAL DUTY to p1 to do s."

which, in turn, means

"p2 has a PRIVILEGE with respect to p1 to do NEG s, AND there is an event_e such that

1. it is naturally possible for event_e to occur, AND
2. IF event_e occurs, THEN condition_c is fulfilled, AND
3. IF condition_c is fulfilled, THEN p1's DUTY to p2 do s is created (which is another way of saying that p2's PRIVILEGE with respect to p1 to do NEG s is terminated, which in turn is another way of saying that p1's RIGHT that p2 do s is created)."

DISABILITY

"p1 has DISABILITY to create LEGAL_RELATION_LR." means

"p1 lacks POWER to create LEGAL_RELATION_LR."

which, in turn, means that

"1. LEGAL_RELATION_LR is already so, OR

2. A. it is naturally possible for state_of_affairs_s to be DONE_BY p1, AND
- B. IT IS NOT SO THAT IF s is DONE_BY p1, THEN LEGAL_RELATION_LR is created."

DISCRETION

"p1 has DISCRETION with respect to p2 as to whether or not to do s." means

"p1 has a PRIVILEGE with respect to p2 to do s, AND p1 has a PRIVILEGE with respect to p2 to do NEG s."

DISCRETIONARY POWER

"Person_p1 has DISCRETIONARY POWER to create LEGAL_RELATION_LR." means

"Person_p1 has POWER to create LEGAL_RELATION_LR and MAY, BUT NEED NOT, exercise that POWER."

DONE_BY

"State_of_affairs_s is DONE_BY person_p." means
 "person_p sees to it that state_of_affairs_s is so."

DONE_FOR

"State_of_affairs_s is DONE_FOR person_p." means
 "somebody sees to it that with respect to person_p, state_of_affairs_s is so."

DUTY

"p1 has a DUTY to p2 to do s." means

"IT IS OBLIGATORY THAT s be done by p1 for p2."

which in turn means operationally in terms of how the legal system will treat the matter

"IF 1. IT IS NOT SO THAT p1 does s for p2,
 THEN 2. p1 has violated her DUTY to p2, AND
 3. IF p2 seeks remedy in the legal system by litigating,
 THEN the legal system will provide a remedy to p1
 with respect to p2."

FORBIDDEN

"IT IS FORBIDDEN THAT a." means

"IF 1. the state of affairs described by sentence_a is so,
 THEN 2. there is a violation, AND
 3. the legal system will provide a remedy with respect to
 the violator."

FORBIDDEN POWER

"Person_p1 has FORBIDDEN POWER to create LEGAL_RELATION_LR." means

"Person_p1 has POWER to create LEGAL_RELATION_LR, but MUST NOT exercise that POWER."

IF

"s IF a." means

"IF a THEN s."

IF . . . THEN

"IF a THEN s." means

"1. If the state of affairs described by sentence_a is so then the state of affairs described by sentence_s is so, AND
 2. if the state of affairs described by sentence_a is not so, then nothing is being said about whether or not the state of affairs described by sentence_s is so."

IF AND ONLY IF

"s IF AND ONLY IF a." means

"IF a THEN s, AND IF NEG a THEN NEG s."

IMMUNITY

"LEGAL_RELATION_LR has IMMUNITY of being created by p1." means

"p1 lacks POWER to create LEGAL_RELATION_LR."

which, in turn, means that

"1) LEGAL_RELATION_LR is already so, OR

2) A. it is naturally possible for p1 to do s, AND

B. IT IS NOT SO THAT IF p1 does s, THEN LEGAL_RELATION_LR is created."

IT IS NOT SO THAT

"IT IS NOT SO THAT a." means

"It is not so that the state of affairs described by sentence_a is so."

LEGAL RELATION

LEGAL RELATION is defined contextually in the following recursive definition.

1. DUTY-type propositions are LEGAL RELATIONS.

2. A. Equivalents and NEGATIONS of LEGAL RELATIONS are LEGAL RELATIONS.

B. IF LR is a LEGAL RELATION and POWER(D2(x,p),LR) is a POWER-type proposition that indicates that LR will be created when person_p exercises that POWER, THEN POWER(D2(x,p),LR) is a LEGAL RELATION.

C. IF LR is a LEGAL RELATION and CONDITIONAL(c,LR) is a proposition that indicates that LR will be created upon fulfillment of some specified condition_c, THEN CONDITIONAL(c,LR) is a LEGAL RELATION.

