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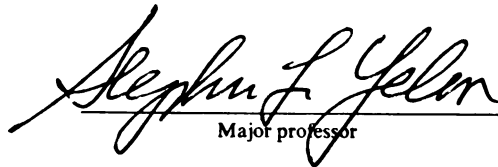
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THE DIFFERENCES BETWEEN FIRST AND THIRD YEAR STUDENTS
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**LEARNING LEGAL REASONING IN LAW SCHOOL:
THE DIFFERENCES BETWEEN FIRST AND THIRD YEAR STUDENTS**

By

Charles John Senger

A DISSERTATION

**Submitted to
Michigan State University
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ABSTRACT

LEARNING LEGAL REASONING IN LAW SCHOOL: THE DIFFERENCES BETWEEN FIRST AND THIRD YEAR STUDENTS

By

Charles John Senger

The purpose of this study was to use new methods to compare the legal reasoning of students who had completed almost one year of traditional American legal education with students who had completed almost three years. Traditional legal education was defined as giving a central role to the use of the case method of teaching with classroom discussion of appellate court opinions. Legal reasoning was defined as reasoning as used in the casebook method, including the idea of reasoning from example to example using analogies based upon previously decided cases. Data was collected from volunteers who both wrote answers to essay questions and thought out loud as they worked.

Analysis of both the written answers and the transcribed protocols of the thinking aloud comments revealed, contrary to expectations, no support for the hypothesis that the third year students' legal reasoning, as defined, would be superior. Three areas were advanced as sources of possible explanations for the finding of no significant differences between the first and third year students' reasoning. Those areas were: the group selection procedures used, particularly the reliance upon volunteers; the definition of legal reasoning used since it might not have captured what the law students were

learning; and the design of this study, including motivational and scaling issues, possible interference between the processes of writing essay answers and thinking aloud, possible triggering by the use of essay questions of a specialized response different from the legal reasoning being learned, and the possible presence of a nonmonotonic learning process with the result that the third year students were measured too early in their careers to reveal any differences.

The researcher's conclusion is that the most likely explanations for the finding of no difference are those explanations associated with the design of this study. However, this study also develops data and findings which will be valuable for future research and educational decision making.

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**Dedicated to
my wife Bettie
and our children
Paul, John, and Carolyn**

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CHAPTER I

INTRODUCTION

Law school has been described as a place for the accumulation of learning. First-year students bring some in; third-year students take none away. Hence it accumulates (White, 1983, p. 23).

The purpose of this study is to probe what students learn in law school, particularly the avowed goal of teaching students legal reasoning or, as it is often phrased, "to think like a lawyer." The effectiveness of the three year legal education program will be tested by comparing the performance of first and third year law students. The task will be essay questions of the type used throughout the three years of law school. To evaluate performance on the essay questions, four types of data will be collected: numerical scores of the essay answers; thinking aloud protocols made while the students write their answers; notes taken by the researcher while observing the students writing; and background information on the participants. The multiple types of data will allow comparisons to be made which have not been attempted in previous studies. If the groups of students differ, as it seems they should, then this study will have a better chance than previous studies to document the nature of those differences.

The need for the study of legal education.

The effectiveness of legal education is important for many of the same reasons that have led to the intensive study of medical education's effectiveness. Both programs require the investment of substantial amounts of time and money; law school is a three year, graduate program. Both programs serve as gatekeepers controlling entry into the respective professions; completion of an accredited law school program is a prerequisite to taking the bar examination in most states.

In some ways, it is even more important to study legal education than medical education because the substance of what is taught in law school has been more often challenged. An early example is when King James, acting on the advice of Bancroft, Archbishop of Canterbury, said that the law was founded upon reason and therefore the King, using reason, could decide cases without judges. Lord Coke answered:

That true it was, that God had endowed His Majesty with excellent science, and great endowments of nature; but His Majesty was not learned in the laws of his realm of England, and causes which concern the life, or inheritance, or goods, or fortunes of his subjects, are not to be decided by natural reason but by the artificial reason and judgment of law, which law is an act which requires long study and experience, before that a man can attain to the cognizance of it.¹

As will be noted in the review of the literature, three centuries later there are still those who would argue that legal reasoning is merely common sense or a specialized knowledge base and that three years of special law school education are not necessary. These challenges take on added urgency when one considers the progress of work on artificial intelligence and expert systems (e.g., Clancey & Shortliffe, 1984; Gardner, 1987).

In addition to questions about what is taught in law school, the teaching methods also have been questioned. The questions persist even though legal education has used the case method for teaching since the 1870's (Stevens, 1983). Stevens traces the political and educational arguments over traditional legal education and shows that, even very soon after the 1870's, questions were raised about whether law school education was appropriate for students other than the particularly quick or talented (1983, p. 118). Likewise questions have been raised about whether legal education is good preparation

¹ Prohibitions Del Roy, 12 Co. Rep. 63, 65; 77 Eng. Rep. 1342, 1343 (1608).

for persons who go into business (Slade, 1989) or even the courtroom (Burger urges curb, 1973). Although these questions about business or courtroom skills may appear to address separate areas of concern, it has been recognized that they have direct implications for law school programs (American Bar Association, 1979). They also have importance both for the students and the society which they will serve (Auerbach, 1976; Carrington, 1984). As Paul (1988) has noted, many students come to law school with virtually no training in complex problem solving and, if they do not receive it in law school, then law schools are "guilty of profound failure" (1988, p. 925).

Despite the parallels to medical education, and despite the seriousness of the questions raised, legal education has been subjected to far less empirical study than, for example, medical schools. The review of the literature will show that much has been written but most of it is based upon anecdotal data gathered from experience teaching in law school.

Unlike many previous works, this study will gather several forms of data and use both qualitative and quantitative methods of analysis. Even if Lord Coke was right, even if legal reasoning is something special acquired over a long period of time, this study's multiple data collection and analysis methods offer hope of isolating at least the contribution made by the last two years of the three year law school program. Isolating the difference between the legal reasoning of first and third year law students might then contribute to the resolution of the controversies about both the nature of legal reasoning and the effectiveness of legal education.

The research question:

How does the legal reasoning of law students who have completed almost one year of traditional American legal education compare to that of law students who have completed almost three years?

Key terms: definitions and background information.**Legal reasoning:**

Legal reasoning is the set of cognitive skills which traditional legal education emphasizes. In this study, the definition of that set of cognitive skills will follow the work of Levi (1949), including the idea that legal reasoning is primarily reasoning from example to example using analogies based upon previously decided cases.

Traditional legal education:

Traditional legal education means law school teaching which follows the casebook model. The model teaches legal problem solving through application of legal reasoning to the facts and law of the problems. The model emphasizes the use of: sequences of appellate opinions illustrating the facts, law, and legal reasoning of prior legal problems; classroom questioning by the professor focusing on applying what is learned from the appellate opinions to new sets of facts; and essay examinations testing what is learned again focusing on application to new sets of facts.

One year of law school:

One year of law school means that thirty semester credit hours have been completed (typically ninety credits over three years for a total law school program).

Background information:

The preceding definitions, particularly the definition of "traditional legal education," show that this study will primarily address the teaching of legal reasoning via the casebook method. The origin and development of the casebook method will be presented in Chapter II as part of the review of the literature. However, to understand the plan of this study, some background information is appropriate in this introduction.

Reading the preceding definition of "traditional legal education" does not necessarily tell one very much about the casebook teaching method being described. One can

envision a professor asking a student to give the facts of a case, to summarize what the court did, and to explain the reasons with comparisons and contrasts with other cases. However, even that exchange between the professor and student can take many forms as is illustrated, for example, by Turow's (1977) descriptions of his first year law classes. Despite the possible variations, the gist of the method was perhaps best expressed by Harry W. Jones (cited in Kelso, 1972), an acknowledged master teacher, when he explained how he used sequences of cases:

1. A general sequence for class learning: encourage students with respect to what they know and have learned; create doubt on some matter; then resolve that doubt or break it into the ingredients of an answer.
2. One very helpful device for creating and resolving doubt is to state hypotheticals or give professional skill variations such as challenging the students to draft a document that will restructure a transaction to change the way in which law applies to it (p. 608).

Jones' explanation also helps show why the case method of teaching is sometimes called "Socratic." Although working with larger numbers than Socrates did, the law professor also uses questions to encourage students in what they know, alert them to what they do not know, and lead them to ways in which the unknowns might be resolved.

The definition of "traditional legal education" also is not meant to imply that only the casebook method of instruction is used in law schools. Levin (1989), for example, outlines the many teaching approaches currently in use. However, as will be further developed in the review of the literature, the case method appears to form the core around which most law schools build the rest of their curriculum. This is especially true when one examines the portion of the curriculum designed to teach legal reasoning.

Finally, in regard to the definition of "legal reasoning," that phrase will often be used interchangeably with the phrase "legal thinking." The reason is that legal literature often uses "legal reasoning" as synonymous with "thinking like a lawyer." Therefore, to the extent that legal literature is used in this study, it will be difficult to maintain a rigid distinction between "legal reasoning" and "legal thinking." However, it is not the intent of this writer to suggest that thinking and reasoning are, in fact, synonymous terms. To a lesser extent, the review of the literature will illustrate a blurring of the lines among the concepts of "thinking," "reasoning," and "problem solving." References to prior studies will follow the terminology selected by the original writer but following that usage is not meant to imply that the writer of this study considers the concepts synonymous.

Plan for this study.

This study has the opportunity to pioneer new approaches to the study of legal education. The review of the literature will show that previous studies of legal education have been based primarily upon the teaching experience of the various writers. This study will break new ground by using multiple data collection and analysis methods taken from both the legal research tradition and the research on thinking, reasoning, and problem solving more generally.

Since this study attempts to break new ground, the review of the literature will have to explain how several different research approaches have been selected and combined. From the legal research tradition, the review will show how the work of Bryden (1984) is closest to the goal of this study. Using Bryden's work as a starting point in the legal research tradition, the review will also show that legal research on legal reasoning has usually focused on the case method of teaching and the use of essay questions as a closely associated measurement method. The use of essay questions turned out, by hindsight, to be central to the results of this study. Therefore the review of the literature

will provide an extended treatment of how the case method has a central role in legal education. That central role led to the use of essay questions in this study.

In examining legal literature, the review also will show why the selected definition of legal reasoning is appropriate for this study. Levi's definition has especially close ties both to the case method of instruction and to problem solving studies more generally. Specifically, his definition can be linked to the work of Polya, Sternberg, Schon, and Collins. Tracing some of these links will help the review's transition to the literature on thinking, reasoning, and problem solving more generally.

The larger body of literature on thinking, reasoning and problem solving will not only help put this study in perspective but it will also provide an additional research tool in the form of thinking aloud protocols. Although other research approaches have been fruitful, and although the use of thinking aloud protocols has occasioned some controversy, nonetheless thinking aloud protocols provide an easily integrated supplement to the previously selected measurement approach using essay questions. Previous research indicates that having persons say what they are thinking does not appear to interfere with a task like writing answers to essay questions. Using both research approaches will allow the collection of both the product data, the written answers, and also process data, the thinking aloud protocols.

Chapter III will be devoted entirely to explaining in more detail how the essay questions and thinking aloud protocols were collected. The outline of the design was that first and third year law students would write answers to essay questions selected to allow the demonstration of the students' legal reasoning. While the students were writing, they were asked to verbalize what they were thinking. Data was collected from each student in individual sessions so that the researcher could observe and videotape the

process. Four kinds of data thus were produced: protocols transcribing the students' thinking aloud comments; written student answers; notes taken by the researcher while observing the students work on the essay questions; and background information about the participants.

Both the written answers to the essay questions and the background information about participants were examined using quantitative methods. The written essay answers were first classified by independent evaluators. The classifications they used were tied to Levi's definition of legal reasoning. Their classifications were converted to numbers so that group means for first and third year students could be computed and statistically compared. Likewise background measures such as undergraduate grade point averages were computed and compared.

The thinking aloud protocols and the researcher's notes were examined using qualitative methods. Selected portions of the students' thinking aloud comments were transcribed into written protocols. Those protocols, in conjunction with the researcher's notes, were then examined for patterns in the students' legal reasoning.

Chapter IV reports the findings of this study. Contrary to the researcher's expectation, the overall finding was that there was no significant difference between the legal reasoning of the first and third year student groups. Even more contrary to the researcher's expectations, the only exception was data from one essay question that showed the first year student group doing significantly better.

Chapter V tackles the problem of discussing and explaining these findings. It reviews a number of possible explanations, including the inherent limitations of this study, the

problems attendant to the use of essay questions, and the nature of what is being learned.

The preceding paragraphs give an overview of this study. The next steps are to place this study within the larger research context and to provide a foundation for the research choices made in the design and conduct of this study. Both of these steps are taken in the next chapter on the review of the literature.

CHAPTER II

REVIEW OF THE LITERATURE

Chapter I provided an overview of this study, its research question, definitions, and research heritage. In particular, it noted that this study of differences in the legal reasoning of first and third year law students is preceded most closely by the work of David Bryden (1984). Therefore legal literature, and especially Bryden's work, will be the starting point of this review. Reviewing the legal literature will contribute to this study both a definition of legal reasoning and a basis for coding its presence in essay question answers. Then this review will place the present study within the larger body of research on thinking, reasoning, and problem solving more generally. In designing this study to go beyond what Bryden had done, especially the technique of using thinking aloud protocols as a data collection method will be drawn from that larger field of research.

Review of law school research.

Formal, empirical study of law school learning is scarce. Teich (1986) and the report of the Special Committee for a Study of Legal Education (American Bar Association, 1980) are good overviews of prior work. Much of that work has consisted of surveys of opinion regarding legal education (e.g., Kahn, 1980). Some studies compared the effectiveness of various teaching methods (e.g., Kimball and Farmer, 1979; Lorensen, 1968) or testing methods (e.g., Wood, 1924; 1925; 1927). Closer to this study is the work of Philips (1982) in using ethnographic techniques to trace the learning of legal jargon or "cant." However, there is one prior study on which this study can build directly. That study was done by Bryden (1984).

Bryden's study.

Bryden studied law school learning by comparing the performance of students who were at early and late stages of their law school program. Bryden's participants were drawn from law students at three excellent American law schools. Random sampling was attempted in selecting students in their last semester of their third year of law school. Since about half of those asked declined to participate, the eighty-seven students who did volunteer cannot be considered a representative sample as Bryden himself notes (1984, p. 482). Beginning first year students were given a general invitation and Bryden then selected those whose law school entrance examination scores most closely matched the already selected third year students. To encourage students to participate, prize money was offered for excellent performance in the study.

Bryden's research procedure was to administer a four question, three hour essay examination to all the participants. The third year students took the examination during their last semester in law school and the first year students took it early in their first semester.

The essay questions were similar to those used for regular law school examinations. Fact patterns, new to the participants, described legal problems such as the possibility of making a legally binding contract in certain circumstances or the possible consequences for a pet cat that was alleged to have bitten two neighbors. Selected legal authorities, both cases and statutes, were included in an appendix.

Students were to find "issues," which are problems usually arising from gaps, ambiguities, or conflicts in the interrelationship of existing law with given facts. The questions were designed to raise certain types of issues that law students would be equipped to isolate and solve. For example, a statute was ambiguous in its possible application to a

set of facts. Students were expected to know that interpreting the statute according to its purpose would be one way to resolve the issue. Likewise two cases in the appendix could have been applied to another set of facts. Students were expected to know how to use the cases based on the distinction between a case's "holding" (its binding legal authority) and its "dicta" (words which might be persuasive but which were not necessary to the decision and thus not binding on a future court).

Bryden and a student each coded the essay answers by counting the number of legal issues which were raised by the examinees and in addition they noted whether the examinees resolved each issue that was raised. Bryden then compared the examinees' responses to what he, as a law school professor, considered to be the issues raised in the questions. Bryden's scoring procedure is consistent with typical law school practice (Delaney, 1982; Kelso & Kelso, 1984; Nickles, 1977; Swygert, 1983; Wood, 1924, 1925, 1927).

Bryden's findings were that "[t]he seniors were nearly always more proficient than the entering freshmen, yet hardly anything was said by a majority even of the seniors." In other words, even the third year law students often failed to raise and discuss issues that Bryden felt were presented by the questions. Bryden supports this summary conclusion by giving footnotes detailing what percentage of first and third year students raised each issue. No inferential statistics were applied to the data. He does, however, provide extensive examples of how the first and third year students responded to some of the questions.

Bryden admits that there are a number of methodological problems with the study. He acknowledges, for example, that his coding techniques were subjective but he compensates by sharing much of the data so that the reader can draw independent conclusions.

A similar technique would have been helpful in regard to the sampling difficulties which he encountered; unfortunately no explanation is given for the large number of students who declined to participate.

One further research question that stands out in Bryden's work is the question adopted for pursuit in the present study. Bryden compared the legal reasoning ability of persons starting law school with those almost finished with the three years of law school. His finding of relatively small differences between those two groups not only was troubling to him as a legal educator but also led him to question whether any difference at all would be found if the group to be compared to third year students were not starting students, as he had done, but rather students who had completed one year of law school. That question, of course, is the one taken up by the present study.

This study will take from Bryden, not only the research question comparing first and third year law students, but also his dependence upon essay questions as a source of data. As will be clearer when the results of this study are discussed, the use of essay questions, for better or worse, was the single most important design decision that was made. Therefore, this review will devote a fair amount of space to explaining why essay questions seem to be an appropriate data gathering source when studying law school learning.

Essay questions as data.

Should essay questions be the heart of this study's data collection? On the one hand, other tasks have proven fruitful in the analysis of analogous problem solving tasks. For example, Elstein, Shulman, and Sprafka (1978) used actors as patients to study the diagnostic skills of physicians. Legal clinics associated with most law schools would present similar research opportunities. However, if the goal is examining changes in legal thinking, then essay questions are closely tied to the law school educational

methods for teaching thinking. The reasons for this close tie are developed in the following paragraphs.

The principal tie between essay questions and law school's teaching of legal thinking comes from the idea that essay questions are like a written continuation of the typical classroom process. As noted in the introduction, the traditional casebook method uses sequences of appellate court opinions. The facts, rules, and reasons of each opinion are compared and contrasted with the others as well as being tested against new hypotheticals proposed by the professor. Discussions typically are between the professor and individual students but all students are expected to follow along vicariously and be prepared to step in and carry the discussion if called upon. This process is described in more detail in, for example, Kelso (1972) or Turow (1977). An essay question can be seen as a written hypothetical to which each student must explicitly respond individually rather than implicitly as part of the classroom group. Thus essay questions closely fit the classroom teaching method.

The second part of the tie between essay questions and law school's teaching of thinking comes from the idea that the casebook method is the primary method of teaching legal thinking. Law schools use a number of teaching methods including lectures, simulations, and clinics (Levin, 1989). However, since about 1870, the casebook method has had a special place in the teaching of legal thinking. The following paragraphs will show this special place by briefly tracing the development of the casebook method.

These materials serve a function in addition to tracing the casebook method. The materials to be quoted are not the product of formal research efforts. All could be dismissed as speculation based upon anecdotal data. However, all the casebook method discussion comes from law professors who have made important contributions to legal

literature. What they say, therefore, at least is data about the professors themselves and their own beliefs about the teaching of legal reasoning. Reading quotations such as those that follow is perhaps the only way to appreciate the depth of the professors shared belief that their teaching dramatically impacts the way that their students think. This belief about the possibility of teaching thinking is important for the present study even if what the professors say about the casebook method is flawed, at least from a research methodology standpoint.

The casebook method began at Harvard as a way of teaching, not so much legal thinking, but doctrine. In the words of Christopher Langdell, its founder:

Law, considered as a science, consists of certain principles or doctrines. To have such a mastery of these as to be able to apply them with constant facility and certainty to the ever-tangled skein of human affairs, is what constitutes a true lawyer; and hence to acquire that mastery should be the business of every earnest student of law. Each of these doctrines has arrived at its present state by slow degrees; in other words, it is growth, extending in many cases through centuries. This growth is to be traced in the main through a series of cases; and much the shortest and best, if not the only way of mastering the doctrine effectually is by studying the cases in which it is embodied. But the cases which are useful and necessary for this purpose at the present day bear an exceedingly small proportion to all that have been reported. The vast majority are useless, and worse than useless, for any purpose of systematic study. Moreover, the number of fundamental legal doctrines is much less than is commonly supposed; the many guises in which the same doctrine is constantly making its appearance, and the great extent to which legal treatises are a repetition of each other, being the cause of much misapprehension. If these doctrines could be so classified and arranged that each should be found in its proper place, and nowhere else, they would cease to be formidable from their number (pp. vi, vii. 1871).

Langdell's basic message was that law could be a science if it restricted itself to the development of doctrines drawn from the primary data of decided cases. The commonplace analogy was that law would be like chemistry with the library as the laboratory.

In Langdell's method, students of the law would learn, not from treatises or apprenticeships, but from casebooks of court opinions under the guidance of, not practicing attorneys, but professional teachers. This had the theoretical advantage of making legal education more suited for a university setting and the practical advantage of allowing a few teachers to instruct large numbers of students.

If law schools still professed to use Langdell's case method primarily to teach doctrine, then the method would have little relevance for the present study of legal thinking. However, as noted by Stevens (1983, pp. 119-120), Langdell's emphasis on doctrine was not totally accepted once it became apparent that the number of legal doctrines to be learned was greater than that predicted by Langdell. Gradually the emphasis turned to producing a "trained mind."

At first the changes were small as the case method's purpose moved from doctrine to mind training. In 1892, William Keener, Dean of Columbia Law School, wrote that at least one modification of the method seemed appropriate:

I think that time can be saved without the sacrifice of substantial benefit *in the first year*, by discussing in some subjects the elementary principles as stated by text writers before discussing the cases on a given topic. This simply for the purpose of acquainting the student with legal modes of thought and expression (p. 149).

