THE CAMBRIDGE-SOMERVILLE YOUTH STUDY REVISITED: A STUDY IN THE
CONCATENATION AND PROMULGATION OF CRIMINOLOGICAL IDEAS

by

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Title of Thesis:
The Cambridge-Somerville Youth Study Revisited: A Study in the Concatenation and Promulgation of Criminological Ideas

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ABSTRACT

This enquiry is an exploratory study into the concatenation and promulgation of some criminological ideas. By using citations and focusing on the ways that authors refer to the Cambridge-Somerville Youth Study (1951), this work attempts to ascertain how the Study is being incorporated into the social science literature. The thesis consists of an attempt to demonstrate the advantages of a bibliometrics approach for the study of ideas in the sciences and for the study of schools of thought. More specifically, this work argues for the benefits of using citation indexes in order to generate sets of documents which are then subjected to content analysis via citation typologies. Further, arguments are made that incorporating these modes of analysis into some of the more theoretical notions of Kuhn about the communication of ideas and citation practises in the sciences will lead to a more comprehensive study of ideas than when these approaches are pursued separately.

Two literature formats have been chosen for analysis: the journal article and the criminology textbook. A random sample of articles citing the Cambridge-Somerville Youth Study was selected from the Social Science Citation Index. In addition, a purposive sample of textbooks referencing the Cambridge-Somerville Study was located. These were analyzed and compared on several aspects.
Comparison of the two communication formats revealed both similarities and differences. For both samples, for instance, the emphasis tends to be on prevention and treatment aspects of the Study. A major difference, on the other hand, is that the textbooks tend to discuss the Study in more depth and more breadth, while the journal articles tend to focus on more discrete aspects of the Study.

These citation data are further examined in terms of their contents and the argument is made that the Study typifies a school of thought or perspective on crime and delinquency commonly referred to as the individual pathology model. Further, some of Kuhn's views about the roles and functions of journals and textbooks are exemplified. Finally, it is conjectured that many references to the Study are Kuhnian-type symbolic generalizations and exemplars.
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Those who have undergone the greatest impact are my family, Edgar, Martin and Erika. Even though they perhaps have not understood my commitment to the process of continuing my education, they have given me their unfailing support, for which
I will always be grateful.

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Men think. They formulate ideas at varying levels of abstraction, generality and precision: they make assumptions, categorise, systematise, theorise, argue, debate, cavil, define, criticise, cajole, denounce, state, believe, recommend, excuse, order and explain. These diverse thought processes and speech acts necessarily occur within a social context since even 'internal dialogue' presupposes a familiarity with social 'others' (Dixon, 1980:1).

If he [the teacher] is indeed wise, he does not bid you enter the house of his wisdom, but rather leads you to the threshold of your own mind (Gibran, 1973:56).

To round itself out, life calls not for perfection but for completeness; and for this the "thorn in the flesh" is needed, the suffering of defects without which there is no progress and no ascent (Jung, 1976:406).
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Introduction

This work is an exploratory or pilot study in the concatenation of criminological ideas via the techniques of bibliometrics. For this work, the term bibliometrics refers to the use of the citation indexes as the sources of documents and the attempts to categorize and to analyze the content of the citations and references. The word is also employed to characterize the endeavours to interpret the data by considering them in the light of some suggestions about the ways that ideas are communicated in the sciences. The theses of Kuhn (1970) are given special attention.

The techniques of bibliometrics are applied to citations and references to the Cambridge-Somerville Youth Study (1951), in order to discern if and to what extent there are patterns in these bibliographic practices, as well as to learn how the study has been incorporated into and disseminated in the social science literature. This work is more qualitative than

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1 The use of the word science throughout this thesis involves no a priori notions of what a science is. It is simply an adjective which locates, designates, or identifies bodies of literature that are referred to by that rubric. The word serves heuristically as an identifier, not as an assessment, or as a judgement (Shapin and Barnes, 1979:10; Mulkay, 1981:vii; Latour and Woolgar, 1986:281-284).
quantitative, akin to a case study.²

Some issues which are central to doing an adequate examination of the concatenation and promulgation of ideas are concerned with the ways in which the data are generated and selected, the quantities of data to be analyzed, and the problems of representativeness and typicality. Further, specialization has limited the value of many accounts of ideas in that such versions tend to be discipline-bound. It is here that, due to data problems and inappropriate modes of analysis

² This tentative probe is justified, in part by the possibility that there are, as yet, no well accepted methodologies for conducting systematic studies of ideas in the sciences. For example, Crane (1980:29) states of her work:

This study is conceived as an exploratory investigation of the cognitive content of a scientific specialty. Its purpose is to develop techniques and questions for investigation.[16] Rather than prepare detailed case histories of some aspect of the field, our goal in this study has been to identify a number of theoretical models whose characteristics are examined and compared in terms of their consequences for the development of knowledge. The advantages of this approach are that (a) it yields new insights into the nature of cognitive change within a field; and (b) it is suitable for making comparisons between fields.