3. IF a proposition is NOT a LEGAL RELATION by virtue of (1) or (2), THEN it is NOT a LEGAL RELATION.

By this definition of LEGAL RELATION, statements involving any of the defined structural terms below will express LEGAL RELATIONS:

DUTY	CONDITIONAL DUTY
RIGHT	CONDITIONAL RIGHT
NO_RIGHT	CONDITIONAL NO_RIGHT
PRIVILEGE	CONDITIONAL PRIVILEGE

POWER	CONDITIONAL POWER
LIABILITY	CONDITIONAL LIABILITY
DISABILITY	CONDITIONAL DISABILITY
IMMUNITY	CONDITIONAL IMMUNITY

DISCRETION DISCRETIONARY POWER

FORBIDDEN POWER OBLIGATORY POWER

In other words, all Modified Hohfeldian LEGAL RELATIONS (derived from Hohfeld's Fundamental Legal Conceptions) and all Extended Hohfeldian LEGAL RELATIONS are LEGAL RELATIONS.

There is an important additional consideration that needs to be mentioned about the above definition of LEGAL RELATIONS. This current definition of LEGAL RELATIONS may need to be extended to include elliptical versions of the above LEGAL RELATIONS by statements involving (1) Deontic Operators or (2) Within_Sentence Connectives defined in terms of such Deontic Operators (such as 'MUST' and 'MAY'). These elliptical statements typically omit expressing some or all of the persons involved in the LEGAL RELATION.

Alternatively, the above recursive definition of LEGAL RELATIONS can be left to stand as is and still be the complete definition of LEGAL RELATIONS, and then, treat the statements involving Deontic Operators and Within_Sentence Connectives as elliptical statements of LEGAL RELATIONS that omit express mention of some or all of the persons involved in the LEGAL RELATION. This second alternative seems the better way to go. If anyone else has any thoughts on this, please furnish feedback at: <http://thinkers.law.umich.edu/files>.

LIABILITY

"LEGAL_RELATION_LR has LIABILITY of being created by p1." means

"p1 has POWER to create LEGAL_RELATION_LR."

which, in turn, means

1. "LEGAL_RELATION_LR is NOT so, AND
2. it is naturally possible for state_of_affairs_s to be DONE_BY p1, AND
3. IF s is DONE_BY p1, THEN LEGAL_RELATION_LR is created."

MAY

"a1 MAY a2." means

"IT IS PERMITTED THAT a1 a2." (where "a1" concatenated with "a2" is a sentence)

which, in turn, means

"IT IS NOT SO THAT IT IS FORBIDDEN THAT a1 a2."

which, in turn, means that

- "1. IT IS NOT SO THAT IF the state of affairs described by sentence_a1_a2 is so, THEN 2. there is a violation, AND
2. IT IS NOT SO THAT IF the state of affairs described by sentence_a1_a2 is so, the legal system will provide a remedy with respect to the alleged violator."

MAY BUT NEED NOT

"a1 MAY BUT NEED NOT a2." means

"a1 MAY a2, AND a1 NEED NOT a2."

(where "a1" concatenated with "a2" is a sentence, AND "a1" concatenated with "NOT a2" is a sentence)

which, in turn, means

"IT IS PERMITTED THAT a1 a2, AND IT IS PERMITTED THAT a1 NOT a2."

which, in turn, means

"IT IS NOT SO THAT IT IS FORBIDDEN THAT a1 a2, AND IT IS NOT SO THAT IT IS FORBIDDEN THAT a1 NOT a2."

which, in turn, means that

"WHETHER OR NOT the state of affairs described by sentence_a1_a2 is so,

1. IT IS NOT SO THAT there is a violation, AND
2. IT IS NOT SO THAT the legal system will provide a remedy with respect to the alleged violator."

MUST

"a1 MUST a2." means

"IT IS OBLIGATORY THAT a1 a2." (where "a1" concatenated with "a2" is a sentence)

which, in turn, means

"IT IS FORBIDDEN THAT NEG a1 a2."

which, in turn, means

- "IF
1. the state of affairs described by sentence_a1_a2 is NOT so,
- THEN
2. there is a violation, AND
 3. the legal system will provide a remedy with respect to the violator."

MUST NOT

"a1 MUST NOT a2." means

"IT IS OBLIGATORY THAT a1 NOT a2." (where "a1" concatenated with "NOT a2" is a sentence)

which, in turn, means

"IT IS FORBIDDEN THAT a1 a2."

which, in turn, means

"IF the state of affairs described by sentence_a1_a2 is so, THEN (1) there is a violation, AND (2) the legal system will provide a remedy with respect to the violator."