After about forty more years, the change from conveying doctrine to teaching legal thinking had gone much further. In 1931, Thomas Konop, based upon his twenty-six years of experience, wrote the following:

The purpose of a law school is not merely to impart knowledge of the principles of the law - to simply stuff the memory of the students, but to train students to think legally.... The decided cases are the authoritative

sources of the Common Law. The study of the law should proceed from these sources (p. 282).

Likewise in 1952, after quoting the previously quoted passage from Langdell, Morgan says:

I have had considerable experience in the classroom with second and third year students whose instruction in the first year has been of varied sorts. And that experience has demonstrated to my satisfaction that men who have not had rigid training by the case method in their first year are likely to have developed habits of superficial thought and a tendency to accept plausible generalizations and to support attractive fireside solutions of difficult problems by ethically appealing but inapplicable legal maxims; they still lack the capacity to discriminate between the legally important and the legally immaterial elements in a complicated situation, although many of them can write a pretty essay on the general principles which might be but probably are not pertinent upon careful analysis. Unless such habits are eliminated and unless such a capacity is developed, the student will continue to be unfit to do the kind of work required of every really good lawyer in any branch of professional activity (p. 387).

Morgan goes on to acknowledge that other teaching methods, including lectures, have a place in law school. However, his conclusion still is that the case method is the "best available method" for giving a student "a sure foundation" to acquire the capacities and qualities that the student needs (p. 391). In a comment that foreshadows the results of the present study, Morgan's conclusion also notes that a foundation is given because three or four years of education are insufficient to equip a student with the needed capacities and qualities.

Reference to more recent articles shows that the case method now is subject to more criticism but it continues to be thought of as the primary way to teach legal thinking. For example, Watson (1968) uses his experience both as a law professor and as a psychiatrist to address the case method of teaching. In his view, the common application

of the method has detrimental effects for the student both in law school and in future legal practice. In law school, the method can lead to psychologically defensive reactions which hinder learning. Although some students adapt successfully, others are driven by stress to perform less well than they are able. In legal practice, the after effects of the case method may leave a student "unemotional" (p. 131) and thus less able to work with people in a service profession. This tracks with the critique of, for example, Redmount (1981).

Watson, however, seeks modifications to the case method, not its abolition:

Let me emphasize that it is a superb teaching technique which must remain a fundamental part of good legal education. There is no question of its effectiveness in developing enormous intellectual skill. However, modifications could be made which would greatly enhance its value (p. 145).

Principal among Watson's suggested modifications are various ways for students to see both the extent of their progress and the need for working with their emotions. Watson also suggests, among other things, that students be given heroes to emulate, that law professors receive interdisciplinary training to sharpen their teaching and counseling skills, that practitioners be involved in the teaching process, and that apprenticeship arrangements be considered to provide what law school cannot.

Finally, Wade (1984) is a good example of a more recent article that supports the use of the case method to teach legal thinking. However, these references to Langdell, Keener, Konop, Morgan, Watson and Wade are not meant to be taken as saying that all legal writers agree with the case method as traditionally used. To help place the preceding references in perspective, the following paragraphs will cite examples of writers who urge more dramatic changes in the case method. However, even while these

writers debate particular aspects of the case method, the implicit assumption will continue to be that the case method plays a central role in the teaching of legal reasoning. This latter point shows why even persons seeking modifications to the case method are still important to this present study. If legal writers across a wide spectrum agree that the case method plays such a role in teaching legal reasoning, then the foundation is laid for an argument to be made shortly that it is advisable to continue to use essay questions as part of the data collection due to the close association that essay questions have with the case method.

The first example of a person seeking more sweeping changes to the case method system is Llewellyn. For example, Llewellyn (1948) noted that: "For it is obvious that man could hardly devise a more wasteful method of imparting *information about subject matter* [emphasis in original] than the case-class. Certainly man never has" (p. 215). Llewellyn's proposed remedy was to supplement the cases with outside readings. Llewellyn also proposed that the current definition of the case method was too narrow:

It is not the judicial decision which is the essence of the "case"; it is instead the concrete *problem-raising situation* - so that, as I see it, any introduction of the so-called "problem method" into law teaching is really but an expansion of the essential merits of *case-teaching*, an expansion obscured only by a current mis-emphasis upon the idea of a "case" as being at best the official report of a judicially decided cause [emphasis in original] (p. 217).

Finally, Llewellyn (p. 218) stated that law schools have not given attention to the type of books which could be substituted for casebooks nor have they combined the available teaching approaches to form "a reasonably rounded, reasonably *reliable* body of training for a *whole* student body" [emphasis in original]. This Llewellyn linked to a social responsibility to make a law degree "*a reliable mint-mark*" (p. 218) [emphasis in original].

Llewellyn suggested changes go further than any of the others because he would substitute hypothetical problems for appellate court cases. This goes to the heart of Langdell's desire to treat cases as original data. However, even in suggesting that the law school case method become more like the case method of, for example, a business school, Llewellyn at least keeps much of the classroom teaching method in place. The discussion materials change from appellate cases to hypothetical problems but much of the rest stays the same.

Another who seeks fundamental changes in the case method is Gross (1984). Gross' concern is with the much larger question of what conception of the legal system should law school convey to students. Much of his discussion rests on the premise that law schools rely too greatly on a nomological model of knowledge and rationality, that it is too often assumed that phenomena are completely determined by laws that can be precisely identified, defined, and proved (p. 393). However, as part of that larger issue, Gross argues (pp. 426-427) that the case method of teaching is too narrow for two reasons. The first reason is that the case method teaches only some of the skills used in legal practice. As Gross notes, the teaching of these broader skills has been treated by, for example, Kreiling (1981). Even if the clinical model of instruction described by Kreiling is not adopted, Gross would address the teaching of those broader skills, in part, by including in the curriculum more writing projects. The second reason for arguing that the case method is too narrow is that the case method, and especially the essay examinations used in conjunction with it, teach students to reason with overly abstracted rules rather than with the legal authority itself. In other words, students learn, especially in preparation for the time pressure imposed by examinations, to reduce cases to simple rules rather than to reason with them in the fuller process described by Levi. Gross argues that addressing this problem could be one part of making students more reflective learners.

As fundamental as Llewellyn's and Gross' suggested changes might appear to be, they are not the most extreme position in current law school thought about the case method. The most caustic critiques flow from writers like Kennedy and Boyle who would turn the method upon itself. For example, Kennedy admits that law school teaches some important skills (1982, p. 595) but he is extremely critical of current teaching, including the use of the case method:

Law schools teach these rather rudimentary, essentially instrumental skills in a way that almost completely mystifies them for almost all law students. The mystification has three parts. First, the schools teach skills through class discussions of cases in which it is asserted that the law emerges from a rigorous analytical procedure called "legal reasoning," which is unintelligible to the layman but somehow both explains and validates the great majority of the rules in force in our system. At the same time, the class context and the materials present every legal issue as distinct from every other, as a tub on its own bottom, so to speak, with no hope or even any reason to hope that from law study one might derive an integrating vision of what law is, how it works, or how it might be changed (other than in an incremental, case-by-case, reformist way).

Second, the teaching of skills in the mystified context of legal reasoning about utterly unconnected legal problems means that skills are taught badly, unselfconsciously, to be absorbed by osmosis as one picks up the knack of "thinking like a lawyer." Bad or only randomly good teaching generates and then accentuates real differences and imagined differences in student capabilities. But it does so in such a way that students don't know when they are learning and when they aren't and have no way of improving or even understanding their own learning processes. They experience skills training as the gradual emergence of differences among themselves, as a process of ranking that reflects something that is just "there" inside them.

Third, the schools teach skills in isolation from actual lawyering experience. "Legal reasoning" is sharply distinguished from law practice, and one learns nothing about practice....

Teachers convince students that legal reasoning exists, and is different from policy analysis, by bullying them into accepting as valid in particular

cases arguments about legal correctness that are circular, question-begging, incoherent, or so vague as to be meaningless (p. 596).

Boyle (1985) demonstrates how Kennedy's ideas can be put into practice in the classroom. According to Boyle:

If there is one issue on which there is general consensus among law teachers, it is that legal education is even sicker than legal scholarship. First year angst, second and third year burnout, not enough theory, not enough practical skills - these themes come up again and again (p. 1005).

The tone of this quotation conveys the passion with which Boyle approaches the topic of law school teaching. Boyle argues, along with Kennedy, that legal reasoning techniques should be taught explicitly rather than simply being modelled. To illustrate how that can be done, Boyle provides descriptions of his day to day classroom teaching. Thus his typical practice is to give students a handout which explains the usual types of arguments based on precedent and policy. He argues that students can thereby learn in thirty minutes how to interpret words either by their dictionary meaning or their purpose, how to phrase a rule broadly or narrowly, and how to select among common pairs of policy objectives such as morality as freedom versus morality as security or the need for a firm rule versus the need for a flexible standard.

On the one hand, Boyle's use of a handout is consistent with the previous remarks of Keener and even the texts of Langdell's other followers included material other than just collections of appellate case reports (e.g., Ames, 1893, 1894, 1904). On the other hand, the handout is a call for a dramatic change. The summary of his handout states:

Neither the precedential nor the "policy" arguments are capable of providing a neutral, "correct" answer. You must learn to use these arguments, if you wish to convince decision makers. You cannot rely on them, or the system they justify, to provide you with moral or political guidance. In fact, the most dangerous thing about these arguments is that

they tend to discourage committed moral or political thought about the legal system by making you feel insecure or powerless (until you learn them) and at the same time by offering tools to knock down any suggestion for change. But this cuts both ways. Remember that it also means that the arguments which people give you about why the status quo is "simultaneously natural, inevitable and just" - that these arguments are also vulnerable to deconstruction. The choice is yours (p. 1063).

The preceding references to Llewellyn, Gross, Kennedy, and Boyle demonstrate forcefully that not all law professors today agree with the case method of teaching as it has evolved from the time of Langdell. However, for the purposes of this study, the point again is that the case method, and therefore essay testing, are an integral part of the law school experience even in the eyes of those who seek major modifications in the method. In addition, the preceding references demonstrate the depth of these law professors' belief that their teaching has a major impact on their students' legal thinking.

The preceding discussion presents an indirect argument for the importance of essay questions as a source of data on the learning of legal thinking. The argument was that the case method of instruction has historically played a central role in the teaching of legal thinking. Therefore it was argued that the learning of legal thinking should be measured by a test that was very similar to the case method of instruction. Essay questions filled that role since they were like written hypotheticals forming the next step beyond the classroom discussion.

Another way to demonstrate the importance of essay questions is more direct but less explanatory. Reference will again be made to the work of Wood (1924; 1925; 1927) at Columbia Law School. Wood worked with law school professors to construct twenty-two objective tests in twelve courses over three years. The purpose of the tests was to study the ability of those tests to measure reasoning ability as compared with the like

ability of traditional essay tests. Although some of the tests consisted of all objective questions, other tests were part objective and part essay. The objective test portion of a combined examination consisted of from 60 to 200 questions and the essay portion typically was three or four questions (1924, p. 247). In discussing the ability of the objective tests to predict future performance in law school, Wood drew this conclusion from some of the 1927 data:

Every correlation presented, without exception, clearly and consistently favors the conclusion that the new-type [objective] examinations give more accurate and more reliable measures of reasoning ability than old-type [essay] examinations of equal or greater time allowance, both when we compare the new and old-type examinations singly or in combination. In the face of such data, it seems impossible that the idea could persist that the objective examinations measure only factual knowledge and isolated bits of information (1927, p. 795).

Despite Wood's conclusions, law school examinations still are dominated by essay questions. More specifically, essay questions dominate at the institution where this research was conducted. The persistent use of essay questions, in the face of Wood's critique, more directly shows how deeply embedded essay questions are in legal education practice.

This study continued the use of essay questions due to both the direct and indirect arguments which have been detailed here. Although alternative data collection methods had been fruitful in other studies, particularly the use of live actors as simulated clients or patients, still the use of essay questions appeared reasonable in light of the connections between essay questions and legal education. Due to the importance of the decision to use essay questions, those connections with legal education have been developed at some length. However, as mentioned earlier, the decision to use essay questions will be revisited when the results of this study are discussed. The decision will

be revisited because the use of essay questions may be the single most important factor underlying the results of this study. The reasons for the importance of using essay questions will include the insights of Gross presented above, especially his idea that students learn, not Levi's reasoning by analogy, but an oversimplified method of using abstracted rules.

Legal reasoning and its coding.

Even if Bryden's research question about first and third year students is adopted, and even if essay questions are used to collect data, the further question remains of whether Bryden's coding scheme should be maintained. Bryden coded "issues" based upon interpreting a statute according to its purpose, distinguishing between the "holding" and "dicta" of a case, and the like. Although this approach provides indicators of legal reasoning which are clearly tied to the case method of instruction, a review of legal literature shows that "legal reasoning" has been defined in ways that permit other coding methods.

As an overview, legal reasoning, sometimes called "thinking like a lawyer", has been examined from a number of directions. Some have focused on the legal education process either from the perspective of law professors (e.g., Boyle, 1985; Brown, 1983; Cox, 1976; Friedland, 1986; Kelso, 1972; Llewellyn, 1960) or law students (e.g., Turow, 1977; White, 1983). Kahn (1980) constructed a taxonomy of legal thinking skills based largely on survey data from law students, professors, and practitioners. Moreover the American Bar Association has sponsored numerous studies of legal education. A good example is the 1980 report of the Special Committee for a Study of Legal Education. Gee and Jackson (1982) provide a good overview of legal education studies.

Legal education and legal reasoning have also been studied from other perspectives, most of which could have been used as the basis of this study. Teich (1986), as

mentioned earlier, provides a good summary of prior empirical research on law school teaching methods, including the previously referenced studies of Kimball and Farmer (1979), Lorensen (1968), and Wood (1924, 1925, 1927). Crombag, de Wijkerslooth, and Serooskerken (1975) attempted to reduce legal problem solving to a flow chart. Schwartz (1980) and Thielens (1980) describe the socialization process of which thinking like a lawyer is a part. Philips (1982) used ethnographic techniques to study socialization from the aspect of learning the particular "cant" or language in which legal thinking is expressed. Sarat and Felstiner (1986) used similar techniques to describe what an attorney does during an actual client conference. Frank (1947) wrote about clinical legal education. Boyum and Mather (1983), Jensen and Horvitz (1979), Nagel and Neef (1979), and Spaeth (1979) all use decision theory to model legal reasoning. Brkic (1985) describes it from the perspective of formal logic. Gardner (1987) and Tito (1987) explain legal reasoning in the context of artificial intelligence. Stevens (1983) provides a historical perspective by tracing how thinking like a lawyer has been taught in America since 1850 and Consalus (1978) covers the Colonial period. Parallels have been drawn between legal reasoning and taking photographs (Conniff, 1985), writing history (Berlin, 1960), and interpreting literary works (Dworkin, 1985).

In addition to the preceding, two other perspectives could have been used as the basis of this study. One would be a philosophical perspective. This is an attractive possibility since this is the most elemental level on which to consider what thinking like a lawyer really means. Burton (1985), Golding (1984), Goldstein (1987), and MacCormick (1978) give good introductions to legal reasoning in a philosophical context. Dworkin (1978), Fuller (1964), Hart (1961), and Kelman (1987) are good examples of the vast literature developing the concepts in more detail.

The other attractive perspective from which to work would be based upon the lists or catalogues of legal education objectives developed by, for example, Cort and Sammons (1980), Holmes (1976), and Strong (1950). Wangerin (1986) reviews much of this work and adds some contributions of his own. Each of these lists attempts to present an overview of the capacities which a law student needs to become a lawyer. Thus Holmes includes descriptions not only of legal analysis and synthesis, but also such skills as legal drafting, counseling, and negotiation (p. 579). He also attempts to present common ground for all the different law school teaching approaches.

Cort and Sammons developed detailed definitions of generic competencies for use in evaluating law students performance in a law school clinical setting. Their approach also received support when the State Bar of California Bar Examiners (1988) adopted parts of it in the practice competency section of their bar examination.

However, for a study of the changes taking place in law students during law school, one definition of "legal reasoning" seems especially attractive because it is so closely tied to the essential ideas behind the casebook method. The definition was developed by a law school classroom professor, Edward Levi, a long-time professor of law at University of Chicago. Based upon his own experience in teaching from appellate opinions, Levi (1949, pp. 1-2) said:

The basic pattern of legal reasoning is reasoning by example. It is reasoning 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 the 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.

The balance of Levi's book consists of extended examples of legal reasoning drawn from sequences of appellate opinions. Part of one of those sequences, the one on the law of product liability, is included in the torts textbook (Prosser, Wade, and Schwartz, 1982) which all participants in this research project had studied. Jaff (1986) and Suber (1988) provide examples of how Levi's definition fits closely with law school teaching.

Levi's approach also has the advantage of describing a process which makes it more suitable for this study than the doctrine oriented approach of Langdell (1871), the closely associated definition of Holmes (1976), or Cort and Sammons' (1980) product oriented analysis. Levi's description also is at a convenient level of abstraction. On the one hand, Levi himself stresses (e.g., 1949, p. 7) that legal reasoning is not primarily a deductive process applied to an existing rule; reasoning by example is the more fundamental level of logic which is used to select rules or premises to be applied in a given situation. On the other hand, it does not propose to settle which of two conflicting analogies necessarily must be selected. That selection might well involve philosophical analysis on which there is no present consensus in the legal field. In other words, using Levi's definition provides the advantage of allowing a middle level of process analysis to which law students would have received repeated indirect exposure in their case method study of appellate opinions.

As will be developed in more detail in Chapter III, Levi's definition provides the basis for a system of coding different from the issue counting of Bryden. Levi's definition focuses on the role of case analogies in legal reasoning. Thus, if a person is using legal reasoning as described by Levi, they will mention cases. References to cases might prove to be easier or less ambiguous to code than the categories used by Bryden. Thus, although counting case references would be an indirect measure of legal reasoning, it still might be a better method than Bryden's counting of issues. In addition, Levi's

definition has the advantage of describing legal reasoning even when the reasoning does not complete all the steps described by Levi. If a student uses only a rule, as Gross (1984) would predict, this still can be described in Levi's terms as being a truncated version of the more complete process. The use of the rule is counted even if the rest of the process is absent. Thus the coding still can work even if, for example, a deductive reasoning process is being used.

Levi's definition of legal reasoning, although developed in the legal context, also has the advantage of being paralleled by problem solving findings in other contexts. These parallels help link the concept of legal reasoning to the more general field of problem solving. It is not difficult, for example, to make connections between Levi's definition and the works of Polya or Sternberg. One of the closest parallels comes from the protocol analysis work of Schon (1983; 1987). Schon studied, among other things, the interactions between a teacher and student of architectural design. Based upon his observations, Schon isolates three levels or conceptions of thinking during problem solving. The first level is the use of facts, rules, and procedures to solve instrumental problems nonproblematically (1987, p. 39). Teaching this level of thinking is a form of technical training in which, as Schon puts it:

[s]tudents would be expected to acquire the material by reading, listening and watching, familiarizing themselves with examples of practice problems matched to the appropriate categories of theory and technique. Coaching would consist in observing student performance, detecting errors of application, pointing out correct responses. (1987, p. 39)

The second level of thinking is where problem solving is viewed as "thinking like a ____". On this level, Schon states:

students will still learn relevant facts and operations but will also learn the forms of inquiry by which competent practitioners reason their way,

in problematic instances, to clear connections between general knowledge and particular cases. The standard drills of law school classroom and the medical clinic exemplify this view. In a practicum of this kind, there is presumed to be a right answer for every situation, some item in the corpus of professional knowledge that can be seen, eventually, to fit the case at hand. (1987, p. 39).

The third level of thinking is an extension of the second level but concentrates not on rules of inquiry assumed to be available to solve all problems but instead focuses on what Schon calls "reflection-in-action". This concept is developed in both of his books but he states the general idea as follows:

We will see students as having to learn a kind of reflection-in-action that goes beyond storable rules - not only by devising new methods of reasoning, as above, but also by constructing and testing new categories of understanding, strategies of action, and ways of framing problems. Coaches will emphasize indeterminate zones of practice and reflective conversations with the materials of a situation. (1987, pp. 39-40).

Both Levi (1949) and Schon (1987) leave open the question of how a problem solver finds an analogy or sees a new way of framing a problem. In the legal context, some insight on this process may be provided by the work of Collins (1985). His studies also used protocols to study legal teaching. His subjects included well-known professors like Max Beberman, Richard Anderson, Arthur Miller and Roger Schank.

Collins identified ten major strategies which inquiry teachers use in choosing cases (1985, pp. 580-581). The ten can be arranged in five pairs of cases: positive and negative paradigm; near miss and near hit; maximal and minimal relation; independent or dependent variable range; and insufficient or unnecessary factor counter example. Although Collins warned that the list is incomplete, especially for law schools where the cases may be in the form of hypotheticals, still the pairs add detail to optimal

learning sequences such as that suggested by Gagne (1977, pp. 119-120) for concept learning.

In addition to the listing of types of cases used in inquiry teaching, Collins listed eight strategies that are used to force students to learn reasoning skills. Those eight were: asking students to form hypotheses; asking students to test hypotheses; asking students to make predictions; asking students to consider alternative predictions; entrapping students into revealing their misconception; tracing consequences to a contradiction; encouraging students to formulate alternative hypotheses; and encouraging students to question authority.