Her footnote #16 is also worth attention. It explains that:

16. The methodology for a distinctively sociological approach to the cognitive content of science in the sociology of science is in its formative stages. Philosophers and historians of science approach these problems in different ways, and with different goals. For example, the philosopher of science seeks to appraise or evaluate completed theories. As Law points out: 'The role of the philosopher is that of judge and his commitment is nonempirical.' ... The sociologist, by contrast, is interested in understanding the factors affecting the development of theories, and this necessitates the examination of the various models which are proposed and gradually eliminated along the way.
and few adequate interpretations, many accounts of ideas in the sciences to date may be misleading (Skinner, 1972; Laudan, 1978:171-195; Studer and Chubin, 1983:225-255; Gilbert and Mulkay, 1984).

This work uses the Social Science Citation Index as a source of documents because it is a more comprehensive and systematically organized data source than the disciplinary indexes such as the Psychology and Sociology abstracts. Also, the inter-disciplinary nature of the citation indexes permits searching the literature broadly. Their use also constrains confirmation bias. This work proposes the use of citation indexes and citation content analysis as a systematic approach to the study of criminological ideas.

A 25% random sample of 33 journal articles from a total of 131 that cite the Cambridge-Somerville Study (Powers and Witmer, 1951) was collected from the Social Science Citation Index. In addition, 33 textbooks referencing the Study were located and used as a comparison sample. The Cambridge-Somerville Study was chosen, in part, because it continues to be described both methodologically and substantively in the current criminological literature.

This work sets out to accomplish several tasks. First, it explores the usefulness of a relatively new set of methodologies for the study of ideas. This methodology, referred to as bibliometrics, consists, in part, of the use of the citation
indexes as both tools and sources for the documents for content analysis. Second, by way of a citation typology, this work attempts to identify and assess the ways in which the Cambridge-Somerville Youth Study has been cited in the social science and criminological literature. Third, the articles and textbooks citing the Study, are analyzed in terms of the perspectives they are communicating. These documents show that the Study has been incorporated into the sample literature primarily as a typification of the individual pathology model of crime and deviance. Fourth, this work makes some conjectures about Kuhn's ideas on citing and referencing and examines his notions about the differential roles and functions of textbooks and journals, both within and among the sciences.

The Concatenation and Promulgation of Ideas

This work is subtitled "A Study in the Concatenation and Promulgation of Ideas" for several reasons. The Oxford English Dictionary (1974:387) defines the term "concatenation" as the "union by linking together..." or union "... in a series or chain..." or a "... concatenated series or system, an unbroken sequence, or chain." First, this definition is useful for an initial journey into the study of ideas because it bypasses and does not beg the question about the alleged cumulative nature of ideas in the sciences and it does not presuppose "progress". Second, because this work uses citation analysis as a technique for exploring the ways that ideas are incorporated into and
disseminated in the literature, the ideas are "linked" together by the methodology. Thus, in order to avoid the criticism of tautological reasoning, the term "concatenation" seems apt. Third, a study in the concatenation of ideas permits a focus on the ideas themselves and not on the circumstances of their production or on the scientists who create them. In other words, before one can explain the sources and consequences of ideas, one first needs to know the ideas themselves, their various forms and contents. The word "concatenation" facilitates the examination of ideas, in such ways as to discern how they are communicated in documents.³

³ Several authors (Chafe, 1986; Vande Kopple, 1986; Cooper and Greenbaum, 1986 in Cooper and Greenbaum [editors], 1986) make distinctions between the ways in which spoken and written discourse are treated. Ricoeur (1982:13-15) suggests four attributes of written language that make it different from spoken discourse. The first attribute is "exteriorization", that is, the inscription process involves "intentional exteriorization" of speaking into writing via syntactic and grammatical techniques. Second, in the realm of spoken language, "meaning" and "intention" overlap and this does not necessarily occur in written language. "What the text signifies no longer coincides with what the author intends; henceforth, textual meaning and psychological meaning have different destinies" (Ricoeur, 1982:13). Third, spoken discourse usually has a specified audience and a dialogical relationship. Written work, however, is potentially available to any literate person and may or may not be written for a definite audience. Fourth, there is a separation from the "ostensive reference" in written work. In spoken discourse the referent may be established "by the shared reality of the speech situation." In spoken discourse, the participants can clarify by indicating, pointing, or gesturing, thus linking what is said to that which is referential and, therefore, maintaining "ostensive reference" (Thompson, 1985:180). However, there is no necessary, explicitly shared situation or reality in the realm of written discourse. Thus, there is a possibility that "...the text has a referential dimension that is of a different order from that of speech, a dimension which is unfolded in the process of interpretation" (Ricoeur, 1982:14). The outcome of writing is such that the connection between spoken discourse and its "ostensive reference" is broken (Thompson, 1985:180).
In part, what also needs to be explained is the contexts in which ideas are promulgated by various social structures or institutions such as universities, disciplines, departments or schools and the courses contained within them. These institutions, with their own histories, are contexts within which ideas are disseminated in many forms, two of which are the professional journal and the textbook. Most researchers in the study of the sciences focus on the production of ideas, to the virtual exclusion of the form and content of the ideas as they are promulgated (Holzner and Marx, 1979).