NEED NOT

"a1 NEED NOT a2." means

"IT IS PERMITTED THAT a1 NOT a2." (where "a1" concatenated with "NOT a2" is a sentence)

which, in turn, means

"IT IS NOT SO THAT IT IS FORBIDDEN THAT a1 NOT a2."

which, in turn, means that

1. IT IS NOT SO THAT IF the state of affairs described by sentence_a1_NOT_a2 is so, THEN there is a violation, AND
2. IT IS NOT SO THAT IF the state of affairs described by sentence_a1_NOT_a2 is so, THEN the legal system will provide a remedy with respect to the violator."

NEG

"NEG a." means

"IT IS NOT SO THAT a."

NON_OBLIGATORY

"IT IS NON_OBLIGATORY THAT a." means

"IT IS NOT SO THAT IT IS OBLIGATORY THAT a."

which, in turn, means

"IT IS NOT SO THAT IT IS FORBIDDEN THAT NEG a."

which, in turn, means

1. IT IS NOT SO THAT IF the state of affairs described by sentence_a is NOT so, THEN there is a violation, AND
2. IT IS NOT SO THAT IF the state of affairs described by sentence_a is NOT so, THEN the legal system will provide a remedy with respect to the violator."

NO_RIGHT

"p1 has a NO_RIGHT that p2 do s." means

"IT IS NOT SO THAT p2 has a DUTY to p1 to do s."

which in turn means

"IT IS NOT SO THAT IT IS OBLIGATORY THAT s be done by p2 for p1."

which in turn means operationally in terms of how the legal system will treat the matter

- "IF
1. p2 does s with respect to p1,
- THEN
2. p2 has NOT violated any DUTY to p1, AND
 3. IF p1 seeks remedy in the legal system by litigating, THEN the legal system will NOT provide a remedy to p1 with respect to p2."

NOT

The sentence, "a1 is NOT a2." means

"IT IS NOT SO THAT the state of affairs described by sentence_(a1 is a2) is so."

For example, the sentence, "The defendant is NOT guilty." implies the sentence, "IT IS NOT SO THAT the defendant is guilty." and vice-versa.

However, although, the sentence, "The defendant was found NOT guilty." implies the sentence, "IT IS NOT SO THAT the defendant was found guilty." the reverse is NOT so. IT IS NOT THE CASE THAT the sentence, "IT IS NOT SO THAT the defendant was found guilty." implies the sentence, "The defendant was found NOT guilty." (e.g., a hung jury)

Thus, it is important to notice that that the presence of the word "is" immediately preceding the word "NOT" in this contextual definition is significant, because the sentence, "a1 NOT a2." (Without the "is") does NOT always imply the sentence "IT IS NOT SO THAT the state of affairs described by sentence_(a1 a2) is so." Also, IT IS NOT SO THAT "a1 NOT a2." is always implied by "IT IS NOT SO THAT the state of affairs described by the sentence_(a1 a2) is so."

For example, IT IS NOT SO THAT "Jones is PERMITTED to NOT provide for the education of her 21-year old children." implies the sentence, IT IS NOT SO THAT Jones is PERMITTED to provide for the education of her 21-year old children. Further, an example in which the first is NOT implied by the second is that IT IS NOT SO THAT "Jones MUST NOT provide for the education of her 21-year old children." is implied by "IT IS NOT SO THAT Jones MUST provide for the education of her 21-year old children."

OBLIGATORY

"IT IS OBLIGATORY THAT a." means

"IT IS FORBIDDEN THAT NEG a."

which, in turn, means

"IF the state of affairs described by sentence_a is NOT so, THEN (1) there is a violation, AND (2) the legal system will provide a remedy with respect to the violator."

OBLIGATORY POWER

"Person_p1 has OBLIGATORY POWER to create LEGAL_RELATION_LR." means

"Person_p1 has POWER to creat LEGAL_RELATION_LR and MUST exercise that POWER."

OR

"a OR b." means

"The state of affairs described by sentence_a is so, or the state of affairs described by sentence_b is so, or both are so."

PERMITTED

"IT IS PERMITTED THAT a." means

"IT IS NOT SO THAT IT IS FORBIDDEN THAT a."

which, in turn, means that

- “1. IT IS NOT SO THAT IF the state of affairs described by sentence_a is so, THEN there is a violation, AND
2. IT IS NOT SO THAT IF the state of affairs described by sentence_a is so, the legal system will provide a remedy with respect to the violator.”

POWER

“Person_p has POWER to create LEGAL_RELATION_LR.” means

- “1. LEGAL_RELATION_LR is NOT so, AND
2. there is some state_of_affairs_s such that
 - A. it is naturally possible for s to be DONE_BY person_p, AND
 - B. IF s is DONE_BY person_p, THEN
 1. the legal system will treat that as an exercise of POWER by person_p to create LEGAL_RELATION_LR, AND
 2. LEGAL_RELATION_LR is created, AND (C) person_p’s POWER to create LEGAL_RELATION_LR is terminated.”