Collins' (1985) findings supplement the findings of Bryden, Levi, and Schon. Bryden counted the number of issues raised by his subjects. Levi referred to the use of analogies as central to legal thinking. Schon made reflective thinking the center of his discussion. However, as noted earlier, Bryden, Levi, and Schon all left much unsaid about how the subject originally would isolate an issue or pick an analogy or begin a new cycle of reflective thought. More generally, Dillon (1982) has noted that not much is known about "problem finding" as opposed to problem solving.

In this regard, Collins (1985) might have helped. Although a distinction might be drawn between techniques of teaching problem solving and techniques of problem solving, still Collins' list of case types and teaching strategies might have served as guides when measuring problem solving learning. This possibility arose from the research of those like Bandura (1965) who found that modeled behavior was likely to be imitated. In the present study, law school professors will have modeled certain techniques in the process of teaching problem solving. When student problem solving is observed, one could hypothesize that some of those techniques might appear even though it must be granted

that the task facing the student is very different from that which faced the professor. For the professor, the techniques might help in selecting the next question to ask in order to assist a learner. For the student, the techniques might help in finding an appropriate analogy to solve a legal problem. Thus Collins' list of techniques might have provided clues on what to look for when legal reasoning is examined in protocols. However, as will become clearer in Chapters IV and V, the data actually gathered in the present study did not lend itself to analysis using Collins' lists.

Despite the nice meshing of Levi's definition with the work of Schon and Collin's, not everyone would agree that reasoning by analogy is the best definition of what students learn in law school. In part this has been foreshadowed in the exchange between King James and Lord Coke which was quoted in Chapter I. Just as King James felt that he had science and reason and therefore he did not need specially educated judges to decide cases, so some scholars would support the possibility that law students come to law school already equipped with the reasoning process described by Levi and therefore the scholars question how time is spent in law school. On a very general level, this would be supported by Minsky's (1986) observation that our language is riddled and stitched with analogies and metaphors. In the legal context, Mudd (1983, pp. 705-706) has questioned how legal thinking differs from what students learn in undergraduate courses. Hornstein (1981) likewise argues that legal reasoning is good reasoning applied to legal materials. Fejfar (1986), relying upon Lonergan (1957), states that: "Much of a law student's education, as well as a lawyer's practice, involves common sense, rather than purely logical or scientific understanding." Part of Lonergan's description of common sense sounds much like Levi's description of legal reasoning:

Common sense, on the other hand, never aspires to universally valid knowledge and it never attempts exhaustive communication. Its concern is the concrete and particular. Its function is to master each situation as it arises. Its procedure is to reach an incomplete set of insights that is to

be completed only by adding on each occasion the further insights that scrutiny of the occasion reveals. (Lonergan, 1957, pp. 176-177)

If legal reasoning is common sense, then interesting linkages might exist with work currently being done on informal logic (e.g., Blair & Johnson, 1980). However, if legal reasoning is common sense already possessed by the students, then this could have a dramatic effect on a study, such as this one, which attempts to measure law school learning. This topic will come up again in Chapter V during the discussion of the results of this study. In any case, the debate over the nature of legal reasoning helps to illustrate how a review of the legal literature soon leads to literature on thinking, reasoning, and problem solving more generally. It is to that literature that this review now turns.

General literature on thinking, reasoning, and problem solving.

Reviewing legal education literature provides not only a starting point in Bryden but also a basis for using essay questions in the study of legal reasoning. However, further insights into the present research question are provided by work that has been done in regard to thinking, reasoning, and problem solving more generally. This has already been demonstrated by, for example, reference to the work of Schon and Lonergan. In addition, this section of the review will draw from that body of work especially the idea of using thinking aloud protocols to supplement the data being gathered in the essay questions.

It is not the purpose of this review to exhaustively cover prior work on thinking, reasoning, and problem solving. That literature stretches back even beyond the dialogue of Socrates with Menon (Plato, ____ B.C./1956). For a person who wishes to review more of that literature, at least the more recent portions have been surveyed in the works of a number of authors. Good examples include the works of Mayer (1983),

Nickerson (1988), Nickerson, Perkins, and Smith (1985), and Shuell (1986). Edited works include: Baron and Sternberg (1987); Johnson-Laird and Wason (1977); and the two volume set by Segal, Chipman, and Glaser (1985). Frederiksen (1984), Hill's (1979) bibliography, and Rowe (1985) concentrate on problem solving. Edited works on problem solving include Groner, Groner, and Bischof (1983) and Tuma and Reif (1980). Bloom and Broder (1950) discussed the problem solving process of college students. Chi, Glaser, and Farr (1988) edit a collection on the nature and acquisition of expertise. Kennedy (1987) concentrates on the development of expertise in the context of professional education.

The preceding reviews show that, as was the case for legal education, some programs which teach thinking have been the subject of relatively little formal research. For example, the works of de Bono (1967; 1976; 1986), Polya (1954; 1957), and Whimbey and Lochhead (1981) have been widely accepted and used but much of that acceptance and use appears to be based upon intuitive appeal rather than extensive formal evaluation. Of course this does not mean that no evaluation of the programs has been done. Lochhead (1985), for example, reports on how parts of his program have been evaluated. However, some programs have been subjected to much more evaluation. For example, IE or FIE (Feuerstein Instrumental Enrichment) program of Feuerstein (Feuerstein, Hoffman, Jensen, & Rand, 1985) is a program which has been formally tested a number of times as illustrated by the review of Savell, Twohig, and Rachford (1986).

The reviews also show that, compared to the legal literature, there is an even greater split between studies which support or undermine the proposition that thinking, reasoning or problem solving can be taught. On the supporting side are studies like Nisbett, Fong, Lehman, and Cheng's (1987) success in teaching inferential rules,

Ghatala, Levin, Pressley, and Lodico's (1985) results in teaching cognitive strategy monitoring to second graders, and Woodward, Carnine, and Gersten's (1988) reported improvements to problem solving skills through the use of structured teaching and computer simulations.

Even closer to this study would be successful programs based on Sternberg's (1977; 1982) work on analogies. Polya's work would have fit into this category but, as Newell (1983) notes, Polya's work is often overlooked. In any case, Alexander, White, Haensly, and Crimmins-Jeanes (1987) is a good example of a successful program based upon Sternberg's work. It is especially interesting for the law school context because, although based upon work with fourth graders, it supports the proposition that direct classroom instruction can help with analogical reasoning.

On the other hand, there are also studies which undermine the proposition that thinking, reasoning, and problem solving can be taught. For example, if behavioral decision theory studies are consulted, a number would call into question the very kind of learning which law school attempts to provide. Johnson (1988) is a recent summary of the implications of those studies across contexts such as graduate admissions office decisions (Dawes, 1971), economic forecasting (Armstrong, 1978), and clinical psychology (Goldberg, 1970). Likewise the studies of Elstein et al., (1978) and Feltovich, Johnson, Moller, and Swanson (1984) indicate that learning a knowledge base is the key to expert problem solving.

Thinking aloud protocols as data.

Reference to the wider field of thinking, reasoning, and problem solving thus does not provide unequivocal support for the proposition that thinking, reasoning, and problem solving can be taught in schools, even if the school is a law school. However, the studies do provide something else for this study. Many of the studies in other areas use, not the

essay questions of law school, but thinking aloud protocols produced by making a transcript of what a person says when asked to say what they are thinking while problem solving. Newell and Simon (1972) demonstrated the use of the method with puzzle solving but it soon was used in expert-novice (Elstein et al., 1978; Feltovich et al., 1984) and naive-novice (Voss, Blais, Means, Greene, and Ahwesh, 1986) comparisons.

Collection of thinking aloud protocols has not met universal approval. Nisbett and Wilson (1977) present detailed arguments against them, including the idea that thinking aloud interferes with the task being studied. However, Ericsson and Simon (1984) answer many of those arguments, at least in a context where concurrent verbal explanations are close to the mental verbalizations likely to be involved in the task. For example, concurrent verbalization might not interfere with execution of a mental task like a Tower of Hanoi problem but might well interfere with a task like hitting a baseball.

Likewise Johnston and Afflerbach (1985) addressed the problem of experts not verbalizing what they were doing because the processes appeared to be elemental. Johnston and Afflerbach believed that the processes were not elemental but rather were automated from long practice. They found that selecting the appropriate level of difficulty for a question could increase the amount and quality of data gathered. Increasing the difficulty of the questions apparently caused the experts to move more toward novice performance. When operating closer to the novice level, the automated processes disappeared and the steps in the thinking process were rendered accessible.

Although studies such as those of Ericsson and Simon and Johnston and Afflerbach address some of the criticisms of thinking aloud protocol methodology, they do not answer all the questions, particularly in regard to combining thinking aloud with the

task of writing answers to essay questions. In addition, alternative research methodologies are available. As mentioned earlier, Johnson (1988) collects a number of studies which have used judgment and decision theory to study experts. Shulman and Elstein (1975) explain various judgment and decision theory approaches. They also distinguish those approaches from process tracing approaches, including thinking aloud protocols, and give examples of contributions attained by each approach.

No one research approach has emerged as the method of choice. However, given the emphasis of this study on reasoning rather than, for example, decision making, it would appear that the use of thinking aloud protocols would be a good research approach to supplement the data collection from essay questions.

Summary.

The goal of this study is to examine the differences in the legal reasoning of first and third year law students. Because the starting point for this study would be Bryden's work based in the legal research tradition, this review first examined works in that scholarly tradition. That review showed that the use of essay questions was deeply embedded in both law school teaching theory and practice. The key to the wide-spread use of essay questions appeared to be their close connection to the type of discussion typically conducted in a law school class using the case method of teaching.

Regarding the definition of the key phrase "legal reasoning", a number of options presented themselves in the literature. The basis for these ranged from the Langdell's doctrinal emphasis to the practice oriented descriptions of Cort and Sammons. For purposes of studying the effect of classroom learning, the definition developed by a classroom professor was selected as most closely tied to the case method of instruction.

The process described in Levi's definition also had the advantage of facilitating coding and of paralleling the processes described by, for example, Schon.

Although Bryden's study provided the research question and initial outline for this study, and although review of other legal research both provided a definition of legal reasoning and reinforced the advisability of using essay questions to elicit data, the more general literature also made contributions. The impetus for conducting this study was increased by the possibility of contributing to the ongoing controversy about whether thinking, reasoning, and problem solving can be taught. In addition, the general literature provided an additional research tool in the form of thinking aloud protocols. This tool would assist data collection on participants' thinking processes at the same time that the written products in the form of essay answers would be gathered.

Much of this study's design has taken shape during this review of the literature. However, the more detailed description of the resulting research plan now will be taken up in Chapter III.

CHAPTER III

PROCEDURE

In order to examine the differences between the legal reasoning of first and third year law students, this study used a new combination of research techniques drawn from both previous legal and social science research. From the legal research area, the central role of the law school case method of study led to the use of essay questions to collect data about legal reasoning. The definition of legal reasoning, and the essay scoring scale presented in this chapter, likewise were tailored to measuring the legal reasoning of persons who had studied using the case book method. From the broader area of research on thinking, reasoning, and problem solving, the technique of using thinking aloud protocols was drawn. The basic idea was that thinking aloud protocols would capture data about the students' thinking processes at the same time as they created their essay answer data. Thus there would be from first and third year law students both process data, the thinking aloud protocols, and product data, the essay answers, which could be analyzed for differences. The rest of the data collection and analysis would be built around the core of product and process data.

Since this study breaks new ground, the design selected emphasizes exploration of the students' legal reasoning rather than an in depth replication of an existing line of research. The emphasis on exploration led to multiple approaches both for data collection and data analysis. For data collection, four kinds of data were collected from both first and third year law students: product data in the form of essay question answers; process data in the form of thinking aloud protocols; general data from the observations of the researcher as the students worked on the questions; and background data collected to double check the equivalency of the two groups of students who were

being compared. For data analysis, the methods included: visual inspection and statistical analysis of numerical data like the essay answer scores and the background undergraduate grade point average data; computer searches of the essay answers for the frequency with which key terms were used; and the researcher's individual scanning of both the thinking aloud protocols and the researcher's notes to determine if thinking patterns could be isolated and compared.

The starting point for explaining the design will be the details of how the students were selected and grouped for study. Then the data collection and data analysis methods will be presented in more detail. The central concern of each step in the design will be to assist in answering the question of how the legal reasoning of first year law students compares to that of third year students.

Participant selection procedures.

Population.

The population to be sampled consisted of students at an accredited midwestern law school. Selecting this population had both benefits and drawbacks when compared to the populations used in other studies. On the benefit side, selecting students from an accredited, but not "top twenty", law school provided an opportunity to study students from a population that has not been represented in prior studies. Bryden's students, for example, were only from top law schools. In addition, the particular midwestern school selected had a much higher than average number of required courses. Thus the three year curriculum was more uniform than at schools which allow more elective courses. This increased uniformity lessened the uncontrolled variation in the educational experience of the third year students who were selected to participate.

A more subtle curb for uncontrolled variation was that the students at the selected institution were all "part time" students. Part time students take fewer credit hours per semester but still complete the program in three years due to the availability of summer sessions. The course sequences that they take are the same as would be taken by full time students. However, the commuting or employment responsibilities typical for a part time student often shield the part time student from some informal educational influences. The full time student is more likely to be present at a law school outside of required class hours. This allows full time students the luxury of an opportunity, for example, to have a coffee break in the lunchroom with a professor. A part time student dashing from the office to class would not get that same opportunity. This leads to the somewhat ironical result that the part time students selected in this study may have been more representative of the results of traditional legal education than full time students would be because the part time students have had less exposure to informal sources of legal education.

The drawbacks to using this population include those associated with selection at only one institution and with the use of volunteers. Each of these drawbacks will be discussed separately in the following paragraphs.

The ability to generalize from the results of this study will be qualified by the decision to select students at only one institution. However, in addition to the benefits mentioned previously, this decision also appears reasonable in light of the results of Bryden's study. Bryden found that the results were "suggestively consistent" from school to school (1984, p. 500). This finding is not surprising in light of the uniformity in content and method in traditional legal education. Therefore restrictions on the ability to generalize may not be as severe as they might first appear.

The drawbacks of using volunteers are well documented in the literature. However, given the nature of the highly intensive type of testing involved in this proposed study, it appeared that there was no reasonable alternative to the use of volunteers, at least if student rights are to be adequately protected.

Informed Consent.

Since the principal researcher is himself a law professor who could be viewed as an influential person regarding future decisions affecting student participants, special care was devoted to obtaining the free and informed consent of participants. Fortunately the research site had two characteristics which greatly assisted the protection of student participants. The first characteristic was that almost all courses at the law school use anonymous grading; the only exceptions were courses in which the principal researcher could easily avoid involvement. The second characteristic was that all participants had a minimum of twenty semester credit hours of law school and thus already had studied the law of Torts. Torts includes the study of the doctrine of informed consent and thus participants in this study were better equipped to make a free and informed decision.

The primary method of insuring informed consent was through the use of the consent form which accompanied the participation invitation letter (Appendix "A"). The consent form contained numbered paragraphs setting forth the following points. Paragraph 1 summarized the purpose, procedures, and duration of the research. Paragraph 2 expressed the participant's agreement both that the research has been explained and that the participant understands it, including the following two risks. One risk is the stress associated with the taking of a three hour essay examination. The other is the possibility that the results of the essay examination may not be in accordance with the participant's own self image. Paragraph 3 explained that the principal researcher retained the right to grade participants in future law school courses if those courses use the school's anonymous grading procedure. It also explained that the principal re-

searcher would not join in law school decision making concerning an individual participant unless the participant made a written request asking the principal researcher to join in a particular decision process. Finally, paragraph 3 indicated that prospective participants should not sign the consent form unless they understood the role of the principal researcher as it was set forth in paragraph 3. Paragraph 4 stated that the participants were free to discontinue participation at any time without recrimination. Paragraph 5 stated that all results would be treated with strict confidence regarding the identity of any participant but that individual participants would be able to obtain their own results if they so desire. Paragraph 6 stated that participation involved no guaranteed benefits to the participants other than the agreed fee paid for their participation. Paragraph 7 stated that signing the form indicates that the signer freely consents to participate.

The consent form also included the phone numbers of two persons from whom additional information could be obtained by prospective participants.

Sampling.

Volunteers were solicited from students who were in either their third semester or in their eighth or ninth semester of law school. An invitation was mailed to each student followed by classroom announcements. The letters (Appendix "B") included a tear-off section on which students could volunteer by writing their name, address, and telephone number. Participation was encouraged by offering twenty-five dollars to each volunteer who was chosen for participation.

Forty-eight students volunteered. Of the forty-eight volunteers, eight were not eligible for participation: five had cumulative grade point averages below a 2.0 and three had completed between forty-five and sixty credit hours and thus did not qualify for inclusion in either the first or third year group.

Each of the remaining forty volunteers were sent a letter (Appendix "C") asking them to schedule a data collection session at a time that would be convenient for them. Using letters to invite the students avoided the possible coercive effects attendant to an in person solicitation from a person, in this case a law professor, who could be viewed as being in a position of authority over the student. Letter invitations also standardized the information given to each student and thus avoided the possible confounding effects of information that might slip out in a conversation with the student.

Sessions were scheduled at all times of day on all days of the week to accommodate participants. Nevertheless, of the forty eligible volunteers, only thirty-one took the additional step of signing up for a session and this number was reached only by extending the sign up period three weeks longer than originally planned. Fortunately, of the thirty-one students, sixteen were first year and fifteen third year. One first year student was used for a trial run of the data collection process and this left an even number of students in the two groups. Since about one hundred ten first year students were eligible, between fourteen and fifteen per cent actually participated. For the third year students, the participation rate was between six and seven percent since fifteen participated out of a total eligible pool of about two hundred thirty.

Data collection.

Data was collected at individual administrations of four essay questions (Appendix "D") during a three hour session. The four essay questions were drafted by the principal researcher. All of the questions also were reviewed by a panel of two law school professors. Each of these professors had well over ten years of legal education experience. This panel approved the questions as to form, substance, and likelihood of eliciting "legal reasoning" as defined in this study.

The legal subject matter covered by the questions was confined to the areas of substantive law covered in the first year of law school: contracts, crimes, civil procedure, property, and torts (torts are civil wrongs, other than breach of contract, such as defamation and civil fraud). This offset the superior substantive knowledge of the third year students with the more recent exposure of the first year students to the materials.

Previous experience with law school examinations indicated that three hours would be more than enough time to complete the four questions, even with time allowed for verbally describing one's thoughts while writing. Only one student came close to using the full three hours and even that student did not complain of time pressures.

The essay questions were drafted to present problems for which there exists no single, easy answer. This was done in the hopes of eliciting more legal reasoning by avoiding automated processes in the same way as Johnston and Afflerbach (1985) did in their reading comprehension study. However, the absence of a single, simple answer did not mean that the questions were impossible or even very difficult. The questions were well within the capabilities of even the first year law student participants.

As previously noted, a three hour block was scheduled to accommodate the student's schedule. Data was collected in two ways. First, as in Bryden's study, students were asked to write answers to each of the four essay questions. Second, the students were asked to verbally describe what they were thinking while they were writing the essay answers. A videotape camera and recorder were used to capture these verbal responses. No time limit was given for each question but the students were asked to complete the four questions within the three hour block and a clock was provided to assist the students in keeping track of the time. Both the number of questions and the time allowed would be typical for a law school examination.

To make data collection seem more like a lawyer's typical office work, and less like a law examination, students wrote their answers while seated at a desk in an office. Writing was done on yellow legal pads rather than examination bluebooks. Students were told that could take a break at any time to get a cup of coffee, use the washroom, etc.

Prior to beginning writing, each student signed a statement attesting to the fact that the student had not discussed the essay questions with any of the other participants, either directly or indirectly. Each student was also given warm up instructions (Appendix "E") and two scrambled letter problems so that they could practice the thinking aloud procedure. The two scrambled words used, in the order given, were "koro" (rook) and "npepha" (happen). After the students had worked through these words, they were asked to select one set of questions from forty sets spread face down on the desk. The sequence of questions in each set had been systematically varied so that the question that was first in the first set became the second question in the second set and so forth. The resulting forty sets of questions then had been shuffled. By selecting one of the face down sets, the student received a randomly assigned sequence of questions.

After completion of the essay questions, participants were asked to fill out a questionnaire (Appendix "F"). This questionnaire collected data on participants' legal experience outside of the required courses. Included was information on elective courses taken, employment experiences if legally related, and close associations, if any, with attorneys. This information served to give some indication of what other factors may be affecting the performance of participants.

Data Analysis.

The students' written responses and their verbal comments were analyzed in two stages. First, the written answers were anonymously classified by a panel of eight coders, each of whom had experience with the law. Second, the principal researcher examined the students' written answers in conjunction with the students' concurrent verbal comments and the researcher's observation notes in an attempt to further understand what the students did and did not do and why. The goal of both stages of the analysis was to answer the primary question of how the legal reasoning of students who have completed almost one year of traditional legal education compared to the legal reasoning of those students who have completed almost three years.

Both stages of data analysis followed the work of Levi as summarized in Levi's previously quoted definition of legal reasoning. To assist the evaluation of students' legal reasoning, that definition was used as the basis for a classification scale (Appendix "G") which was given to the panel of eight coders who evaluated the student answers. The scale's classifications were defined according to the type of authority used by the student and whether the facts of the question or previous legal case were used in the student's answer. The types of authority recognized included nonlegal authority, legal rules, and prior case law such as a reported decision of an appellate court.

This approach to coding was chosen as the best way to indirectly assess the extent to which students were using Levi's reasoning by analogy. If a student were to use all three of Levi's steps, the student would have to mention the facts of the previous case, the facts of the present problem, how the two sets of facts compared and contrasted with each other, the disposition of the previous case, the legal rule which could be developed from consideration of both sets of facts, and the disposition for the present problem.