The General Approach

A persisting set of criticisms about studies of the sciences involves arguments that they entail poor or no explicit techniques or methodologies (Laudan, 1978), and a dearth of data on the content of the ideas (Cozzens, 1985). This work uses content analysis as a technique for the categorization and analysis of ideas (Cicourel, 1964:142-146; Glaser & Strauss, 1967; Sumner, 1979; Krippendorff, 1980; Lincoln and Guba, 1985; Weber, 1985). In this work, it is argued that there is much to learn about ideas by focusing on the patterns of citations that are embodied in the publications of scientists.

While there are several disciplines that study the activities and ideas of scientists and science, this work tentatively explores the usefulness of bibliometrics to examine
ideas in terms of their concatenation, and focuses on the
documents of scientists as forms and contents of written
discourse. It also speculates on the ways that these ideas are
promulgated. Further, there is attention given to the substance
of criminological ideas by studying the citations to the
Cambridge-Somerville Youth Study in the publications of social
scientists.  

An Outline of Chapters  

Chapter II gives an overview of the background of the
Cambridge-Somerville Youth Study, including a brief biographical
note on the founder, Dr. Cabot, and a summary of the Allport
Forward. This is followed, in Chapter III, by a discussion of
the citation indexes as sources of documents. It includes a
brief history of the development of the indexes and an
evaluation of them as they contribute to the exploration of
ideas in the sciences. Examples of studies, using citations as  

\[ \text{Several students of the sciences argue that a primary}
\]  
\[ \text{impediment in the expansion of knowledge flows from language}
\]  
\[ \text{usage (Sartori, 1984). For example, Lachenmeyer (1971) contends}
\]  
\[ \text{that sociologists tend to use language that is vague,}
\]  
\[ \text{contradictory, ambiguous and suffers from opacity. While these}
\]  
\[ \text{problems will not be entirely resolved here, the preferred}
\]  
\[ \text{language usage is the following.}
\]  

When explaining the writings of others, or describing the
arguments of authors, the preference is to use disclaiming
vocabulary. Thus, terms such as: Smith argues, states,
conjectures, alleges, purports and claims, are used simply to
describe. These words are used neither to laud nor to criticize
\emph{per se}. Evaluation of the arguments of authors, if done, is
usually in a separate section or paragraph. This attempt is in
keeping with the naturalistic and reflexive approach to ideas
(Latour and Woolgar, 1986).
data, are noted in the general areas of science as well as in the specialty areas such as the bio-medical sciences and criminology. This is followed by an overview of citation typologies as modes of analyzing the ideas of the sciences. Chapter IV describes what was done in order to study the Cambridge-Somerville Study: the sample of journal articles citing it, the collection and selection of data, the description of the typology, its components, the organization and analysis of data and, finally, a discussion of the results.

In Chapter V, the contents of a sample of textbooks referring to the Cambridge-Somerville Youth Study are discussed. This sample is used as a basis of comparison with the journal articles. Some similarities and differences in the two types of publications, as they pertain to the Study, are noted.

Chapter VI is an attempt to illustrate the usefulness of bibliometrics to explore schools of thought. Several observations are described as they relate to the use of the Cambridge-Somerville Study to illustrate and exemplify the individual pathology model as a way of viewing and dealing with crime and deviance. Some theoretical ideas are touched upon in Chapter VII and an endeavor is made to explicate Kuhn's (1970) thesis regarding these topics.