Thus, the following is so:

- IF
1. person_p has POWER to create LEGAL_RELATION_LR, AND
 2. state_of affairs_s is DONE_BY person_p, AND
 3. the legal systems treatss being DONE_BY p as being an exercise of her POWER to create LEGAL_RELATION_LR,
- THEN
4. p has exercised her POWER to create LEGAL_RELATION_LR, AND
 5. LEGAL_RELATION_LR is created, AND
 6. p’s POWER to create LEGAL_RELATION_LR is terminated.

PRIVILEGE

“p1 has a PRIVILEGE with respect to p2 to do s.” means

“IT IS NOT SO THAT p1 has a DUTY to p2 to do NEG s.”

which in turn means

“IT IS NOT SO THAT IT IS OBLIGATORY THAT NEG s be done by p1 for p2.”

which in turn means operationally in terms of how the legal system will treat the matter

- “IF
1. p1 does s with respect to p2,
- THEN
2. IT IS NOT SO THAT p1 has violated a DUTY to p2, AND
 3. IF p2 seeks remedy in the legal system by litigating, THEN IT IS NOT SO THAT the legal system will provide a remedy to p2 with respect to p1.”

RIGHT

"p1 has a **RIGHT** that p2 do s." means

"p2 has a **DUTY** to p1 to do s."

which in turn means

"**IT IS OBLIGATORY THAT** s be done by p2 for p1."

which in turn means operationally in terms of how the legal system will treat the matter

"**IF** 1. **IT IS NOT SO THAT** p2 does s for p1,
THEN 2. p2 has violated her **DUTY** to p1, **AND**
 3. **IF** p1 seeks remedy in the legal system by litigating,
THEN the legal system will provide a remedy to p1
 with respect to p2."

UNCONDITIONAL LEGAL RELATION

"x is an **UNCONDITIONAL LEGAL RELATION**" means

- "1. x is a **LEGAL RELATION** whose main operator is '**OBLIGATORY**' or its **NEGATION**, **OR**
 2. X is a **LEGAL RELATION** equivalent to such a **LEGAL RELATION**."

Four of the five ways of expressing **UNCONDITIONAL LEGAL RELATIONS** involve the following four legal operators: **RIGHT**, **DUTY**, **NO_RIGHT**, and **PRIVILEGE**. Examples are:

1. **RIGHT**(s,p1,p2) =ab **RIGHT**(state_of_affairs_s, person_1, person_2).
 Person_2 has a **RIGHT** that person_1 see to it that state_of_affairs_s is so, that is, that state_of_affairs_s is **DONE_BY** person_1.
2. **DUTY**(s,p2,p1) =ab **DUTY**(state_of_affairs_s, person_2, person_1).
 Person_1 has a **DUTY** to person_2 to see to it that state_of_affairs_s is so, that is, that state_of_affairs_s is **DONE_BY** person_1.
3. **PRIVILEGE**(**NEG**(s),p2,p1) =ab **PRIVILEGE**(state_of_affairs_NEG(s), person_2,person_1).
 Person_1 has a **PRIVILEGE** with respect to person_2 to see to it that the state_of_affairs_NEG(s) is so, that is, that state_of_affairs_NEG(s) is **DONE_BY** person_1.
4. **NO_RIGHT**(s,p1,p2) =ab **NO_RIGHT**(state_of_affairs_s, person_1, person_2).
 Person_2 has a **NO_RIGHT** that person_2 see to it that state_of_affairs_s is so, that is, that state_of_affairs_s is **DONE_BY** person_2.

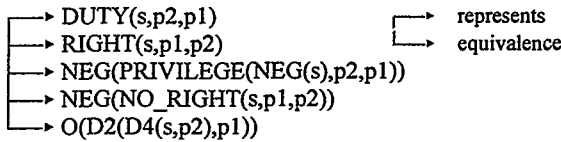
The first two of these modified **LEGAL RELATIONS** and the **NEGATIONS** of the last two, together with a fifth **OBLIGATORY** action

statement, $O(D2(D4(s,p2),p1))$ are referred to as the DUTY_set of LEGAL RELATIONS.

5. $D2(D4(s,p2),p1) =_{ab} OBLIGATORY(DONE_BY(DONE_FOR(state_of_affairs_s, person_2),person_2))$.

IT IS OBLIGATORY THAT state_of_affairs_s be DONE_FOR person_p2 be DONE_BY person_p1.

There are the following equivalence relations among the five members of the DUTY_set:



There is a corresponding set of LEGAL RELATIONS consisting of the NEGATIONS of the five above called the PRIVILEGE_set. They, of course, are also equivalent to each other.