Thus, the extent to which a student worked with both the facts of the cases and of the problems would be one indication of reasoning by analogy. If, on the other hand, a student mentioned only a common sense or legal rule, it would indicate deductive reasoning that stops short of using all of Levi's steps.

The coding classifications forced the coders to separately consider whether the answer was based upon the use of facts and whether it used a given type of authority. Breaking the coding process down into these steps was an attempt to achieve higher reliability in coding than if the coders were simply given Levi's definition and asked to evaluate the extent of its use in an answer. Breaking the coding process into separate steps for facts and authority also attempted to achieve higher reliability than would have been achieved with the use of issue counting in the manner done by Bryden.

Letter combinations, such as "NLAA" (nonlegal authority alone) or "CF-C&P" (Case with Facts of the Case & this Problem) were used to indicate both the type of authority being used and whether that authority was used in conjunction with facts or not. The combinations used were: NLAA (Non Legal Authority Alone); NLAF (Non Legal Authority with Facts); RA (Rule Alone); RF (Rule with Facts); CA (Case Alone); CF -C or P (Case with Facts of Case or this Problem); and CF - C&P (Case with Facts - Case and this Problem). The use of letters instead of numbers helped the coders remember what each classification was and it also avoided the inference that one classification was necessarily better than another. The principal researcher met with each coder and used a practice question and answers (Appendix "H") to assure that the classifications were applied correctly by the coder. The practice answers were obtained from student responses to a classroom exercise which was otherwise unconnected to this study.

First stage data analysis.

The first stage of data analysis was classification of the student answers by the eight coders mentioned above. Each of the four essay question answer sets was randomly assigned to two coders who worked independently. Thus each coder classified thirty essay answers. Prior to giving the answers to the coders, each answer to each question was assigned a random identification number. Coders therefore classified the answers without any knowledge either of the student writer's identity or of the group, first or third year, to which the student belonged.

After the answers had been classified and returned to the principal researcher, the classifications were converted to numbers to assist analysis. The numbers were assigned in the order the classifications appear in the classification guide (Appendix "G"). Thus "NLAA" (Non Legal Authority Alone) became "1", "NLAF" (Non Legal Authority with Facts) became "2", "RA" (Rule Alone) became "3", "RF" (Rule with Facts) became "4", "CA" (Case Alone) became "5", "CF-C or P" (Case with Facts of Case or this Problem) became "6", and "CF-C&P" (Case with Facts of Case and this Problem) became "7". The participant's final score for each question was the total of the two numbers resulting from the coders' classifications. Thus is if a particular essay answer received a "5" from one coder's classification and a "4" from the second coder's, then the participant's final score for that answer was a "9". Higher numbers were assumed to indicate more complete conformity with Levi's definition of legal reasoning and thus the classification scale was assumed to be an ordinal scale.

Since the classification scale has not been validated in prior research, the scale also was recoded into two dichotomous variables which reflect key elements of Levi's definition of legal reasoning. The two variables were based upon whether facts were used in the answer or not and on whether a rule (common sense or legal) or a case was used. The

recoding was done with the researcher acting as a tie-breaker if the two scorers' classifications would lead to different results. Since both the seven point scale and the dichotomous variables were based upon Levi's definition, it was expected that both coding methods would lead to similar results. However, the recoding was done to allow that assumption to be verified.

Student classification scores next were sorted back into first and third year student groupings. The scores were then analyzed in three ways. First, the scores were graphed for visual examination of how each group of students performed on each question. Then mean scores for each question were computed and graphed for both the first and third year student groups. Finally, interpretation of the scores was assisted by the computation of several statistics. To examine how well the classification scales worked, a Spearman-Brown scorer reliability estimate was computed as well as correlations between the original seven point scale and the dichotomous scales produced by the recoding. To examine the results obtained from the classification scales, a Student's *t* test of significance for the differences between the student group means on each question was computed as well as an analysis of covariance using undergraduate grade point averages and Law School Admission Test scores as covariates.

All analysis of the data, whether informal visual inspection procedures or formal statistical tests, were conducted based upon a null hypothesis of no difference between the two groups. The alternative hypothesis was that a third year student group mean score on a question would be greater than that of the first year student group. Due to the small sample size, a significance level of $\alpha = .05$ was chosen for the statistical tests. The power of the test (Hayes, 1973, pp. 419-420) was .94 based upon a sample size of fifteen when the percentage of variance accounted for was .25 or more. The further

assumption for the power computation was that the approximation was based upon a normal distribution.

To gain more information about the participating students, and to determine whether the writing ability of the first and third year students was similar, the students' answers were analyzed using the computer program Grammatik III (Wampler, 1988). This program indicated the reading level of what the students wrote. The idea behind using the test was that, if the reading levels would be similar, then there would be one less source of variation that could influence coding of the answers.

Second stage data analysis.

The primary goal of the second stage of data analysis was to search for explanations of whatever findings were made in the first stage analysis. The search process proceeded in two steps. First, even as the students worked on the essay questions, wrote their answers, and concurrently made verbal comments, the principal researcher observed their words and actions. While observing the principal researcher sat in a corner of the office behind where the student was working. Notes could therefore be made without cuing the participants as to desired responses. The only prompt that was given was the statement: "Please remember to speak up." Since the students each received the questions in packets in which the questions had been sequenced at random, abbreviated notations were adopted to allow the researcher to make unambiguous references to the questions. Thus, in appendix "D", the four essay questions are labeled: "FF" (free food); "LL" (Larry Landowner); "SNS" (Saturday night special); and "TANK" (Tanker). As indicated by the words in parentheses, the abbreviated notations were selected based upon some of the facts in the essay questions. Second, all portions of the videotapes relating to one of the questions ("FF") were transcribed into typewritten protocols. Both the notes of the principal author and the typewritten protocols were searched for explanations of the first stage findings.

At each step of the second stage of data analysis, guidance was provided by Levi's definition of legal reasoning. The panel of coders used classifications designed to indirectly indicate the use of Levi's reasoning by analogy. The principal author used Levi's definition directly as a guide when observing the students, viewing the videotapes, and examining the typewritten protocols. In addition to personally examining the protocols, the principal researcher used a computer text search program (ZyIndex, 1987) to determine if certain key words were used by the students. Key words were chosen based on the likelihood of their appearance if a student was using Levi's reasoning by analogy. The words chosen included "analogy", "case", "decision", "example", "common law", "rule", and "principle". When any of these words were located by the computer search, the principal researcher re-examined the passage to assure that the material had been not been missed during the researcher's examination of the protocol.

The second stage of data analysis also provided an opportunity to obtain data or insights not based upon Levi's definition of legal reasoning. Since collection and analysis of concurrent verbal comments went beyond what had been done in previous studies, so also efforts were made to remain open for the possibility of new and unexpected findings. For example, it may have become clear that, contrary to expectations based on previous studies, legal reasoning is learned only very late in law school. First year students might mimic an automated process and only much later realize the underlying legal reasoning implications. Such a finding would be difficult to make based upon examination only of the results of participants' problem solving but it might appear in the more complete data preserved by thinking aloud while problem solving. In any case, such a finding would be an example of a pattern of problem solving that might be discovered in the second stage of data analysis.

This chapter has detailed the design of this study, the types of data to be collected, and the methods of analysis to be used. The essay question data, the thinking aloud protocols, the researcher's observation notes, and the background data all were aimed at collecting data about the legal reasoning of first and third year law students. The visual inspection techniques, the statistical analyses, and the computer searches all were selected as means of comparing the data about the students' legal reasoning. The findings from all this will be presented in Chapter IV.

CHAPTER IV

FINDINGS

Introduction.

The findings are subdivided into three subsections corresponding to three groups of data: written essay scores; thinking aloud data (including thinking aloud protocols and the researcher's observation notes); and group background data. Each of these three groups of data were examined to answer the research question of how the legal reasoning of first year students compared to that of third year students.

The researcher's expectation was expressed in the alternative hypothesis that third year students' legal reasoning would be better than that of first year students. As summarized in table 4.1, the findings from the three groups of data do not support the researcher's expectation.

Table 4.1
Findings Summary

Data Type	1st Yr. Better	No Difference	3rd Yr. Better
Essay	X		
Protocol		X	
Researcher's Notes		X	
UGPA		X	
LSAT		X	

The overview provided by table 4.1 will be developed in more detail in the next three subsections. As indicated in part by table 4.1, those subsections will present the

following findings. First, the written essay score data revealed that the first year average scores, compared those of the third year students, were higher for each of the four questions. Because the first year students scored higher, and because this was exactly the reverse of the researcher's expectation expressed in the directional alternative hypothesis, no essay results could have been statistically significant using a one-tailed t test. If the alternative hypothesis had simply been that the means of the first and third year student groups were not equal, then a two-tailed t test would have indicated that, for one question, the difference would have been statistically significant. This finding of significance for one question would not change if analysis of covariance techniques were used with undergraduate grade point averages and law school admission test scores as covariates. Likewise the results changed little if the seven point essay scoring scale was recoded into two dichotomous scales and then reanalyzed. Second, the thinking aloud data provided more data on the legal reasoning of the students. However, no pattern of differences was found between the first and third year students. Finally, the group background data revealed no significant differences in the groups' undergraduate grade point averages, law school admission test scores, or writing levels.

Written essay scores.

Written essay scores were the first data examined to determine whether the legal reasoning of first year students differed from that of third year students. Group average scores were computed for each question and then compared for differences in the performance of the first and third year student groups. In addition, estimates of reliability and tests of significance for the scores also were computed. These computations produced the following findings.

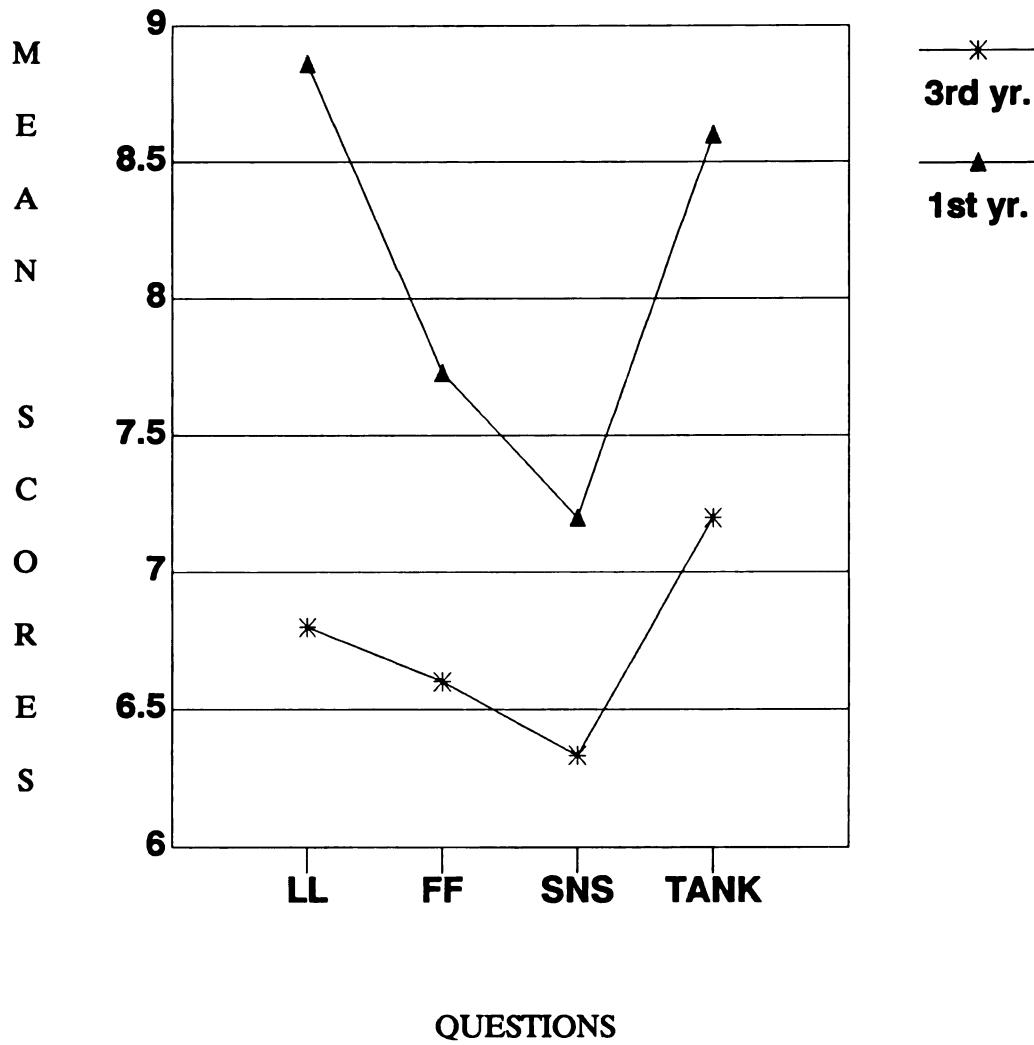


Figure 4.1 Group Mean Essay Scores.

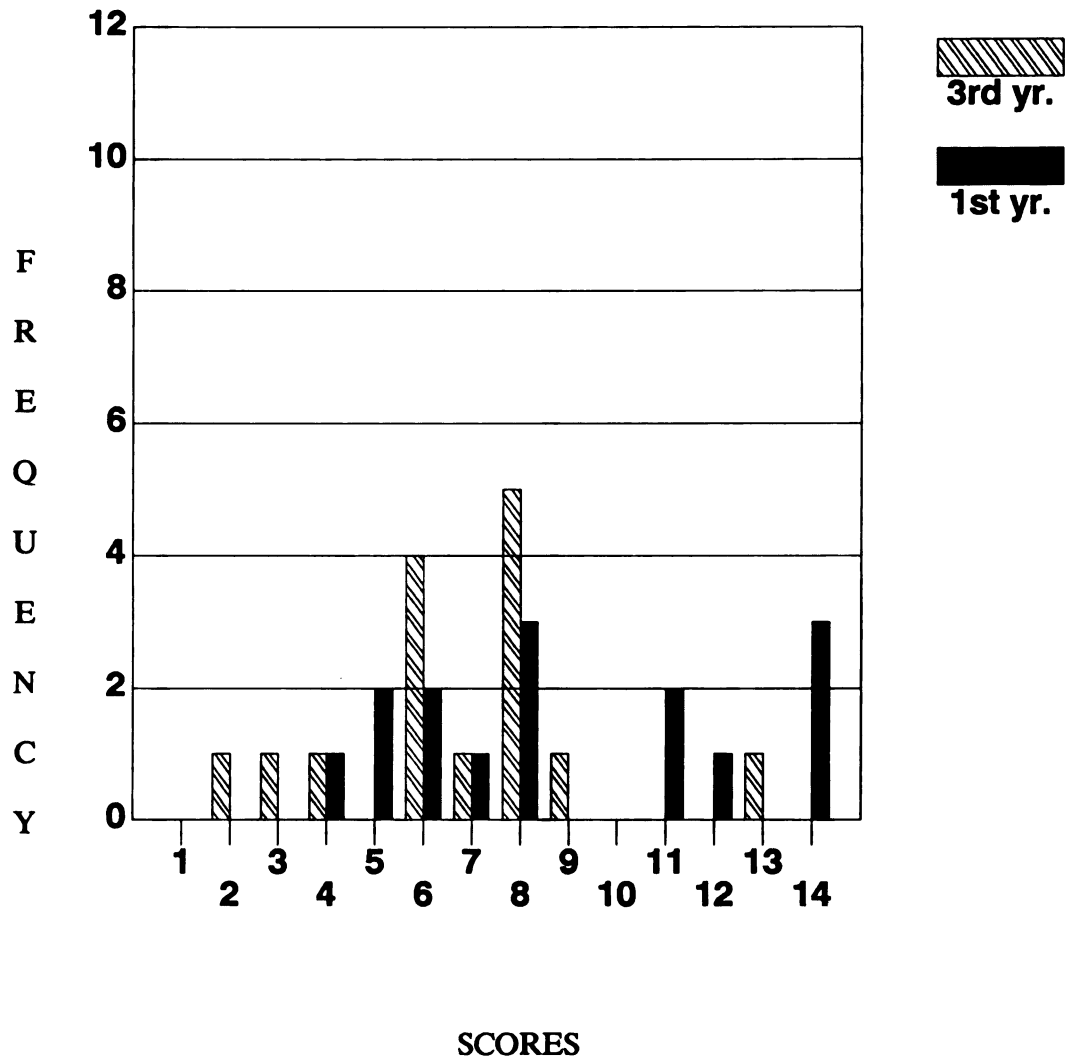


Figure 4.2 LL Scores.

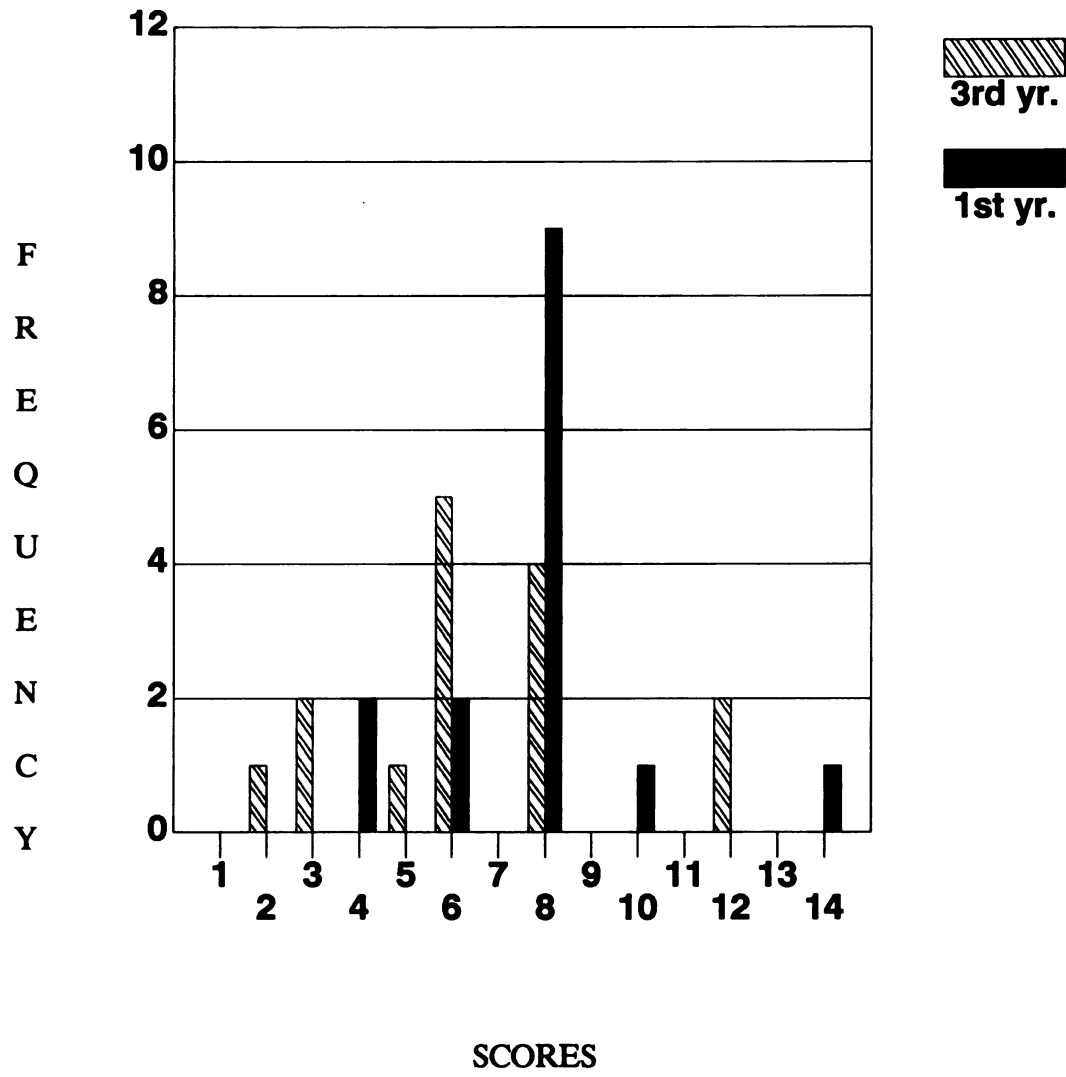


Figure 4.3 FF Scores.