A discussion of several findings out of the data forms the foundation of Chapter VIII. From the works of Kuhn (1970, 1979), key concepts relating to the practise of citing are considered.
which seem to form a framework upon which to organize some observations evolving out of this work. The possibility that some kinds of citations are symbolic generalizations and exemplars is considered.
CHAPTER II
A STUDY IN CRIMINOLOGICAL IDEAS: THE CAMBRIDGE-SOMERVILLE YOUTH STUDY

Introduction

A study of ideas in criminology relating to the Cambridge-Somerville Youth Study (1951) is provocative for several reasons. The Study is a commonly cited piece of research and is the exemplification of a popular perspective on crime and deviance which is often referred to as the individual pathology model. The Study appears at the transition between the decline of the reformatory movement and the rise of the prevention and rehabilitation trend in North America. It also stands at the apex of two debates in the social sciences concerning the possibilities of changing human behaviours: a) the debate over the efficacy of psychotherapy and b) the controversy surrounding the power of rehabilitation techniques in criminology.

The Study is referred to as an initial and important beginning to these debates. It is characterized as "one of the nation's earliest prevention programs" (Olsen-Raynor, 1983:593), one that "stands in a long line of programs" (Higgins, 1978:215). Mannheim (1967:187) describes it as "the best known American prevention program". It is a study described in considerable detail in arguments about the effectiveness of psychotherapy (Eysenck, 1961; Jeffery, 1969; Bergin, 1971;

In the debate about the effectiveness of interventions in general, it is cited as "showing" that these may be more harmful than helpful (Malan, 1973:721; Mays and Franks, 1980:81; Nettler, 1984:51-52; Melton, 1984:476). The Study is also referred to as providing evidence for the failure of specific intervention strategies such as individual counselling (Cressey, 1955:118), probation (Kraus, 1970:22; Harris, 1977:433-434), delinquency prevention programs (Shireman, 1974:558; Lundman, et al., 1976:306; Wright and Dixon, 1977:36-37), halfway houses (Geis, 1974:8) and unfocused individual counselling (Rutter, 1982:734).

On other substantive matters, the Study is described and referred to in discussions about the causes of crime (McCord, 1959; Glaser, 1964; and McCord, 1981), the psychopathic personality (Kohlberg, et al., 1984:118), the identification of predelinquents (Rose, 1967:6), the seriousness of delinquency (Kelly and Winslow, 1970:124), the role of the home and family in delinquency (Walsche-Brennan, 1967:7), and the amounts of "hidden" crime (Murphy, 1964; Nettler, 1984:51). Data from the
Cambridge-Somerville Study are used in justifying the theoretical arguments of Dunham and Knauer (1953:290), Cressey (1955:118) and Wilkins (1964:96).

The Study is also described and referred to as an important methodological example. Riley (1963:612-624) describes it in detail in a methods text, Weiss (1972:3) refers to it, and it is abstracted in Reicken and Boruch (1974:288). More specifically, Mannheim (1967:178) refers to the Study as an example of experimental design, while Berleman and Steinburn (1967:413-4) write that it "still stands, thirty years after its inception, as the most rigorous evaluation study". Pumfrey and Elliott (1970:187) write that it is the "longest controlled study which has yet been conducted". In the words of Segal (1972:12), the Study is one of "the best and most comprehensive attempts at evaluation research" and for Collingwood and Genthner (1980:591), it is one of the "most ambitious ... projects ... carefully planned...". Melton (1984:476) describes the Cambridge-Somerville Study as "carefully designed" and "rigorously conducted." Further, it is deemed an excellent example of a quasi-experimental and longitudinal study (Sobel, 1979:1021; Kohlberg, et al., 1984:118). Finally, a methods text by Kidder (1981:78-89) describes it as "A True Experiment", an ideal to be modelled: "The Cambridge-Somerville Youth Study is a unique piece of evaluation research because it did what many social evaluations should do."
Comprehensive literature searches and citation studies reveal many references to the Cambridge-Somerville Study (Wolfgang, *et al.*, 1978) and it often survives the process of the deletion of studies based on methodological adequacy (Lundman, *et al.*, 1976:306). For example, Wright and Dixon (1977:36-7) review 6600 abstracts related to the topic of the treatment of juvenile delinquency and community prevention programs up to January 1974. The search procedure involved computer scans of literature data banks, solicitations from more than 200 public and research agencies, and the Joint University Libraries at Nashville, Tennessee. Among the studies reviewed is the Cambridge-Somerville Youth Study. The author's description is succinct: "The studies by Powers and Witmer (1951) and McCord, McCord and Zola (1959) of the Cambridge-Somerville project still stand as the most carefully documented studies of individual treatment for officially defined delinquents."

Lundman and Scarpitti (1978:208-209) used computer search techniques to generate a bibliography on delinquency prevention programs. Out of 1,000 references, they examined 127 studies that met their criterion that the document must contain "independently interpretable information on both the nature and results of the project". These authors report that only 25 studies met this standard and the Cambridge-Somerville Study is included as one of them.

Finally, Sobel (1979:1021) referred to the Study as a "classic". It therefore warrants close scrutiny in an effort to
determine the attributes and characteristics of such studies. It may be as important to know how ideas in the sciences develop by studying "classical" research as well as the more common focus on "classical theories".

The Cambridge-Somerville Youth Study

In order to know how the Cambridge-Somerville Youth Study is being differentially incorporated into the social sciences literature, it is important to be familiar with the Study itself. Thus, what follows is a brief overview and summary of the Study as envisioned by Cabot, depicted by Allport in his Forward to the book and described by Powers and Witmer (1951).

Cabot: The Founder

Cabot, the person who inspired, organized and initiated the Study, had an illustrious career in the field of medicine. In this field, he was innovative and he was a renowned teacher; he inaugurated the first medical social services at Massachusetts General Hospital in 1905 and introduced the teaching of autopsy. He was apparently a man of unrelenting energy and, after World War I, devoted himself almost totally to the study and teaching of ethics. During this period, Cabot developed the case method of teaching. Allport (1951:587) lauds him as a "symbol of rugged integrity and public service" with the ability to combine the values of science with those of art.
Cabot was a reformer, devoted to the growth of humankind. He believed that growth was achieved through reverence for God and ascetic discipline coupled with liberty. He fought for both morality and freedom, being both President of the Anti-Saloon League of Massachusetts and an advisor to the American Civil Liberties Union.

Combining intense concerns for personal growth with an interest in finding effective ways of dealing with problems in society, Cabot devised the plan of the Cambridge-Somerville Youth Study. His philosophy appears in the Forward to the Gluecks' (1930) book as well as in the Powers and Witmer (1951) work. The following is the statement as it appears in both publications:

one necessary condition: that someone should come to know and to understand the man in so intimate and friendly a way that he comes to a better understanding of himself and to a truer comprehension of the world he lives in. The personal factor is the indispensable factor. Friendly understanding - implying an ingredient of love - is the basis of all therapy (Powers and Witmer, 1951:v; Glueck and Glueck, 1930:ix).

Cabot made clear his appreciation for the Gluecks' "hard-headed" empirical study which provided a further motivation to establish the Cambridge-Somerville Youth Study. He noted that the work of the Gluecks' emphasized the failure of the reformatory and stated that if reformatories are such "conspicuous failures", then one must re-think what it is that is to be achieved and devise a plan to accomplish the goals. There seems to be no reason to suspect that the conditions
existing in a Reformatory would be conducive to the reformation of its residents and he stated his hypothesis for success in decreasing criminality. His emphasis was on an individualized treatment program in which each person is attended to on a one-to-one basis. Cabot is reported as having felt strongly that, with adequate and appropriate financial and human resources, people could be turned away from criminal careers to lead useful, constructive lives in society.

The Allport Forward

Allport (1951) reviews the development and execution of the Cambridge-Somerville Youth Study (1951) including evaluations and analyses in the Forward. He maintains that the central theme of the entire study is the total dedication to an honest and fair assessment of the program and its effects, no matter what those effects might be. He reviews aspects of the research design, comments on the treatment techniques, notes problems in appraising the complex inquiry, and discusses the findings and conclusions.

Allport lays out the basic research design and indicates some of the problems resulting from such a comprehensive study. At the outset, the design was to be an experimental one comprising a treatment group of 325 boys and a control group of 325 boys who had been matched on several characteristics and their predicted tendency toward delinquency. (See Table II)
The following table indicates the numbers of boys initially in each of the control and treatment groups who were predicted to be either delinquent, non-delinquent or neutral.
TABLE I
Composition of the Treatment and Control Groups

<table>
<thead>
<tr>
<th></th>
<th>delinquent</th>
<th>non-delinquent</th>
</tr>
</thead>
<tbody>
<tr>
<td>control</td>
<td>165</td>
<td>135 + 25 neutral</td>
</tr>
<tr>
<td></td>
<td></td>
<td>= 160</td>
</tr>
<tr>
<td>treatment</td>
<td>163</td>
<td>137 + 25 neutral</td>
</tr>
<tr>
<td></td>
<td></td>
<td>= 162</td>
</tr>
<tr>
<td></td>
<td>328</td>
<td>272 + 50 (neutral)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>= 322</td>
</tr>
</tbody>
</table>

Each of two matched boys would be randomly assigned to either the treatment or the control conditions.