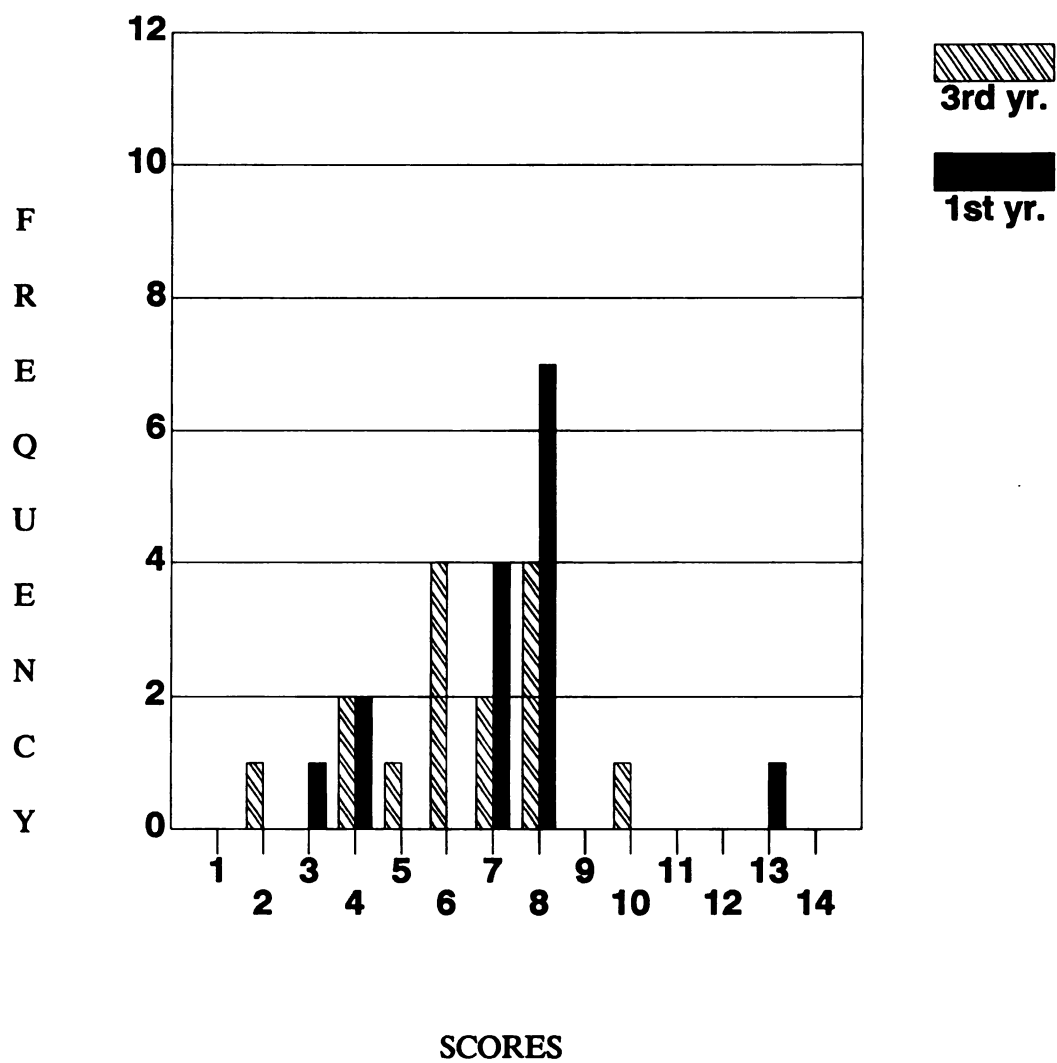


Figure 4.4 SNS Scores.

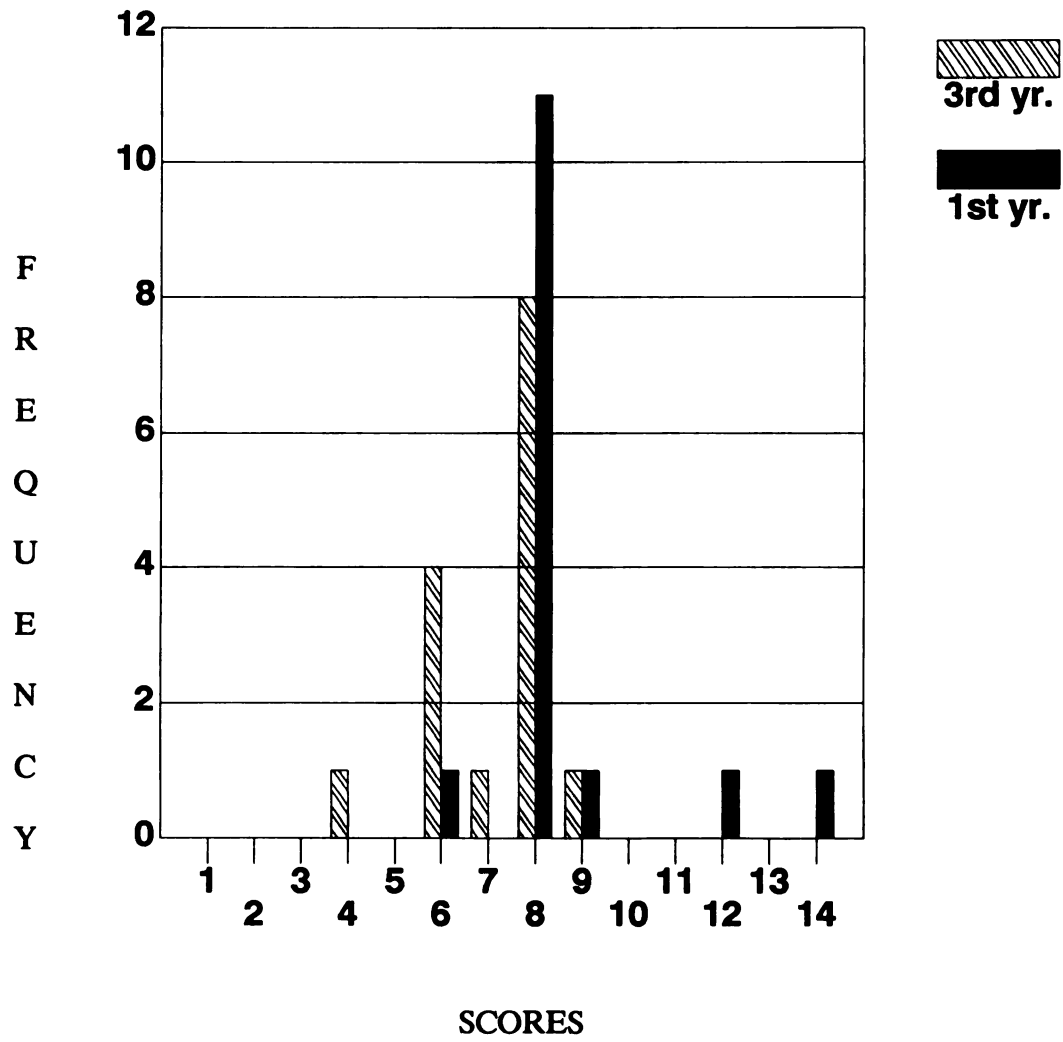


Figure 4.5 TANK Scores.

Group difference findings.

The group average scores for each question are graphed in figure 4.1. Visual inspection of this graph leads to two findings. One finding directly addresses the question of group differences. The other is the basis of later discussion about the type of reasoning being used by the groups.

The first finding is that the first year students, compared to third year students, scored higher on all four of the essay questions (appendix "D" - questions labeled by letter abbreviations taken from the facts of the question). The difference ranged from a low of .87 on the "SNS" question to a high of 1.87 on the "LL" question but the direction of difference was always the same. In addition, the highest average score of the third year students was on the "Tank" question and yet that average score only equals the lowest average first year score which was on the "SNS" question.

The second finding is that the highest average score is 8.87 and that score came from the first year student group. This average score is some evidence of the reasoning process being used by the students. Since two scorers evaluated each question, and since their scores were added together for reporting purposes, a average score of 8.87 could be produced by each scorer reporting a average score of 4.435. A score of "4" corresponded to the use of rule with the facts of the case and a "5" to use of a case without facts. This finding about the central tendency of the data can also be made by visually examining the distribution of the data in figures 4.2 to 4.5.

Data reliability and significance findings.

The reliability and significance of the essay score findings were checked by estimating the scorer reliability indices and by running various tests of statistical significance. The findings from these steps are presented in the next two subsections.

Scorer reliability indices. Comparisons based on the average scores were checked by computing scorer reliability estimates. Table 4.2 sets forth both the Pearson Product Moment correlations and the Spearman-Brown reliability estimates. "FF" has the highest correlation coefficient at .824 and thus the highest reliability estimate at .903. The lowest set of numbers are for "Tank" at .513 and .678.

Table 4.2
Scorer Reliability Measures

Question	Pearson Correlation	Spearman-Brown
LL	0.733	0.846
FF	0.824	0.903
SNS	0.697	0.822
TANK	0.513	0.678

Statistical tests of significance. Finally, the essay score differences were tested using several statistical tests. The first test was Student's t . As mentioned earlier, no statistical tests were required to reject the alternative hypothesis because the first year students unexpectedly scored higher on all four questions. As an aid to further interpretation of the data, however, Table 4.3 sets forth the results of a two-tailed test for each of the four questions. Using .05 as a decision point, only the results for the "Tank" question show a statistically significant difference between the scores of the first and third year students.

Table 4.3

Essay Score *t* Tests

Question	LL		FF		SNS		TANK	
Group	1st yr	3rd yr	1st yr	3rd yr	1st yr	3rd yr	1st yr	3rd yr
Mean	8.867	6.8	7.333	6.6	7.2	6.333	8.6	7.2
Standard Deviation	3.523	2.651	2.375	2.898	2.336	2.024	1.920	1.320
Standard Error	0.910	0.685	0.613	0.748	0.603	0.523	0.496	0.341
Student's <i>t</i>	-1.816		-1.172		-1.086		-2.327	
Prob > <i>t</i>	0.080		0.251		0.287		0.028	
Degrees of Freedom	28		28		28		28	

In addition to the *t* test, an analysis of covariance was applied using undergraduate grade point averages and law school admission test scores as covariates. The probability levels associated with the univariate F tests were: FF - 0.257; LL - 0.144; SNS - 0.404; and TANK - 0.034 (squared multiple "R" of .204). Thus, for the TANK question, the mean scores for the first and third year students differed significantly even when undergraduate grade points and law school admission test scores were used as controls. However, when all four dependent variables were included in a multivariate analysis of covariance, the Hotelling-Lawley trace statistic was 0.255 and thus not significant.

Statistical tests also were applied to the recoded scores produced by splitting the seven point scale into two dichotomous scales. One scale was based upon whether a student's answer used facts or not. The other scale was based upon whether the answer used a rule or a case. Thus a student's answer to, for example, the "LL" question would produce an "LL" score from one to seven, a "LLFACTS" score of 0 or 1, and a "LLRULE" score of 0 or 1.

Pearson product-moment correlations showed that, in general, the two dichotomous scales were weakly correlated with each other and more strongly correlated with the seven point scale. For example, the scores for question "LL" on the seven point scale had correlations of .436 and .836 with the corresponding scores on the dichotomous scales but the corresponding dichotomous scales had a correlation of only .139 with each other. The full correlation matrix is presented in appendix "I".

The scoring results on the dichotomous scales were tested again using analyses of covariance with undergraduate grade point averages and law school admission test scores as covariates. The test for FFFACTS, at .046, was the only set of scores to show a significant difference between the first and third year students. A corresponding *t* test is not reported for FFFACTS because for that set of scores, as well as for TANKFACT and TANKRULE, one of the group scores had a standard deviation of 0.0 and therefore the STATS module of SYSTAT (Wilkinson, 1988) did not complete the computations.

Thinking aloud data.

No pattern of differences in the groups' legal reasoning was found either in the thinking aloud typed protocols or in the researcher's notes made during the thinking aloud process. However, some data was relevant to a determination of the type of legal reasoning being used by the students.

Typed protocols.

The texts of the thinking aloud protocols first were examined by the researcher. Search results then were supplemented by computer search techniques. The findings from each technique are presented separately in the next two subsections.

Researcher's examination of the protocols. The researcher's examination of the protocols was guided by Levi's description of legal reasoning. The first step was

to find evidence of Levi's legal reasoning by analogy. The evidence for each group of students then could be examined to detect differences between the groups.

As discussed earlier, Levi distinguished legal reasoning from pure deductive reasoning. Rather than selecting and applying a rule, legal reasoning, according to Levi, developed the applicable rule by comparing the facts of the present problem to those of previous cases. To find evidence of this process, the protocols were searched especially for citations to previous cases and their facts.

The search revealed that none of the fifteen protocols contained evidence of all three steps of Levi's process. Nevertheless, the protocols can be grouped in accordance with Levi's description of legal reasoning. To assist the reader, all references to protocols will be by use of the randomly assigned numbers which identified them in the research process but an extra digit has been added to indicate that the protocol is from a third or first year student. Thus protocol number 700 became 3700 and 906 became 3906 to indicate they were from third year students. Likewise 942 became 1942 and 50 became 150 to indicate first year student authorship.

Five of the fifteen protocols contained evidence of using a prior case by analogy. Three protocols (3700, 1942, and 1713) contained that evidence in response to both parts "A" and "B" of the question. One contained it only in response to part "A" (1475) and one only for part "B" (3906). In two of the five protocols, 3906 and 1942, the evidence was only in the thinking aloud portion of the protocol and not in the student's written answer.

Protocol number 3700 is an example of the type of evidence found:

I'm gonna play around with the Hadley v Baxendale issue which limits damages. Although it's a contract case, maybe I could somehow correlate the two. I can't, I really can't use Palsgraf because that means you're liable for all damages that result from a tort, so I'm gonna try to use Hadley.

The balance of the protocol further developed the reasons why the Hadley¹ case was not directly applicable and yet could be used to advantage to address the essay question presented. Thus the protocol developed both the facts of the present case and those of the previous case. However, neither it nor any other protocol illustrated Levi's next step of explicitly comparing those sets of facts to develop a rule. Instead, the rule of the prior case was stated and then applied to the present problem. Two other protocols (3680 and 1349) contained arguments based upon analogies. However, both based the analogies upon factual hypotheticals rather than upon previous cases. For example, protocol number 3680 argued that the property owner would have a duty to safeguard persons leaving the gym from street hazards since the owner already had a duty to safeguard from other hazards like fighting and smoking.

Two protocols at least mention a potential analogy. One, 3223, contains the statements: "It wasn't like a slip and fall." and "I wonder if you could go as far as saying this was like an attractive nuisance." Likewise number 1688 said "it could be classified as an attractive nuisance" and also referred to "tort law", "invitee" and "licensee". If "slip and fall", "attractive nuisance", etc. are taken as short hand references to a line of established cases, then these references would qualify as evidence of Levi's reasoning by analogy with cases. Even if the references are taken only as short hand statements of legal rules, they still give evidence at least of using a rule by analogy.

¹ Hadley v. Baxendale, 156 Eng. Rep. 145 (Exch. 1854).

Levi's description of legal reasoning conceded that the law can sometimes appear to be simply deductive reasoning. The other six protocols illustrate this possibility. For example, protocol number 1564 stated:

You gotta be kidding. Ummm. This would be a lot easier if I knew which kind of course I was supposed to be writing this for but we're going to talk in, ummm, torts and address it from that standpoint. If we address it from that standpoint then, then we want to address the issue of negligence and if we address the issue of negligence then ... I'll wanna address it a four element: duty, breach, proximate cause, and injury.

Later in the same protocol, the student declined an opportunity to draw an analogy to a prior famous case. The student said: "I wanna talk about zone, danger and all that shit.... I don't wanna get into Cardozo and all that." "Zone of danger" and Judge Cardozo had been mentioned by other students in reference to the Palsgraf² case. Instead of developing an analogy to that case, the student said: "the courts have held that a injury must be foreseeable to, ummm, connect liability to the tortfeasor.... Here it is unforeseeable that a teenager eating supper in the building would be killed by an auto."

The protocol providing the most abbreviated version of Levi's (1949) process was that of a third year student (3926). It stated: "Again, the facts are not really important at all." The resulting answer to the first part of the question was only four sentences long:

Plaintiff would contend that the owner of real estate such as that in question (gym) may not delegate duties regarding the care and maintenance of its rental property. That is, the real estate company would be strictly liable for this nondelegable duty.

Public policy forbids the delegation of such duties when the landowner

² Palsgraf v. Long Island R.R. Co., 248 N.Y. 339, 162 N.E. 99 (1928).

retains such a benefit that the delegation is not permitted. Here, the real estate company retains such a benefit that they remain liable notwithstanding their rental of the gym to the school.

No facts, cases, or hypotheticals were in the thinking aloud protocol section corresponding to this answer.

These last two protocols, 1564 and 3926, illustrate the range of ways in which a student could use a general rule or principle to solve a legal problem. Instead of referring to the facts of a prior case for an analogy, as Levi would suggest, the student in 1564 first selected a general area of law, torts, then a general area within torts, negligence, and then a general rule of negligence law to apply to the facts of the problem. The student in 3926 likewise uses what the student apparently considers a general principle to answer the question but 3926 does not integrate the facts into the answer as 1564 had done.

The other four protocols use rules in a manner that is within the range illustrated by 1564 and 3926. Excerpts from those four protocols will give the reader an indication of what the students were doing. 3822 searched for "an area of liability" which the student could not remember. 3467 referred to "theories espoused by the estate", "agency theory", "tenant situation" and "the rule of law that I can't think of right now." 1937 referred to the legal categories of "invitees, licensees, and trespassers", the legal theory of negligence, and a "standard" which the student could not remember. 150 said "Kind of attracted real little kids to the place" and therefore "the real estate company will have a higher duty."

Finally, one protocol, 3680, provided some evidence of Schon's (1983; 1987) reflection-in-action. That protocol began with comments that the second part of the question

would be easy to answer, proceeded with further discussion of the distinctions between the two parts of the question, and then eventually realized that both parts of the question could be seen as aspects of a deeper problem. This is the closest that any protocol came to clearly illustrating Schon's process.

The research design presented in Chapter III envisioned the use of Collins' factors to investigate how students found the analogies that they used. However, findings for this part of the research design are not reported even though analysis using Collins' factors initially looked promising. Pursuing this type of analysis and reporting the results was not done for a reason that can be best illustrated by referring again to protocol number 3700. That protocol's selection of cases to cite can be explained without recourse to the sophistication of Collins' approach. Both Hadley and Palsgraf are landmark cases in the development of the law. A leading reference book on the law of torts calls Palsgraf "the most discussed and debated of all torts cases" (Keeton, Dobbs, Keeton, & Owen, 1984, p. 284). Hadley has similar fame in the law of contracts since it announces rules that have been uniformly adopted by American courts (Simpson, 1965, p. 396). Since protocol number 3700 was one of the better examples of the use of case analogies, and since even that protocol's interpretation did not require the application of analysis using Collins' factors, a decision was made not to pursue the originally planned stage of analysis using Collins' factors.

In summary, the researcher's examination of the thinking aloud protocol data provided little evidence of Schon's process and little need to use Collins' factors but some evidence of legal reasoning as described by Levi (1949). Although none of the protocols illustrated all three steps of Levi's process, still they could be grouped in accordance with his description of legal reasoning. Five protocols came close to illustrating Levi's process with prior cases. Two protocols used analogies to hypotheticals. Two protocols

at least mentioned the possibility of an analogy. The rest of the protocols, six in all, gave evidence of deductive reasoning but differed in the extent to which they used the facts of the problem. However, all these groups of protocols came from almost equal numbers of first and third year students. No pattern of differences was found between the two groups of students.

Computer searches of the protocols. The computer program ZyIndex produced frequency reports for various word combinations. The word searches were on words whose occurrence would be expected if a student were using Levi's approach to legal reasoning. Given Levi's emphasis on the use of prior cases by analogy, the words selected for search were: analogy (and its forms); case; decision; example; common law; principle (and its forms); rule; Palsgraf (a landmark decision in the problem area); and policy. For reasons that will be explained later, a search was also made for the letters "IRAC". Those letters stand for "Issue, Rule, Application, and Conclusion".

Some of the search terms were completely absent from the protocols. For example, the search specification for the word analogy was "analog*". The asterisk serves as a wild card so that all forms of the word will be retrieved. Thus analogy, analogize, and analogous would all be reported. ZyIndex reported no occurrences in the fifteen protocols. The same was true for the word "decision" using "decisio*" as the search specification. Likewise "principi*" never occurred.

The most frequently used word was "rule". Fourteen of the fifteen protocols had at least one occurrence. In five of the protocols, the word "rule" was used in the sense of "rule of law" or "courts rule" (3467, 1937, 1475, 1942, 1713). The balance of the occurrences reflected the use of the word "rule" in the problem itself. Thus many referred to the "city rules" and the "program rules".

The next most frequently occurring search term was "case". Nine protocols used the word "case" at least once. In four of the protocols, 1475, 1942, 3700, 1713, "case" was used in the sense of a legal decision. Thus 3700 referred to the "Palsgraf case". The other five protocols used "case" in different senses. Examples include: "in which case"; "in this case"; "make a case for"; and, "in case there's a little something I missed".

"Palsgraf", correctly or incorrectly spelled, occurred in four protocols (1942, 3700, 1713, and 3906).

None of the other search terms occurred in more than one protocol. "Example" was used by 1937 in the sense of "for example". The same protocol also contained the only occurrence of the phrase "common law". "Policy" was used by 3926 in the sense of "public policy argument". Finally, "IRAC" was used in protocol number 1942.

In summary, "rule" was the most frequently occurring word followed by "case" and "Palsgraf". "Example", "common law", "policy" and IRAC" never appeared in more than one protocol. "Analogy", "decision", and "principle" never appeared.

Researcher's notes.

Only limited notes were taken by the researcher during the thinking aloud process but those notes nonetheless made three contributions to this study. As an overview, the three contributions were as follows. First, the notes support the finding that most of the students were not demonstrating the use of Levi's reasoning by analogy. However, they also provide evidence that some of the students may have been using Levi's process even if it did not evidence itself in their answers. Second, the notes support a finding that at least one of the essay questions was so close to material studied by the first year students that they probably had a decided advantage in attempting to answer it. Third,

the notes provide some evidence of uncontrolled factors which may have influenced this study. Each of these three contributions will be treated in a separate subsection.

Evidence of Levi's reasoning by analogy. The first contribution of the researcher's notes is that they provide further support for a finding that the students revealed little evidence of using Levi's reasoning by analogy. As had been the true for the written answers and the typed protocols, references by analogy to previous cases or decisions were absent from a majority of the students' answers. However, a review of the notes also reveals that the students' answers to one question are an exception.

One essay question concerned the disputed ownership of buried money. The person who buried the money, the owner of the land where it was buried, and the hunter who found it, all claimed the money. While thinking aloud on this question, a majority of all students, ten third year and eleven first year, referred to prior cases. However, the essay scores show such use only by two third year and six first year students.