Several problems arose in executing the design, however. First, the control group was a control group only in a limited sense due to the fact that several services similar to those being offered by the Study were available to them in the community. Second, the project was to continue over a ten year period, which led to problems of attrition, i.e. the loss of both subjects and workers. Third, while Cabot suggested that it was necessary to "get to" these boys at a very young age, 5 or 6 years, in fact, the average age of the boys at the start of
treatment was 10 1/2 years. This was due, in large part to the fact that a 6 year old has had less opportunity to be involved in behaviours that might be seen to be problematic or leading to a delinquent career. Consequently, the early identification of potentially delinquent boys was problematic. Briefly, then, the plans of the experiment were extremely ambitious and the resulting objectives difficult to achieve. Due to the dropout rate of subjects and counselors during the war, no treatment boy remained in the program longer than eight years and the average length of time was five years. (See Table II) On the basis of this, Allport is forced to question whether the original hypothesis was actually tested.

Allport then reviews the so-called treatment methods and several major issues arose from this. The first was a debate concerning the nature of the problems that were to be treated. Because the design called for the involvement of some boys who were not seen to be future delinquents and boys had been randomly assigned to the treatment and control groups, the treatment group contained boys who did not have problems. This became a practical dilemma for the counselors who did not know what it was that they were to do with non-delinquent boys. Also, the boys in the project had been sought out and some families had been "seduced" into the program. This raised ethical problems for some people concerning the concepts of "human engineering". "Intrusion" versus "friendship" as social work policy had to be taken into consideration.
TABLE II

Length of Treatment Period

<table>
<thead>
<tr>
<th>Number of Boys</th>
<th>Average Period of Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>65 (retired)</td>
<td>2 years, 6 months</td>
</tr>
<tr>
<td>113 (dropped)</td>
<td>4 years, 2 months</td>
</tr>
<tr>
<td>72 (terminated)</td>
<td>5 years, 11 months</td>
</tr>
<tr>
<td>75 (carried to end)</td>
<td>6 years, 9 months</td>
</tr>
<tr>
<td>Average for group of 325</td>
<td>4 years, 10 months</td>
</tr>
<tr>
<td>Maximum period</td>
<td>8 years, 1 month</td>
</tr>
</tbody>
</table>

NOTE: Twelve boys were in treatment for 7 years or more, and four for 8 years or more.

[from Powers and Witmer, 1951:8]
The Second World War precipitated the attrition of both subjects and counselors. Of all the counselors, only one remained for the duration of the program and maintained most of her original caseload. She, too, was the one who had the "best" results. Allport (1951:xi) points out that this, by no means, proves anything, but "neither should we disregard its significance."

Further, Allport notes that, in terms of treatment, not only are the principles involved in character building unknown but there were 19 different counselors bringing their own approaches to the program. Many of these counselors were not trained social workers which made standardization of treatment virtually impossible and made the subsequent evaluations of the treatment program most difficult.

On the topic of the project goals, Allport notes that this experiment in delinquency prevention may have been the first time that a social agency had been "created for the purpose of assessing its own work" (Allport, 1951:xvi). He explains that, while delinquency "prevention" and "personal growth" were the goals designated by Cabot, the difficulty in tying these concepts to concrete measures means that the task of evaluation was problematic.

Witmer, a research expert engaged as the principle evaluator of the study, attempted to measure what is referred to as the "adjustment" of the boys. This proved to be an onerous task even
though four major methods were tried. These were:

1. A battery of attitude scales and personality tests which consisted of both standard psychometric instruments and some measures developed by the program staff. Due to the attrition of the subjects, it was decided that the numbers remaining in the program were not sufficiently large to make valid comparisons on these tests and measures.

2. Official statistics on delinquency. The evaluators were conscious of the inadequacies of official statistics but decided to make the best possible use of these police and court records.

3. Ratings of adjustment. These measures were developed and carried out by Witmer.

4. Case analysis. The case files of 254 treated boys were analysed in different ways in order to find out if and how many boys had benefitted and to what part(s) of the treatment the benefits could be attributed.

Allport also addresses the findings and conclusions of the study. His overall conclusions are that:

none of the evaluative methods employed indicates any great degree of success for the treatment program. Certainly, we cannot say that the initial hypothesis selected for testing has been satisfactorily established.

He makes several suggestions as to why this may be the case. Perhaps the hypothesis itself was unsound, too coarse or ambiguous. Perhaps the evaluative tools were too crude to determine growth or changes in character. It may be, also, that the effects of treatment were not to be realized until later in
the lives of the subjects and that would be a more appropriate
time for evaluation. In two interim surveys, the trend, while
slight, was in favour of the treatment boys, even though few of
the tests showed statistical significance. Unfortunately,
according to Allport, these evaluative techniques were not
employed after the conclusion of the treatment stage so, he
argues, "we must table the whole matter".

With regard to the evidence supplied by the official
delinquency statistics, Allport claims that there were few
differences between the two groups of boys. The frequency of
court appearances and the number of committals to correctional
institutions were quite similar, although there were fewer
treatment boys among the serious offenders. Allport surmises,
that this might be of import if further investigation indicates
a delayed effect such that, while treatment might not prevent an
initial delinquent act, it may be effective in preventing a
delinquent career after the first experience.

The measurements of social adjustment used by Witmer, were
the only evaluations that yielded totally negative results,
according to Allport, who questions the validity of such
measures in terms of the objectives of the program.

The final evaluative procedure, a clinical analysis of the
boys' cases, entailed a great deal of work but methodologically
lent itself to much criticism. The potential bias of the sole
analyst, the reliability and analysis of the "non-objective"
data which comprised much of a case file was highly problematic. The resulting analysis produced paradoxical conclusions. On the one hand, Witmer (1951) concluded that about one third of the boys had benefitted to some degree from the treatment program. On the other hand, it was reported that the terminal adjustments of the treatment and control boys did not differ. Allport suggests that there are several explanations for the apparently contradictory results. One is that as many boys may have been harmed as were helped and that one measure balanced out the other.

From the data and results of the study, attempts were made by Powers and Witmer (1951) to identify "causes" of juvenile delinquency. The single most important condition in juvenile delinquency is, according to Allport, the emotional "tone" of the home. Emotionally inadequate, damaging homes "engender deep conflict in the child". One conclusion of the Study is that neither poverty, uncleanliness nor broken homes are as instrumental in the predisposition to criminal behaviour as is emotional poverty. In what appears to be a prescription, Allport (1951:xxiv) adds "that the prevention of delinquency requires the establishment and maintenance of better homes under the control of better parents". Allport also ponders the value of beginning preventive efforts when the child is younger than these subjects but as he points out, not only is it difficult to identify predelinquents before they reach school age but methods of working with such young children are not well understood.
Given the extremely high costs of implementing such a program as the Cambridge-Somerville study, Allport advises that other agencies contemplating this sort of venture, restrict their efforts to children who are not seriously handicapped and attend to subjects that have a reasonable probability of showing successful outcomes. He also points out that the subjects of the study, both treatment and control boys, turned out better than the original predictions indicated. Indeed, those who did pursue criminal careers were predicted. However, the project workers grossly overpredicted the numbers of those who would do so.

Allport (1951:xxviii) concludes his Forward with a section entitled "Implications for Social Science". In it he has the highest praise for those who carried out this study and writes:

The account contained in this volume is marked by scrupulous honesty. There is no self-laudation, no special pleading. The product is a model of objective reporting. In this respect, it should be imitated by investigators who are both participants in and observers of the course of any special program.

Allport deems the Cambridge-Somerville Youth Study to be a most ambitious undertaking, and while the results were "disappointing", it has contributed an enormous amount to future endeavours of a similar nature. It has been a pioneer effort in addressing ethical, moral and hard-headed scientific issues in one fell-swoop, hopefully a point from which it is possible to achieve progress toward effective treatment and prevention of delinquency (Allport, 1951:xxviii).
This chapter has provided an overview of the Cambridge-Somerville Study. In order to ascertain how this Study is being portrayed and appraised in the literature, however, a mode of analysis is required. In the next chapter, the importance of citation indexes as sources of documents and citation typologies as ways of organizing and analyzing data are explored.
CHAPTER III

CITATION INDEXES, CITATION TYPOLOGIES AND THE STUDY OF IDEAS IN THE SCIENCES

Introduction

Many studies of the sciences have focused on neither the documents nor the substantive or cognitive contents of the sciences (Cozzens, 1985). This section suggests that citation indexes may be important sources of documents and their use may act as constraints on several kinds of bias in the study of the ideas of the sciences. In a following section, attempts to study the ideas in the sciences via citation typologies are discussed.

One set of important sources of data for studying the sciences are the Science and Social Science Citation Indexes. Recently, ways of analyzing citation data have been developed under various titles including bibliometrics, evaluation bibliometrics, scientometrics, statistical bibliographies, the documentary method and citation analysis (Weiss, 1960; Kessler, 1963; Price, 1964; Boyer & Folger, 1966; Garfield, 1970; Weinstock, 1971; Chubin, 1975; Studer, 1977; Small, 1978; Elkana, Lederberg, Merton, Thackery and Zuckerman, 1978; Cozzens, 1985; Garfield, 1988). In general, these rubrics refer to the study of scientific documents which are connected by the practices of citing and referencing (Small & Griffith, 1974:17). More specifically, Garfield (1970) and Garfield, Malin, and
Small (1978) have pioneered the use of citation indexes in their attempts to analyze the social structures of scientific communities, and the mapping of the patterns and arrangements of scientific literatures. Garfield (1970:669-671) suggests several uses for the citation index as a "valuable sociometric tool for historians and sociologists".