This same essay question also provides some evidence of students using Levi's reasoning process even when they give no evidence of it in their written answers. Student number 371 is one example. There the student spoke of two prior cases and explicitly noted that the essay question's situation was "analogous" to those cases. However, the student's written answer was scored four and two by the two scorers. Likewise student number 3209 mentioned two prior cases and said: "Make Harry's parallel that - but he's a trespasser." Again the written answer received a score of four from both scorers.

Evidence of Levi's reasoning by analogy was present in a few answers other than 371, 3209, and the two discovered in the thinking aloud protocols mentioned earlier. Review of the researcher's notes shows the following instances of a student referring to the idea of using a case by analogy even though it is not included in the students written answer:

3223 on "Tank" question (scores of four and two); 3476 on "SNS"(scores of four and two); 3676 on "Tank" (scores of four and four); and 3467 on "SNS" (scores of one and one). Thus the researcher's notes reveal six instances, including 371 and 3209, where there is evidence of Levi's process even though it is not reflected in the written essay scores. All six of these instances come from third year students.

Essay question validity. The second contribution from the researcher's notes is a finding that the first year students may have enjoyed a substantial advantage in answering at least one of the questions.

The question that the first year students may have had an advantage on was the buried treasure question treated in the last subsection. As noted there, a majority of both third and first year students remembered prior cases like the question presented. However, a number of first year students remembered details not mentioned by the third year students. For example, two first year students remembered the name of the case they had studied and one even remembered the name of the justice who wrote it. Another mentioned that it had been the first case that they had studied in law school. No similar references were made in the remarks of the third year students. Thus the more detailed and recent memory apparently possessed by the first year students may have given them an advantage in making it more likely that they would mention the case and thereby enhance their scores.

Uncontrolled factors. The researcher's notes provide some evidence that news reports may have given some of the first year students an advantage in answering the "Tank" question. Two things happened to make this possible. First, the secretary scheduling the thinking aloud sessions had given the third year students preference in assigning times. Thus twelve of the first fifteen persons to do the questions were third year students. Second, about one week into the month of sessions, student 942 men-

tioned that the "Tank" problem sounded like something the student had heard about on the news. At that point, twelve of the thirty sessions had been completed, including eleven of the fifteen third year student sessions. Three other students later made similar comments 1564; 150; and 1349. As indicated by the numbers, all of these students were first year students.

Group background data.

Four types of background data were collected. Each of the four sets of data provided a different basis for judging how similar the groups of students were on measures other than the amount of legal education completed. Undergraduate grade point averages [UGPA] and Law School Admission Test [LSAT] scores were two of the types collected. In addition, the computer program Grammatik III computed a Flesch-Kincaid Grade Level for the essay answers that the students wrote. These grade level figures were computed to safeguard against the possibility that especially the essay scores might reflect differences in the writing abilities of the groups rather than any difference in their legal education. Finally, questionnaires completed by the students provided information about: parents or friends who were attorneys; legal employment experience; and experience gained from practice type law school courses. This data was collected to give an indication of how much an opportunity the students had to learn legal reasoning outside of traditional law school courses.

Table 4.4 presents both the undergraduate grade point averages, LSAT scores, and Flesch-Kincaid Grade Level figures for the two groups. Since the group averages differed on each of the measures, the table includes the results of using Student's *t* to test whether the differences are significant. Those tests (again, two-tailed) confirm that the group averages do not differ significantly.

Table 4.4

Group Background Data

Measure	UGPA		LSAT		Flesch-Kincaid	
Group	1st yr	3rd yr	1st yr	3rd yr	1st yr	3rd yr
Mean	2.8613	2.9153	529.87	499.53	10.4	8.6667
Standard Deviation	0.3753	0.3740	91.961	68.333	2.1974	2.7689
Standard Error	0.0969	0.0966	23.744	17.644	0.5674	0.7149
Student's <i>t</i>	0.3947		-1.0254		-1.8991	
Prob > <i>t</i>	0.6961		0.3139		0.0679	
Degrees of Freedom	28		28		28	

Table 4.5 condenses the information collected on the student questionnaires. Third year students gave more affirmative responses to all the questions. As might be expected from the composition of the groups, nine of the third year students had taken some of the practice type courses offered late in the law school curriculum. None of the first year students had taken such a course. For the other questions, the numbers were closer. For having a parent or friend who was an attorney, the numbers were seven to six and for legal employment experience it was eleven to seven.

Table 4.5

Background Questionnaire Data

Group	Attorney Parents or Friends	Legal Practice Courses	Legal Employment
1st yr	6	0	7
3rd yr	7	9	11

In summary, the group background data indicates that third year law students had more opportunities for exposure to legal reasoning in setting outside the traditional law

school courses but they did not differ in undergraduate grade point averages, LSAT scores, or writing level as measured by the Flesch-Kincaid Grade Level method.

Summary.

As indicated earlier in Table 4.1, the findings do not support the researcher's expectation, expressed in the alternative hypothesis, that third year law students would demonstrate better legal reasoning, as defined by Levi, than the first year law students. The finding of no difference between the legal reasoning of the first and third year students was supported by the essay question scores, the thinking aloud protocols, and the researcher's observational notes. This result, the possible reasons for it, and its implications for both legal education and the teaching of problem solving more generally, will now be discussed in Chapter V.

CHAPTER V

DISCUSSION AND CONCLUSIONS

Discussion

Introduction.

The research question of this study asked how the legal reasoning, as defined by Levi, of first year law students compared with that of third year law students. Essay question answers, thinking aloud protocols, researcher observation notes, and student background data were collected. Visual inspections, statistical analyses, and computer searches examined the data and compared the results for the two groups of students.

The findings of this study are consistent with the prior work of Bryden (1984). As previously noted, Bryden raised the possibility that the small differences he found between first and third year law students would disappear if the first year students had the benefit of a little more legal education. This study introduced such a change. Instead of using beginning students as Bryden had, students were selected with twenty credit hours completed over two semesters. As Bryden would have predicted, no difference was found.

The expectation in this study, expressed in the alternative hypothesis, was that third year law students would demonstrate superior performance if Bryden's research approach were modified. This study explored modifications regarding both the definition of what was being measured and the different data collection techniques which could be used. After reviewing a number of alternatives contained in the literature, Levi's (1949) definition of legal reasoning was adopted. The literature likewise provided multiple data collection and analysis approaches. If the expected result had occurred and third year students had performed better, then Bryden's questions about legal

education would have been largely answered and this study would have been additional support for the proposition that expertise can be taught.

The expectation of this study was not fulfilled. No difference was found between the legal reasoning, as defined, of first and third year law students. Reasoning by analogy data was sparse so there was little to which Collins' factors could be applied. Schon's reflection in action was almost totally absent. Moreover, although the findings are consistent with the work of Bryden, it is difficult to accept the null hypothesis because those same findings appear counter-intuitive. From the perspective of a teacher, it would seem that a group with an average of 74.3 credit hours of legal education would do better than a group with an average of only 20.5, especially when what is being measured is what law schools profess to teach, that is, legal reasoning. A contrary finding of no difference might be taken as a direct challenge to present legal education methods. In addition, as discussed in the review of the literature, it would provide further support to those who question whether thinking and problem solving skills can be taught.

Rather than accept the null hypothesis, this discussion will review other explanations for the findings. Once again, the review of the literature is a fertile source of possible explanations of why this study's expectation was not met. Thus this discussion will begin with a section considering the possibility that group selection procedures are responsible for the finding of no difference between the first and third year students. Then the following sections will inquire whether the responsible factor or factors stem either from the way legal reasoning was defined or from the research design that was chosen. Those sections will be followed by a summary and by conclusions based upon the discussion.

Group selection procedures as an explanation.

The first possible explanation of this study's findings of no difference between the groups is based on the argument that the findings are not a reflection on legal education's effectiveness, either at the school studied or others, but rather are a mere artifact of the two particular groups which were selected and studied. This possibility is perhaps the most difficult to dismiss and, ultimately, perhaps must be simply acknowledged based upon the practical limitations of research in general and this study in particular.

One of the more concise presentations of this possibility's underlying reasons is included in the work of Campbell and Stanley (1966). In their terminology, the essay score analysis in this study would be a static-group research design for which the internal and external threats to validity are well defined. One of those internal validity threats is the "selection" factor which arises from the failure to have complete randomization in the process of choosing participants.

The "selection" factor, the possibility that differential recruitment influenced the composition of the groups studied, cannot be ruled out in this study. Here there was little information on why some students participated and why many others did not. Students mentioned time problems even though sessions were held at any time convenient for the student. Other said that the \$25.00 was not enough compensation compared to their outside employment prospects. Unmentioned but probably present was a fear to expose their abilities to a professor whom they might have for a teacher in a future class. Also unmentioned but likely to be present was a hope by some to obtain special help in test taking.

Each of these reasons could lead to the selection problems raised by Campbell and Stanley. Students with great time pressures might be more apt to be top or bottom performing students. Likewise employment concerns might be more important for bottom students, because they would be less likely to have scholarships, or top students because of their enhanced employment prospects. However, little data was available regarding the reasons for student participation and no formal data was available about what implications those reasons might raise.

Selection of students at only one law school also brings with it threats to the external validity of this study. The possibility exists that the institution studied was not typical and therefore the results should not be generalized to other schools. As noted by Bryden (1984), it is of some help that most law schools use many of the same textbooks and often teach from them in similar ways. However, generalizability concerns remain.

Campbell and Stanley (1966) also explain that all threats to validity cannot be overcome. Some assumptions remain, and might be false, even in the best designed study. Here, practical constraints necessitated more than the minimum number of assumptions. Therefore it must be allowed, especially for the statistical analysis of the essay scores, that the way the students were selected may be responsible for any difference or lack of difference found in this study. The balance of this discussion is presented in the context of the limitations raised by Campbell and Stanley.

The definition of legal reasoning as an explanation.

The second possible explanation of this study's finding of no difference between first and third year students' legal reasoning is based on the idea that this study attempted to measure the wrong educational outcome. Both the review of the literature and the data provide some support for the possibility that the "legal reasoning" supposedly

learned by law students is, not Levi's (1949) legal reasoning by analogy, but rather a further application of the students' common sense to a new substantive knowledge base.

The review of the literature included references to scholars who would view legal reasoning as common sense. Included in those references were Fejfar (1986), Lonergan (1957), and Minsky (1986). If legal reasoning is basically common sense, and if law students come to law school already equipped with those skills, then an alternative educational outcome from a legal education would be acquisition of a body of substantive knowledge. As noted in the review of the literature, this would be consistent with the medical education findings of Elstein et al. (1978) and Feltovich et al. (1984). It would also be consistent with the view of legal education that students sometimes have (White, 1986).

In addition, the data here provide some support for the possibility that the definition of legal reasoning used in the study is responsible for the finding of no difference. For example, the computer word searches revealed no occurrences in the transcribed protocols of the word "analogy." Also, the first year students did best on the "LL" question which was most closely related to the material that they had already studied. In addition, even the highest scores of the groups averaged only between "4" and "5" whereas students using Levi's reasoning would be expected to score at least "5." These findings do not decide the issue but they are consistent with the view that expertise acquisition is more the learning of a large data base of information than the learning of a skill like Levi's reasoning by analogy.

At first glance, these challenges appear to go to the heart of this study. The basic assumption here was that law schools teach students to do "legal reasoning" and that Levi's (1949) reasoning by analogy was the best description of what that meant.

However, even if students come to law school with some of those skills already in place, and even if learning a substantive body of knowledge is a primary goal, still the data and results in this study are not necessarily rendered superfluous. It can even be argued that the results become more interesting if these challenges are correct.

If law students already know how to reason by analogy, then it would seem even more likely that third year law students would achieve higher scores on this study's measures. The third year students' presumably larger body of legal knowledge would form the basis for more analogies than would be available to a first year student. Thus it might be argued that the challenges raised in this section, far from explaining the finding of no difference in the performance of the first and third year students, actually provide additional incentive for seeking explanations of why so little reasoning by analogy data was obtained. Even if the study's basic assumption about the nature of legal reasoning was incorrect, still the data collection methods cast a wide enough net to catch any differences between the two groups of students. Therefore this set of challenges raise important questions but, by questioning the basic assumption of the study, they do not automatically provide an explanation for why this study found no difference between the two groups.

Research design as an explanation.

Even if this study's student selection procedures were appropriate, and even if assumptions about the definition of legal reasoning did not compromise the results, the possibility still exists that aspects of this study's design would cause it to fail to detect differences between the first and third year students' legal reasoning. The findings in Chapter IV prompt consideration of at least five aspects of the study's design as candidates to explain the study's results. First, it may be that the design did not motivate the students sufficiently to elicit performance on the level addressed by Levi's definition of legal reasoning. Second, the measurement scales used for scoring the essay

questions may not have correctly implemented Levi's definition of legal reasoning. Third, the design might have actively interfered with what was being measured. Fourth, the study's measurements may have been collected at the wrong time. Finally, the study's design may have been weakened by the absence of additional control groups. Each of these possibilities will be discussed separately in the following paragraphs.

Student motivation is one possible explanation for this study's results. The level of student motivation might have been important in at least two ways. One is that the first year students, having been more recently introduced to legal reasoning, might have had more motivation to demonstrate their ability to use the new way of thinking. This additional motivation might have increased first year student performance enough to mask any difference that the third year students might have otherwise shown. The second way that motivation might have been important is if neither first or third year students were sufficiently motivated to perform very well. The uniformly low level of performance again might have masked the presence of differences between the groups.

This study included no formal measures of student motivation. However, the researcher's observations of the students during data collection provide some anecdotal data about student motivation. Based on that data, it can be said that some students appeared to throw themselves completely into the task while others appeared willing to take the participation money and run. Moreover the latter category appeared to be a small minority of both the first and third year student groups. No other motivational patterns stood out from the data. However, due to the type of data used in drawing these conclusions, the possible role of motivation cannot be ruled out as an explanation for the results here. Even though it would be contrary to the researcher's personal impressions, it may be that no differences were found between the first and third year students' legal reasoning because of the influence of motivation on group performance.

The essay scoring scales are a second aspect of the study's design that may explain the finding of no difference between the first and third year student groups. The seven point scale was developed from Levi's definition in order to achieve more reliable scoring than had been achieved in previous studies where legal "issues" had typically been counted. To explore whether the seven point scale was really one ordinal scale or a combination of several dichotomous scales, the data was recoded into two dichotomous scales and the results were compared with the results from the seven point scale. The two dichotomous scales were based upon two key elements of Levi's definition - the use of facts and the use of cases. The seven point scale's classifications used combinations of these elements rather than separating them into two different scales.

On the one hand, the findings indicate that the scales worked well. Even though the students used reasoning on a lower level than expected, the scales were broad enough to describe and capture the process in a way that could be analyzed as planned.

On the other hand, the scales did not appear to ease scoring decisions as much as had been hoped. Even after being checked out at the orientation session with the researcher, each of the scorers called the researcher at least once to clarify how the scoring classifications should be applied. Most of the questions concerned how much evidence was necessary to conclude that a student's answer was using a legal rule or a case. The possible combination of factors proved to be extensive. Thus, rather than eliminating the ambiguity involved in deciding what an "issue" is and how it should be counted, the scoring scale may have merely placed the ambiguity into a new setting. Naturally ambiguity from any source would introduce measurement error which could conceal the effects that were being measured.

Even though the scales appeared to be broad enough to measure the form of legal reasoning used by the students, it also appears that the breadth of coverage may have sacrificed the precision needed to measure variations among the students. Particularly on the "TANK" question, the histogram of the scores shows little variability. Thus it appears that the scoring scale may have been too coarse a scale to make fine distinctions among student answers.

A third way that aspects of the study's design could have been responsible for the study's results was if the design interfered with the data collection process. Design interference could take several forms, each of which might so interfere with data collection so as to explain why no difference was found between the legal reasoning of the first and third year students. The first way that the design could interfere would be if the students mistook the data collection process as a legal examination for which they had learned a specialized method of response. Bryden (1984) recognized the possibility that a legal examination might evoke such a response from students. As a consequence, this study was designed so as to reduce the likelihood that the problems would be viewed as part of a legal examination. For example, the students wrote on lawyers' yellow pads rather than bluebooks and they worked at an office desk. Nevertheless, it was clear from various remarks of the participants that the "examination factor" had not been removed. Thus, in one protocol, the student said: "Can't panic here just because I'm taking an exam."

Another protocol provided a clue as to how the students might respond if they believed that they were taking an examination. That protocol, number 1942, referred to IRAC, an acronym standing for: Issue, Rule, Application, and Conclusion (Kelso & Kelso, 1984, p.481). Although perhaps suitable for some contexts, IRAC would appear to favor deductive reasoning over Levi's reasoning by analogy. Searching student outline banks

and similar materials was not a part of this study's design. An informal review of several student course outlines was at first assuring in that it showed that students had been exposed to typical lines of appellate cases which are used to teach reasoning by analogy. However, the informal review also supported the possibility that an IRAC type approach to examination questions may be part of law school's hidden curriculum. As noted in the review of the literature, Gross (1984) details how students may be learning an oversimplified legal reasoning process for use on examinations. One key part of the oversimplification is that students work with abstracted legal rules rather than with the authority itself (pp. 426-427).

If this study's data collection process was viewed by students as a legal examination, and if students learn a specialized method of response for legal examinations, then that might explain why no difference was found between the first and third year students. The specialized responses might not accurately reflect what was being learned in law school. The students might be learning Levi's (1949) reasoning by analogy but the study's design might interfere with their demonstration of it because a different response would be triggered by the data collection procedure. The students also might not be learning Levi's reasoning by analogy, as Gross would maintain, but instead an oversimplified process of using abstract rules. In either case, essay questions would trigger exactly the kind of rule dominated responses that were found in this study. As noted earlier, the essay scores averaged, at best, between "4" and "5" with a "4" denoting the use of rule with facts and a "5" denoting the use of a case alone. Use of a case, without its facts, is like using the case as shorthand for a rule in the manner described by Gross.

Rule dominated responses also may have occurred because, as noted earlier, the students may not have been sufficiently motivated to engage in the more involved reasoning demands of Levi's process. However, whether caused by lack of motivation

or the triggering of a specialized response, an additional impact of receiving rule dominated responses is that the use of rules rather than case analogies leaves little room for analysis using Collins' factors. Likewise a lack of motivation or the triggering of a specialized response could explain why Schon's reflection-in-action did not appear more often in the data.

The design of this study may have interfered with data collection in another way. Going beyond the problems of students thinking that they were taking an examination, Groen and Patel (1988) maintain that two factors are responsible for the results of investigations, like this one, which are designed along the lines of studies such as de Groot (1965) and Elstein et al. (1978). The first factor is that pattern recognition methodology, which proved useful in studying chess problems presented on de Groot's chess board, is not well adapted to verbally complex domains. In other words, chess pieces on a board may present a pattern for recognition but abstract words present a different type of problem requiring different methods. The second factor is that nonroutine, difficult problems will trigger the backward (hypothetico-deductive) reasoning found by Elstein et al. (1978). Groen and Patel (1988) themselves found forward reasoning when a different research design was used.

Here backward (deductive) reasoning was found. Largely absent was Levi's reasoning by analogy which, according to Levi (1949), is an imperfect form of forward or inductive reasoning. Moreover the essay questions used in the study deliberately included difficult portions so as to avoid the automated processing described by Johnston and Afflerbach (1985). However, it would seem that the easy portions of the essay questions would have avoided difficulties raised by Groen and Patel. Since students provided little evidence of Levi's reasoning by analogy even for the easy portions of the questions,

Groen and Patel's two factors may not be a complete explanation of why no difference was found between the first and third year students.

Finally, the design of this study may have interfered with data collection due to the peculiar demands associated with writing an essay response while thinking aloud. Prior research has coupled thinking aloud with primarily mental activities such as problem solving (Ericsson & Simon, 1984) or reading (Johnston & Afflerbach, 1985). However, prior research leaves open the possibility that a task like writing may interfere with the collection of thinking aloud data or vice versa, especially when the task is being performed by a person who is not yet an expert. Here the data also raised the possibility of this type of interference because several participants commented on the difficulty of both writing and thinking aloud. Likewise some participants wrote and thought aloud in separate steps, not concurrently. An example of how this type of interference could be important is provided by data in the researcher's notes showing participants using analogies even though they did not include them in their written answers. Since all six of those participants were third years students, the absence of the analogies from their written answers, and thus from their scores, might have had an important impact on statistical comparisons of group scores. However the analysis of the data did not focus on this source of interference and thus the possibility of its impact here can be acknowledged but not resolved.

A fourth reason why students may not have manifested Levi's reasoning by analogy, even though they had learned it, is that the process involved may not be a monotonic function of learning, that is, that persons who have learned a certain amount may not perform as well as persons who have learned either more or less than that amount. Lesgold, Glaser, Robinson, Klopfer, Feltovich, Wang (1988) give the example of a baby whose locomotion may become less efficient when automatic and secure creeping gives

way to toddling. In their own work, Lesgold et al. (1988) found that third and fourth year radiologist residents performed less well than either experts or first and second year residents on some films. Strauss and Stavy (1982), quoted by Lesgold et al., state that one possible reason for nonmonotonicities is: "[o]scillation between a familiar but inadequate mental representation of the problem situation, and an improved but still new and 'untrusted' representation system which is correct."

Here the findings of Lesgold et al. might explain why even third year students used very general rules to solve the problems rather than applying the more sophisticated reasoning process which presumably they had learned. If, as Herbert Simon (Chase & Simon, 1973) has proposed, it takes 10,000 to 20,000 hours (five to ten work years) to become a chess master, then third year students might be at too early a point in their development to show a difference based upon the change in their reasoning. If a nonmonotonic process is involved, the third year students might even do worse than the first year students on some questions, as was the case here and for Groen and Patel's radiology residents.

The fifth aspect of the study's design that might affect at least the interpretation of the results is that no data was collected either from pre-law students or from lawyers several years after their graduation from law school. The presence of these control groups would have shed light on a number of the possible interpretations of the data. For example, the possibility that law students come to law school already equipped with legal reasoning would have been checked by data from pre-law students. Likewise the presence of law graduates with several years experience would have checked the possibility that a nonmonotonic process was being learned. However, for the present, the contribution of such control groups must await future studies.

Summary and discussion.

This discussion began with a recognition of the possible conclusions that could be drawn from a finding of no difference between the legal reasoning of first and third year law students. It was recognized that those conclusions could go to the heart of both present legal education methods and the possibility of teaching expertise in general.

Since the present system of legal education has been in effect for about one hundred years (Stevens, 1983), and since it therefore can arguably be entitled to a benefit of the doubt, this discussion has focused on explanations of the finding of no difference between the groups and yet not overthrow legal education as we presently know it.

Reviewing the three sections of challenges discussed above, it would appear that a "middle of the road" interpretation of the findings is probably the best approach. Extreme interpretations are, of course, possible. The limitations explained by Campbell and Stanley (1966) can be used to attribute the findings to peculiarities of the individual students studied with no justification for drawing any wider conclusions either for the law school involved or for law schools in general. At the other extreme, one could argue that the finding of no difference, even though one group had about three and a half times as much instruction, means that this study is one more on the list of studies which prove that it is misleading to claim that expertise can be taught. At a minimum, this would mesh with previous calls for reducing the law school curriculum from three to two years (e.g., Packer, & Ehrlich, 1972).

In between the extreme interpretations is the possibility of interpreting these findings in a "middle of the road" fashion. From the one extreme, that interpretation could allow that the study's design, while not rendering the data superfluous, nevertheless could be modified both to better address the problem of motivating participants and to reduce

the "examination factor". For example, the use of simulated clients might be seen by students as being more realistic and thus increase motivation while still allowing data collection without students automatically applying a specialized set of responses that they may have learned for examination taking. From the other extreme, that middle position interpretation could allow that legal education may contain a "hidden curriculum" at variance with what the process is claimed to be. For example, it may be that knowledge base acquisition and deductive reasoning play a larger role than is often acknowledged. This could lead to measurement tools more focused on the knowledge base acquisition and deductive reasoning rather than upon legal reasoning as defined by Levi.

In addition to taking bits of wisdom from more extreme interpretive positions, a middle position might also concentrate on the possibility that a nonmonotonic process is being learned and that therefore increased learning will not always be accompanied by immediate improvements in performance. Although this would be frustrating for both students trying to learn expertise and teachers trying to measure that same learning, still it would appear to better represent what is involved in the acquisition of expertise.

Finally, taking a middle position would allow these findings to be more easily integrated with the findings of Bryden (1984). That study used traditional legal education measurement techniques. Issues were counted and totals compared for beginning and third year students. Here data was collected on the level of how issues are identified, on the level of legal reasoning by analogy as defined by Levi (1949). Uses of analogies by first and third year students were counted and compared. In both studies, no significant differences were found when the data was examined as a whole.

Although neither Bryden's study nor this one can be taken as dispositive, still both together can be read as presenting a stronger case that some modifications would strengthen legal education. Bryden urged greater use of programmed learning. This study would support at least greater recognition of the role of knowledge acquisition. It does not seem sufficient to rely on teaching legal reasoning or "thinking like a lawyer" as a set of skills apart from a large knowledge base.

In addition, both studies can be read as supporting the idea, often expressed before, that legal educators might spend more time explicitly describing the process they are teaching. Absent that explicit teaching, it appears that students may be quickly learning a specialized response to essay examinations. Although in one sense that shows that legal education can be very effective, it appears that the specialized response is learned more as part of a hidden curriculum than as an explicitly desired learning outcome. Moreover, it appears that such a specialized response, since it treats the law superficially as a set of overly abstracted rules, and since it does not involve use of law's richer resources, would be detrimental to students in their future practice of law.

Any changes in legal education will encounter predictable obstacles (Cramton, 1982). However, attempting to overcome such a specialized response by continuing to teach legal reasoning implicitly through the use of the case method may be effective for some but it probably is not the best method, particularly if a nonmonotonic process is being learned. Since a nonmonotonic process may delay positive feedback about what has been learned, students might become discouraged when long hours of work appear to produce no positive results and even seem to make matters worse. They may opt for what appears, at least short term, to work better. The fact that some students might succeed despite these obstacles would be of little comfort to educators if it appears that

the educational system could do more for many others to whom that educational system has held itself out as a source of help.

Conclusions

Reviewing the preceding findings and discussion, some conclusions will be drawn about the questions addressed in this study. Those conclusions then lead to two levels of recommendations. On one level, recommendations can be made concerning future work on these questions. On another level, recommendations can focus on the broader challenge of teaching expertise.

Many possible explanations could be responsible for this study's finding of no difference between the legal reasoning, as defined by Levi (1949), of first and third year law students. This researcher concludes that the most likely candidates are interference between the task of writing and the thinking aloud process, the "examination" factor with its associated specialized response, and the nonmonotonic nature of expertise learning. These appear the most attractive alternatives, not only because they would account for the results, but also because they would most directly lead to future remedial action.

If the results are due to interference between writing and thinking aloud or to participants thinking that they are taking a law school examination which calls for a specialized response, then data gathering can be modified to better capture the reasoning that they are learning. The suggestions of Groen and Patel (1988), for example, would attack part of this problem. If a nonmonotonic process is being learned, then longitudinal studies could receive more emphasis. To the extent that repeated measures present special problems and opportunities, reference can be made to the testing and measurement

advice of Willett (1988). In any case, conclusions and recommendations on this level allow practical steps to be taken toward resolving the larger questions of how problem solving and expertise in general can be defined, taught, and measured.

On a broader level, this researcher declines to conclude that the teaching of expertise is impossible or that legal education is in need of a revolution. However, it would appear that this study, read in light of other studies on the acquisition of expertise, supports at least one more general recommendation. As noted previously, the recommendation has been made before but it merits repetition. The studies support a call for legal educators, and other teachers of expertise, to be more explicit about what we teach, no matter how that goal is defined. If we teach a type of reasoning, we can identify and explain it. If we teach a knowledge base, we can acknowledge its importance and perhaps tailor our teaching methods to make its acquisition most effective and efficient. If we teach various analysis or learning skills, we can try to help students to see their progress even as their performance may appear to deteriorate. If acquisition of expertise is a long, hard process, we may have to examine how to instill a love of life-long learning.

It is likely that legal education, and the teaching of expertise in general, requires teaching to be explicit in all the ways outlined in the preceding paragraph, plus perhaps other ways of being explicit that have not yet been discovered. If that is the case, then we should acknowledge the magnitude of the task and be unwilling to be satisfied with short-term, partial solutions such as over-reliance upon any one teaching or testing method. Hopefully this study can help in the search for longer-term solutions both by documenting part of the legal education experience for the benefit of others who seek to teach expertise and by perhaps helping to forge links between legal education and

research on teaching expertise in general so that legal educators could take better advantage of what has been learned by others.

Hopefully this study also will help build a greater appreciation for what has already been accomplished in the teaching of expertise. Although, for example, law school testing, and state bar examinations, can be easily criticized, and although they could certainly be better, still this study would support a view that they may be preferable to many alternatives. If a nonmonotonic process is involved, then heavy emphasis on testing the acquisition of knowledge may be appropriate to test a student who has only been in the field for three years or less. It may also, of course, raise questions about whether testing at a later point might be appropriate, not only to protect the public served by the expert, but in addition to provide incentive for the expert to continue the process of gaining expertise.

By raising the possibility of what amounts to the recertification of experts, this set of conclusions has obviously moved far beyond the subjects and context of this study. It is an appropriate point to observe that much research remains to be done but that this study must, indeed, conclude. The torch passed by Bryden (1984) and others has been carried here but it again must be passed on. Further conclusions will be best made when more data has been gathered and examined.

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APPENDICES

Appendix A

Informed Consent Form

Prior to signing this form, please read all of the following paragraphs. The paragraphs are numbered to make it easier to ask questions about specific points.

1. The research project in which you would participate is being conducted, in part, to fulfill one of the requirements of Professor Senger's doctoral program at Michigan State University. The purpose of the research project is to study the type of learning which goes on in law school. Learning will be measured by essay questions much like those typically used on law school examinations. The one difference will be that, in addition to the usual written answers, participants will be asked to say aloud what they are thinking while they read the essay questions and prepare their written answers. There will be four essay questions which will be answered in a three hour time period. Each participant will write the questions while alone in a room with the principal researcher (Professor Senger); this will allow the process to be videotaped while preserving anonymity for the answers. The essay question writing sessions will be scheduled at your convenience over the next few weeks. Analysis of the data and writing a dissertation reporting the results will be completed within one year.

2. Signing this form expresses your agreement both that the research has been explained to you and that you understand the explanation. Please note that this research involves all the risks usually associated with taking an essay examination including both the risk of stress while answering the questions and the risk that one's performance may not meet one's expectations.

3. Professor Senger agrees not join in law school decision making concerning individual participants unless a participant makes a written request asking Professor Senger to join in a particular decision. Professor Senger will retain the right to grade participants in future law school courses but only if those courses use the school's anonymous grading procedure. If any part of this paragraph is not understood, please do not sign this form.

4. Please note that, even if you agree to participate, you may end your participation at any time without fear of reprisal.

5. All results of this study will be treated with strict confidence regarding the identity of any participant. Individual participants will be able to obtain their own results if they wish. The videotapes will be viewed only by Professor Senger. The videotapes will be erased after this research project is completed.

6. There are no guaranteed benefits to participants other than the agreed upon fee for their participation.

7. Signing this form will indicate that you have freely consented to participate in the research referred to in the preceding paragraphs. If you so agree, please sign and date this form in the space provided below.

_____ Participant's signature Date

If you decide not to participate, could you briefly indicate why? There is no obligation to say anything but the information would greatly assist analysis of the data that is collected.

Appendix B

Invitation to volunteer to participate

June 4, 1987

HELLO:

Want a chance to earn \$25, help with some research on legal education, and learn more about law school skills? How? Well, more details will be provided if you are selected, but the basic idea involves taking something like a law school exam. Three hours or less will be needed.

To indicate your interest in participating, please print your name and telephone number on this sheet and return it to the secretaries on the fifth floor. Please act before June 12th. Prospective participants will be randomly selected from those who volunteer and will be notified the following week. Even if you volunteer and are selected, you will be free to decline to participate if you happen to change your mind.

Thank you for your consideration,

Charles J. Senger

Professor of Law-

Yes, I would like to be considered:

Name _____

Phone Number _____

Appendix C

Response letter to volunteers

June 20, 1987

Dear :

Thank you for your expression of interest in participating in my study of legal education. As the next step, I would like you to call my secretary to schedule a three hour block. The time can be at your convenience - any time, any day that is open. What we can then do is to discuss the project in more detail and, if you wish to go ahead, we can complete the process in that time block.

If you have difficulty making an appointment, or if you have further questions, please do not hesitate to call me. If I am not at the office, please call me at home (517) 349-9105.

Thank you again for your offer to help. I look forward to working with you and together maybe we can make a contribution to legal education.

Sincerely yours,

Professor Senger

Appendix D

Protocol questions

QUESTION 1.

(Please remember to say out loud what you are thinking while you read and prepare your answers.)

Free food! It was too good to be true. But it was true, as Sally's teenage sister explained. All one had to do was to show up at 6:00 P.M. at what used to be the neighborhood school gym. A free hot supper was provided for all teenagers who came, Monday through Saturday.

Sally was only nine, and her younger sister was two and a half, but the hot lunches sounded great to someone who did not eat regularly. The next day, Sally decided to take her younger sister on a two block walk to the gym to try to get both of them a free hot supper.

Unfortunately, the charitable organization running the supper program enforced the rules limiting the suppers to teenagers. As the lady in the gym explained it, the city of Detroit had started the program to help keep teenagers off the street. Although all money for the program came from private donations, the city rules on eligibility still had to be followed.

As Sally argued with the lady, she did not notice that her younger sister had slipped away. By the time that Sally checked for her sister, she was too late. The two and half year old had gone out the front door of the gym and, in attempting to run across the street, had been hit and killed by a car.

The estate of the child sued the driver of the car, the city of Detroit, the charitable organization which ran the suppers, and the present owner of the gym, a local real estate company. In the trial court, all defendants were found liable. The defendants now appeal.

Using the bluebook that is supplied, please write an answer to the following two questions.

A. Assume that you are an attorney who represents the estate of the deceased child. Please explain how you would argue to an appellate court in support of the trial court's ruling that the estate has a cause of action against the local real estate company which currently owns the gym.

B. Assume that you are an attorney who represents the local real estate company. Please explain how you would argue to an appellate court in their defense against the trial court's ruling that the estate has a cause of action against the real estate company.

QUESTION 2.

(Please remember to say out loud what you are thinking while you read and prepare your answer.)

Danny Dealer didn't know what to do. His drug dealing profits were high but both the cops and some rival gangs were hot on his heels. If he got caught by the gangs, it would all be over. If he got caught by the cops, at least he wanted to save the money for his "retirement".

Given that banks had to report large cash transactions, Danny knew that going near a bank would only bring the cops closer. In desperation, Danny drove out into the country to bury a box full of money in some woods. The ground was harder than expected, Danny was out of shape, and time was short, but at least he got the box covered. The next day Danny was arrested and put in jail.

Some time later, Harry Hunter passed through the woods where the box had been buried. As Harry walked, he noticed the corner of a box sticking out of the ground, apparently uncovered by recent flooding. Harry was unable to dig up the box without a shovel but he broke open the exposed corner. The sight of all the money in the box almost caused him to faint.

Harry took the money from the box and filled both his back pack and game bag. He then took the money to the local sheriff's department and explained where the box was located. Harry could not believe what happened in the next few days. All his efforts resulted in an unending headache as seemingly everyone around went after the money. Larry Landowner, who owned the woods, said that the money should go to the landowner. Danny Dealer read about the find in the newspaper and Danny's lawyer says that Danny should get it. The Internal Revenue Service, the State Treasury, and others, all join the fight. After a short trial, the trial court ruled that, as a matter of law, Danny Dealer was entitled to the money. All the other claimants now appeal.

Using the bluebook that is supplied, please write an answer to the following two questions.

A. Assume that you are an attorney who represents Larry Landowner. Please explain how you would argue to an appellate court against the trial court's ruling that only Danny Dealer, and not Larry Landowner, is entitled to the money.

B. Assume that you are an attorney who represents Harry Hunter. Please explain how you would argue to an appellate court against the trial court's ruling that only Danny Dealer, and not Harry Hunter, is entitled to the money.

QUESTION 3.

(Please remember to say out loud what you are thinking while you read and prepare your answer.)

It was almost closing time when the robber burst into George Grocer's store. George knew what was happening, grabbed the shotgun which he kept under the counter, and attempted to shoot. Unfortunately the shotgun jammed and the robber's handgun didn't. George fell to the floor with a chest wound.

After grabbing the money in the cash drawer, the robber ran to leave only to see two police cars pulling into the store's parking lot. A gun battle broke out and the robber held off the police for about an hour until he was overpowered by a police officer who had slipped in through a back delivery door. The police confiscated the robber's handgun, a "Saturday Night Special Model" made by Cheap Arms Inc. Inspection of the weapon showed that "Saturday Night Special Model" was a good name for the handgun since it was poorly manufactured from cheap quality materials. Looking at it made it hard to believe that the robber had fired it almost sixty times in the battle with the police.

George Grocer sued Cheap Arms Inc. George claiming that Cheap Arms Inc. was liable under a theory of products liability. The trial court ruled, as a matter of law, that George Grocer had no products liability cause of action against Cheap Arms Inc.

Using the bluebook that is supplied, please write an answer to the following two questions.

A. Assume that you are an attorney who represents George Grocer. Please explain how you would argue to an appellate court against the trial court's ruling that George Grocer has no products liability cause of action against Cheap Arms Inc.

B. Assume that you are an attorney who represents Cheap Arms Inc. Please explain how you would argue to an appellate court in support of the trial court's ruling that George Grocer has no products liability cause of action against Cheap Arms Inc.

QUESTION 4.

(Please remember to say out loud what you are thinking while you read and prepare your answers.)

Corporal Paul Tanker joined the Army in 1985 and, after basic training, was assigned to Fort Huachuca, Arizona, the worldwide Army communications center. Shortly thereafter he met Sergeant Patricia Smith. Over a period of time, the two became involved in a sexual relationship.

In accordance with standard operating procedure, Corporal Tanker had been tested for AIDS when he had arrived at the Army base. Due to an administrative error, it was not until four months later that he was informed that he had tested positive for the AIDS virus. He told Sergeant Smith the bad news and the two of them broke off their relationship out of fear that Sergeant Smith might catch the disease.

Three months later Sergeant Smith visited Corporal Tanker and they again had sex which resulted in Sergeant Smith's pregnancy. Although Corporal Tanker's company commander had originally been understanding, this incident led to the commander deciding to bring criminal charges against Corporal Tanker. Corporal Tanker was charged with aggravated assault which is defined as assault "with a dangerous weapon or other means or force likely to produce death or grievous bodily harm."

Testimony at trial revealed that some medical experts estimate the chance of contracting AIDS to be as high as 50 percent for each sex act. Sergeant Smith's monthly tests for AIDS were revealed to all have been negative but doctors also testified that patients sometime do not test positive until four or five years after exposure.

The trial court convicted Corporal Tanker of aggravated assault. Corporal Tanker now appeals.

Using the bluebook that is supplied, please write an answer to the following two questions.

A. Assume that you are an attorney who represents Corporal Tanker. Please explain how you would argue to an appellate court that Corporal Tanker's conviction should be reversed.

B. Assume that you are an attorney who represents the Army prosecutor. Please explain how you would argue to an appellate court that Corporal Tanker's conviction should be affirmed.

Appendix E

Warm up Instructions

In this experiment we are interested in what you think about when you find answers to some questions that I am going to ask you to answer. In order to do this I am going to ask you to THINK ALOUD as you work on the problem given. What I mean by thinking aloud is that I want you to tell me EVERYTHING you are thinking from the time you first see the question until you have completed your answer. I would like you to talk aloud constantly from the time I present each problem until your answer is completed. I don't want you to try to plan out what you say or try to explain to me what you are saying. Just act as if you are alone in the room speaking to yourself. It is most important that you keep talking. If you are silent for any long period of time, I will ask you to please keep talking. Do you understand what I want you to do?

Appendix F

Participant's legal experience

Please answer the following questions which will assist with data interpretation:

1. Have you ever been employed in a legally related job? If so, please explain briefly.

2. Please circle any of the following course names if you have taken that course:

Trial Workshop; Sixty-Plus Law Clinic; Client Counseling;

National Moot Court; Law Review.

3. Are either of your parents an attorney? If so, please explain briefly.

4. Prior to going to law school, did you have close friend who was an attorney? If so, please explain briefly.

5. Prior to today's experience, have you discussed either the facts or issues of these questions, or the thinking aloud procedure, with anyone else? If so, please explain briefly.

APPENDIX G

CLASSIFICATION GUIDE

1. INTRODUCTION

The essay question answers you read will fall within one of several classifications. The classifications used here have been chosen to reflect both the type of authority being used and whether facts are used with that authority. The task is to classify each answer according to its type.

For purposes of this classification process, there is no implication that one type is necessarily better or worse than another. Likewise, the intent here is not to grade the answers as would be done in a typical essay examination. A number of other factors would have to be considered if grading were the goal. Once an answer is classified, there is no need to further evaluate it.

The following paragraphs will describe the classifications.

2. CLASSIFICATIONS

Type NLAA - Non Legal Authority Alone

Type NLAA - Non Legal Authority Alone - will be the classification if the student's written answer addresses the question in terms of common sense or authority other than legal authority. As will become clearer in the descriptions of the other answer types, legal authority would be a legal rule or court decision.

As an example of this type, a student might say that one party should win because it was "fair" or "just" to reach that result. Likewise a student might say that a given result should be reached because a Harris poll showed that the majority of the people in America agreed with that result.

Type NLAF - Non Legal Authority with Facts

Type NLAF - Non Legal Authority with Facts - will be the classification if the student's written answer addresses the question in terms of general common sense or authority other than legal authority, as in type NLAA, but also interweaves some of the facts of the problem into that common sense or non legal authority.

As an example of this type, a student might say that one party should win because it was "fair". However, the student would also show what facts of the problem made it more fair. Perhaps one party had been more responsible for the mistake that caused the parties a problem. Maybe one party had been in a more powerful bargaining position and had taken unfair advantage of that position. Anyway, the main characteristic which distinguishes this type from the previous one is that the facts of the problem are used with the non legal authority to support the conclusion.

Type RA - Rule Alone

Type RA - Rule Alone - will be the classification if the student's written answer addresses the question in terms of an announced legal rule. For example, a student might say that the rule of law in this state was "ABCD" and therefore the result in the present case must be "XYZ". The clear use of a legal rule distinguishes this answer type from the preceding types.

Type RF - Rule with Facts

Type RA - Rule with Facts - will be chosen if the student's written answer addresses the question in terms of an announced legal rule which is interwoven with the facts of the problem. For example, a student might say that the general rule was "ABCD". The student would then tie the facts of the problem to the elements of that rule. If application of the rule required that the injured party had lost more than \$100, the student would show how the problem involved a loss of at least that magnitude.

Interweaving the facts with the rule distinguishes this type of answer from type RA above. In type RA, a conclusion might be reached through the use of the legal rule but the facts were not explicitly treated in light of the requirements of the rule.

Type CA - Case Alone

Type CA - Case Alone - will be chosen if the student's written answer addresses the question in terms of a prior court decision. For example, the student might say that the

"Doe" case held that the rule was "ABCD" and therefore the result in the present case would be "XYZ".

The explicit reference to a prior court decision in what distinguishes this type from types RA and RF above. In types RA and RF, the rule is taken from a seemingly given body of law. The RA or RF rule is divorced from the prior facts of the case in which it originally arose. In type CA, at least the prior case is explicitly acknowledged as the source of the rule

Type CF-C or P - Case with Facts of Case or this Problem

Type CF-C or P - Case with Facts of Case or this Problem - will be chosen if the student's answer addresses the question in terms of a rule of a prior court decision which is interwoven with the facts of either the prior case or of the present problem. For example, the student might say that the "Doe" case held that the rule was "ABCD". The student would then tie the elements of that rule to the facts of the present problem. Alternatively, the student might explore the facts of the "Doe" case before reaching a result for the present problem.

Type CF-C or P is distinguished from type CA much like type RF is distinguished from type RA. Just as type RF interweaves facts of the problem with the announced rule whereas type RA just states the rule and perhaps a conclusion, so type CF-C or P interweaves facts of the problem or case with the rule from the prior case whereas type CA just states the case rule and perhaps a conclusion.

Type CF-C&P - Case with Facts of Case and this Problem

Type CF-C&P - Case with Facts of Case and this Problem - will be chosen if the student's answer addresses the question in terms of a rule of a prior court decision. However, unlike type CF-P, the facts of the prior case are explicitly compared or contrasted with the facts of the present problem before the rule of the prior case is applied to the present problem. For example, the student might say that the "Doe" case rule was "ABCD". The student would then note that "Doe" involved facts "EFGH" and the present problem involved facts "EFGK". Since the facts were not identical but still quite similar, the student would then conclude that the "Doe" case rule could be used by analogy in the present problem. In using the rule, the student may modify its requirements to accommodate the ways in which the present problem differs from the prior case.

Although this type answer shares much with the preceding types, the key distinction is that the student recognizes that the prior rule is being used by analogy. In type RA, RF, CA, and CF-P, the prior rule is taken as an absolute which is applied to the present problem and, at most, facts from only the problem or the case were interwoven. In type

CF-C&P, the student is giving evidence of the implications of using the prior case rule as an analogy. Those implications are twofold. First, that the prior case rule should only be used based upon a similarity between its facts and the present facts. Second, that the prior case rule may itself be modified in order to fit the special requirements of the present problem.

The CF-C&P answer thus shows recognizes that the rule of the prior case cannot be selected for application until consideration has been given to how the facts of the prior case compare and contrast with the facts of the present problem. The rule of the prior case also is not taken to be absolute but rather is subject to broader or narrower definition in light of the facts of the present problem.

3. CONCLUSION

The essay questions answered by the students have two parts. In addition, for a particular question, a student sometimes will break the legal problem into several smaller problems or issues with each smaller problem then receiving separate treatment. It may be that the treatment of one part of the problem seems to fit into one answer type and another part of the answer fits a different type. In such situations, the answer will receive multiple classifications. Thus one answer might be classified as types RA, RF, and CA because its different parts fit those classification types.

Finally, a student may use multiple common sense principles, rules, or cases in treating a given issue. If that happens, please write "multiple" along with the classification that is otherwise appropriate.

THANK YOU!

Appendix H

Practice question and answers

[Practice question]

Plaintiff was injured while riding a roller coaster when a branch from an overhanging tree struck her in the eye, shattering her eyeglasses. The plaintiff brought suit against the owner of the roller coaster, alleging that the owner negligently failed to ensure that the route travelled by patrons of the roller coaster was free of obstructions. The defendant denied that the amusement device was negligently maintained and that the plaintiff was injured while riding it. As part of his case-in-defense, the defendant sought to have the roller coaster manager testify that thousands of people had ridden the amusement device in the three months prior to the plaintiff's accident, and no rider had complained of having been struck by a branch or limb of a tree during a ride.

A. Assume that you are an attorney representing plaintiff. Please explain how you would argue to an appellate court that the roller coaster manager's testimony should not be admitted into evidence?

B. Assume that you are an attorney representing defendant. Please explain how you would argue to an appellate court that the roller coaster manager's testimony should be admitted into evidence?

[As noted in Chapter III, this question is taken from a classroom exercise in a class that was using as a text Paul R. Rice's *Evidence: Common law and federal rules of evidence* (New York: Matthew Bender, 1987). This question is taken from problem 2 on page 176 of that text.]

NLAA

The roller coaster manager should be allowed to testify about the prior incidents. If he can't testify, who can? Who is in a better position to know? What's the harm in letting him tell his story?

This witness has taken a day off from work to try to contribute what he can. He has waited all day. Now we are going to refuse to let him testify? Why?

If plaintiff is free to testify about his ride, and no one can say anything about other rides, how is the jury going to get the big picture? Doesn't simple fairness require that both sides get their say?

If there are some objections that plaintiff wants to make about the testimony, let's explain those objections to the jury and let them weigh the evidence in that light - but at least let them hear it.

NLAA

If this roller coaster owner has to pay for this accident, there soon won't be any amusement rides around. The story is always the same; the deep pocket or person with money should pay. But is that fair? Why should the ride owner bear the loss?

It used to be in this country that everyone was proud to take care of themselves. It was the pioneer spirit. If a wagon wheel broke, they fixed it and, if help was needed, the community pitched in. If a barn had to be rebuilt after a lightening storm, then the farmer and his friends did it. It wasn't always easy but self reliance instilled a special kind of pride.

Now everyone who has a problem immediately wants someone else to pay for it. Maybe the government. Maybe a corporation. Maybe a home town business. But the key is that it's always someone else.

If this roller coaster manager can't show the jury what's going on, then we invite the jury to make the wrong person pay. Of course this evidence should be allowed in. Justice demands it.

NLAF

The large number of prior safe rides should help defendant. If the number had been low, then the lack of complaints could have been for other reasons. Maybe others didn't report because their injuries were minor. Maybe they didn't know who should get the report. Maybe they didn't know that they could sue the owner. Maybe they had just been almost hit and had ducked out of the way.

Although there are other explanations, the thousands of persons who rode safely seems to more than cover the possibilities. If the wind was a factor, it must have blown hard on one of the previous rides. The same for plaintiff's height, etc. If riders were getting hit, it's unlikely that plaintiff would be the first to complain out of all those people. The greater the number of nonoccurrences, the more likely that a true reflection of the actual condition of the ride will be revealed.

Another way to explain it is to refer to the saying: "History repeats itself." Thus it is worthwhile to examine the history of passenger experience on the roller coaster. If no one else was ever hurt, then it would tend to suggest this particular occurrence was a fluke or the fault of the rider.

Prior history especially helps since it was supposedly a tree branch which hit plaintiff. A tree branch grows very slowly. To say that it was out of the way for 3 months and then suddenly grew across the path is hard to believe. If the branch was a hazard, it would have been reported previously. Since no such history of reports exists, it wasn't a hazard. It wouldn't be just if defendant can't show that history.

NLAF

Defendant argues that the rides of thousands of people over the three prior months are substantially similar to the ride taken by plaintiff and there were no complaints. The manager can lay a foundation by testifying to the customs and procedures in the operation of the roller coaster. That standard would set both times of operation and procedures of maintenance and checking. The maintenance inspection, for example, might be staff walking or riding the "rails" to check for possible problems like the tree branch alleged to have caused this accident. Defendant can testify the time period he chose is all within the same amusement season. Defendant can argue that there have been no changes in the route or trackage. In sum, the situation has remained substantially the same. Defendant would ask that the trial court admit the evidence based upon the similarities and the trial court's denial, if one, would be an abuse of discretion. Even if the prior safe rides are not perfectly similar to the ride in question, that should only go to the weight to be given the evidence, not to its admissibility.

The defendant's basic argument is that he had no notice of a problem. The testimony that thousands of people had ridden the device would be relevant to show this lack of notice. This testimony might be relevant to show that the branch had shifted into a dangerous position just before the plaintiff was injured and therefore show that the defendant may not have been able to foresee such an occurrence.

RA

Evidentiary questions like this should not be made to seem more difficult than they really are. The roller coaster owner wishes to show that his ride was safe. He wishes to show safety by evidence of prior nonoccurrences.

According to the law of this state, evidence of prior nonoccurrences is admissible as long as substantial similarity is shown. In this case, substantial similarity of circumstances is obvious. Therefore, the evidence should be admissible. The law of our state permits and, as a matter of fact, demands no less.

Plaintiff has, of course, objected to the introduction of this evidence. The motivation for that objection is not hard to see. This evidence is very relevant for defendant's case and naturally plaintiff would like to keep it away from the jury. However, the rule is that it's admissible and nothing that plaintiff says changes that.

RA

The manager's testimony is probative as it serves to discredit the plaintiff's contention of negligence. It serves to clarify the conditions under which the alleged injury occurred. It also serves to verify the organization's routine practice. Exclusion would, in fact, prejudice the defendant as it would be logical to assume that if the branch injured one person, it would injure another.

The rules of evidence allow relevant evidence to be admitted. This evidence should therefore be admitted. To deny the jury here an opportunity to weigh the facts in light of the manager's testimony would deny them an opportunity to consider circumstances which may have probative value in determination of whether the incident, in fact, occurred - something which must be determined prior to determination of whether the park was negligent.

Anyway, it is sufficiently similar that it should be admitted. This would be circumstantial evidence but it is relevant to the defense of my client and its probative force is greater than its possible prejudice to the plaintiff.

RF

Plaintiff here alleges that he was struck by a branch as he rode in a roller coaster. Defendant wishes to show that such an occurrence was unlikely, if not impossible. Defendant's means of proving that it was unlikely is to show that thousands of other riders completed the ride with no one saying anything about any branches in the way.

The general rule is that prior nonoccurrences can be shown if the circumstances of those nonoccurrences are sufficiently similar to make them relevant. That similarity is easily shown here. Defendant's roller coaster is the same one that has carried all the riders. The location of the ride hasn't changed in at least three months. There is no showing that the cars on the ride have been changed in any way - no windshields added or removed, etc. There is no showing of changes in the height of persons allowed to ride. For example, it would have been important if all the prior nonoccurrences happened when the only permitted riders had been children under 48 inches in height.

Since the prior nonoccurrences happened under sufficiently similar circumstances to assure relevancy, the general rule will allow the defendant to prove those nonoccurrences. To deprive defendant of that opportunity would be unjust and contrary to the American system of justice. If defendant is to have a fair trial, this evidence must be admitted.

RF

The modern principles of evidence would allow the testimony by the manager that no one had been hit before on the ride. If there was a chance that the jury might emphasize it too much, the adverse party can use their persuasive skills to convince the jury that it didn't really carry much weight.

Evidence about nonoccurrences is allowed if the events are close in time, the circumstances are static, and there is enough frequency to insure reliability.

Here the roller coaster manager's testimony is about nonoccurrences. The rule would support the admission of the evidence as long as the circumstances and use of the roller coaster had not changed much. Since at least some of the prior riders had been on the ride the same day as plaintiff, it seems likely that the nonoccurrences were under similar circumstances and should be admitted. Thousands of people riding the same roller coaster with no one getting hit by a tree branch is pretty persuasive unless the plaintiff is 8 feet tall or maybe was somehow standing up in the seat!

CA

Defendant's attorney would offer the manager's testimony to prove the alleged defect did not cause plaintiff's injuries. Show as support no other complaints have been made. Try to get people from the community to testify re: their personal knowledge from use at the park, etc. Hard to do because someone could have been injured yet not complained.

The Jeep rollover cases said that prior occurrence evidence is admissible if those occurrences were sufficiently similar to the one sought to be proven.

Here defendant wants to show lack of accidents rather than accidents. Still, the similar situation rule should apply. The prior roller coaster rides were similar. According to the Jeep rollover cases, the court should let defendant show them.

CA

The main issue is negligence. The defendant should have the right to establish that nobody else riding the coaster has ever been injured in this manner. Without this testimony, it is almost impossible to defend against this charge.

Under the Stanley case, the prior lack of accidents when all the persons rode the coaster should be allowed in. Stanley held that the absence of prior accidents was admissible evidence to prove lack of notice of a problem.

Of course it would help if it were corporate practice to document all problems with the coaster. That type of monitoring would help show what conditions were the same or different.

In summary, it will be best under Stanley if plaintiff can tie in facts about: closeness in time; static conditions; and frequency of use. Here, plaintiff should be in good shape.

CF-C or P

Plaintiff was hit by a tree branch while riding a roller coaster. In order to hold the owner of the ride responsible, plaintiff has to show that the owner was negligent - that the owner knew or should have known about the unsafe branch and yet did not act to protect the plaintiff.

The owner now seeks to prove that he had no inkling that the branch could be a problem. To prove that, he wishes to present the testimony of the roller coaster manager. The manager will testify that thousands of persons had ridden the coaster in the last three months and no one had complained about the tree branch.

Prior occurrences or nonoccurrences are relevant to a question of notice of a defective or dangerous condition. In *Marois v Paper Converting Machine Company* held that evidence of prior occurrences were admissible if the prior occurrences happened in substantially similar circumstances.

In the present problem, substantial similarity of circumstances could be shown by reference to a number of factors. One is that this is not a carnival ride which is moved from place to place - it's been in the same spot for at least three months. Another is that the tracks keep the ride within known bounds - unlike a "go-kart", for example. If these and like factors are enough for substantial similarity, then the evidence should be admitted under the *Marois* rule.

(CF-C or P)

The prior safe rides on the roller coaster are nonoccurrences compared to the occurrence of a tree branch allegedly striking a rider in the present problem. Evidence of prior nonoccurrences can be introduced if certain conditions are satisfied. For example, the court in *Simon* said that such evidence would be considered in light of three factors: the closeness in time of the non occurrences; the static or nonstatic condition and circumstances of the instrumentality in question; and the frequency with which the instrumentality was used during the period of nonoccurrence.

In the present problem, only two of the factors might be satisfied. Some of the non occurrences involving other riders were on the same night as the accident and the number of those riders may have been fairly high. However, even if those two factors are satisfied, the tree branch may not have been a static condition. The wind, for example, might have blown the branch into the path of the roller coaster.

Thus, according to *Simon*, the nonoccurrence evidence should not be admitted because all the factors are not satisfied. Therefore the offered nonoccurrence evidence from the other roller coaster riders will not be accepted.

CF-C&P

Evidence that something has not happened before is only admissible if it is relevant. But just because something has not happened before does not mean that it can't happen. Although arguments thus might be made both ways, Stanley v Schiavi was a lot like what happened in this problem. Here we have a roller coaster and proposed testimony about the absence of prior accidents. Stanley involved a mobile home with a three inch step leading from the main part of the mobile home into the living room. Stanley had tripped over that step and sued the mobile home dealer.

The mobile home dealer sought to prove that the dealer had no notice that the step was defective or dangerous. The dealer therefore attempted to introduce evidence that several hundred persons had walked through the mobile home model without anyone tripping. The appellate court stated that the evidence was admissible as long as substantial similarity of conditions was shown or an adequate number of incidents was offered. Since several hundred persons had safely negotiated the step, the court held that an adequate number of incidents had been offered and the evidence was therefore admissible.

With the roller coaster, the facts of the problem likewise do not show whether the conditions were substantially similar at the time of the accident and at the time others rode the ride. However, the proposed testimony again concerns a large number of prior nonoccurrences. The Stanley opinion presented this as an alternative prerequisite for admitting the evidence.

The logic apparently is that a sufficiently high number of prior situations assures that at least some of them were substantially similar. Whatever the limits of that logic might be, at least it is persuasive for facts such as those presented by this roller coaster situation. Here even more persons rode safely than had been involved in Stanley. Thus the evidence should be admissible.

CF-C&P

The roller coaster owner has a problem. Even if thousands of people have had safe rides on the roller coaster, it doesn't automatically mean that evidence of the safe rides will be admissible in court. The prior rides might have been safe for reasons totally unassociated with the accident being litigated in court. Therefore, before the evidence can go to the jury, the court must decide whether it is relevant - whether it tends to make more probable a fact material to the trial.

The case involving the train whistle perhaps could provide the court guidance in deciding whether to admit the manager's testimony in this problem. In the train whistle case, the plaintiff sought to prove that a train had not blown its whistle before it struck plaintiff's truck at a crossing. Plaintiff wished to present the testimony of other persons who would testify that the train often failed to whistle at that crossing. Those persons lived near the tracks with several having homes just about at the point where the whistle should have been blown.

According to the train case, the key to the admission of nonoccurrence testimony is that the prior nonoccurrence situations must be substantially similar to the situation that is being litigated at the trial. Although the court noted that some factors probably would be different each time the train went by, still it concluded that enough was the same to allow the testimony into evidence.

The situation with the roller coaster is much the same - it even can be viewed as a small train. The only difference is that the persons testifying would be those on the "train" rather than in homes alongside the tracks.

In some ways, the roller coaster situation is even more likely than the train to involve similar circumstances each time it runs. The train whistle depended upon a voluntary human act. The engineer decision to blow the whistle could have been influenced in a number of ways. Here, however, the presence or absence of a tree branch does not appear to be the result of a voluntary act. In addition, even though some things might be different each time the roller coaster went by, it's unlikely that a tree branch could grow fast enough to suddenly hit a person where no one had been hit before.

Since the court in the train whistle case held that prior nonoccurrences were sufficiently similar to be admissible, the prior safe rides likewise should be able to be shown in this problem through the testimony of the roller coaster manager. The roller coaster rides are more apt to be the same than the engineer blowing the whistle, allowing this evidence in will not broaden the train whistle case's ruling about what incidents are similar enough to be admissible.

Appendix I

Pearson product moment correlations

	LL	FF	SNS	TANK	CLASS
LL	1.000				
FF	0.371	1.000			
SNS	0.388	0.432	1.000		
TANK	0.394	0.537	0.092	1.000	
CLASS	-0.325	-0.216	-0.201	-0.403	1.000
UGPA	-0.004	0.291	0.216	0.159	0.074
LSAT	0.283	0.212	0.375	0.186	-0.190
LLFACTS	0.436	0.233	0.325	0.300	-0.111
FFFACTS	0.332	0.445	0.376	0.428	-0.333
SNSFACTS	0.406	0.425	0.467	0.061	-0.000
TANKFACT	0.340	0.366	0.411	0.096	-0.186
LLRULE	0.836	0.163	0.345	0.295	-0.302
SNSRULE	0.350	0.085	0.587	-0.138	0.000
TANKRULE	0.392	0.391	0.091	0.784	-0.267
FFRULE	0.052	0.699	0.088	0.403	0.111

	UGPA	LSAT	LLFACTS	FFFACTS	SNSFACTS
UGPA	1.000				
LSAT	0.170	1.000			
LLFACTS	0.326	0.080	1.000		
FFFACTS	0.378	0.172	0.630	1.000	
SNSFACTS	-0.049	0.195	0.356	0.356	1.000
TANKFACT	0.122	0.104	0.557	0.557	0.695
LLRULE	-0.172	0.139	0.201	-0.050	0.161
SNSRULE	-0.006	0.108	0.089	0.089	0.071
TANKRULE	0.016	0.068	0.089	0.089	0.071
FFRULE	0.185	-0.349	0.111	0.111	0.089

	TANKFACT	LLRULE	SNSRULE	TANKRULE	FFRULE
TANKFACT	1.000				
LLRULE	0.112	1.000			
SNSRULE	0.050	0.443	1.000		
TANKRULE	0.050	0.443	-0.071	1.000	
FFRULE	0.062	0.050	-0.089	0.356	1.000

BARTLETT CHI-SQUARE STATISTIC: 266.311 DF= 105 PROB= .000

MATRIX OF PROBABILITIES

	LL	FF	SNS	TANK	CLASS
LL	0.000				
FF	0.044	0.000			
SNS	0.034	0.017	0.000		
TANK	0.031	0.002	0.630	0.000	
CLASS	0.080	0.251	0.287	0.027	0.000
UGPA	0.985	0.119	0.253	0.401	0.696
LSAT	0.130	0.261	0.041	0.324	0.314
LLFACTS	0.016	0.215	0.080	0.107	0.559
FFFACTS	0.074	0.014	0.040	0.018	0.072
SNSFACTS	0.026	0.019	0.009	0.747	1.000
TANKFACT	0.066	0.047	0.024	0.613	0.326
LLRULE	0.000	0.390	0.062	0.114	0.105
SNSRULE	0.058	0.655	0.001	0.466	1.000
TANKRULE	0.032	0.033	0.633	0.000	0.153
FFRULE	0.784	0.000	0.645	0.027	0.559

	UGPA	LSAT	LLFACTS	FFFACTS	SNSFACTS
UGPA	0.000				
LSAT	0.370	0.000			
LLFACTS	0.079	0.676	0.000		
FFFACTS	0.039	0.365	0.000	0.000	
SNSFACTS	0.797	0.301	0.053	0.053	0.000
TANKFACT	0.521	0.584	0.001	0.001	0.000
LLRULE	0.364	0.463	0.287	0.792	0.395
SNSRULE	0.974	0.569	0.640	0.640	0.708
TANKRULE	0.933	0.721	0.640	0.640	0.708
FFRULE	0.327	0.059	0.559	0.559	0.640

	TANKFACT	LLRULE	SNSRULE	TANKRULE	FFRULE
TANKFACT	0.000				
LLRULE	0.556	0.000			
SNSRULE	0.795	0.014	0.000		
TANKRULE	0.795	0.014	0.708	0.000	
FFRULE	0.745	0.792	0.640	0.053	0.000

NUMBER OF OBSERVATIONS: 30