The Nature of Citation Indexes

A citation index is:

an ordered list of cited articles, each accompanied by a list of citing articles. The citing article is identified as a source, the cited article as the reference (Garfield, 1970: 669).

By locating the names of authors and their works in the indexes, subsequent citing documents may be identified. Thus:

a citation index for the journal literature identifies and groups together all newly published articles that have referenced (cited) the same earlier publication (Institute for Scientific Information, 1980:3).

The indexes also list documents by topics, located in Permuterm Subject Indexes. The indexes categorize topics by "the significant words found in an article's title" (Cooper, 1984:50-51). The indexes are set up for both manual and computer usage.

1 For Garfield's verbatim description of a citation index see appendix B. For a detailed description of the Social Science Citation Index and the methods used to manually search the index used in this work, see appendix A.
History and Development of Citation Indexes

One rationale for the development of citation indexes is provided by the "reference tradition" which prescribes that, when scientists publish, they "should" refer to earlier works which identify those concepts, methods and apparatus that inspire or are used by the author (Kaplan, 1964). Some possible reasons for using references and citations are listed by Weinstock (1971:19) as follows:

1. Paying homage to pioneers;
2. Giving credit for related work;
3. Identifying methodology, equipment, etc.; providing background reading; correcting one's own work;
4. Correcting the work of others;
5. Criticizing previous work;
6. Substantiating claims;
7. Alerting researchers to forthcoming work;
8. Providing leads to poorly disseminated, poorly indexed, or uncited work;
9. Authenticating data and classes of fact—physical constants, etc.
10. Identifying original publications in which the idea or concept is discussed;
11. Identifying the original publication describing an eponymic concept or term such as, e.g., Hodgkin's disease, Pareto's Law, Friedel-Crafts Reaction;
12. Disclaiming work or ideas of others; and
13. Disputing priority claims of others.

A second rationale for the establishment of citation indexes concerns the vast amounts of literature in the sciences, most of which can no longer be adequately indexed by subject abstracts, such as the Psychology or Sociology Abstracts. Therefore, the development of citation indexes concerns the need to provide an "effective, efficient, and unobtrusive alternative to the subject indexes..." (Garfield, 1970:669).
Since the enormous growth in the literatures of the sciences from around the 17th century, scientists have been attempting to develop efficient modes of synthesis and dissemination of their works. A contemporary response to the information "explosion" in the sciences has been the development of citation indexes (Bayer and Folger, 1966). Early proponents of citation indexes include Weiss (1960), Kessler (1963), Allen (1964), and Price (1964). Adapting citation indexing to historical research was realized when Allen (1964) created a citation technique to chart the major contributions of scientists, and illustrate the interrelationships among their publications. A basic step in the acknowledgement of major contributions is the identification of publications which have been highly cited by authors (Garfield, 1970:670, 1987).

Garfield (1970:670) also notes that citation studies can be used to disprove myths in science and "can also bring into focus anomalies in the history of scientific developments". For example, the contributions of Mendel (1866) in the field of genetics have been debated and it is often suggested that his research was ignored. However, through the use of indexing techniques, it is now argued that he was a major contributor to this branch of research (Garfield, 1970:670).

Indexing techniques can be applied to a number of different areas of study. However, their greatest utility is probably in: 1) library and information science, 2) history of science, and 3) the sociology of science. Even though the indexes can provide
researchers with a valuable tool, Garfield warns that they can also be abused, imposing a limitation on their potential for investigation of the sciences (Garfield, 1970:671). This brief overview notes the history and development of citation indexes. While it alludes to the importance of citation indexes for the study of the sciences, the next section elaborates upon the power of these indexes to explore the ideas of the sciences.

**Citation Studies of the Documents of the Sciences**

There are now several studies of the sciences using citation indexes as data (Price, 1965; Margolis, 1965; Cole and Cole, 1967; MacRae Jr., 1969; Garfield, 1972; Moravcsik, 1973; Mulkay, Gilbert and Woolgar, 1975; Edge & Mulkay, 1976; Gieryn and Merton, 1978; Roche and Smith, 1978). The indexes can be used to study a wide variety of topics and have been used to delineate and categorize literature in the sciences and determine their groupings and patterns (Cole and Cole, 1972; Small and Griffith, 1974; Cole and Zuckerman, 1975; Martyn, 1975:295; Garfield, *et al.*, 1978; Chubin, 1976; Roche and Smith, 1978; Cozzens, 1985; Dolman and Bodewitz, 1985). They are the most commonly used measures of "growth" (Moravcsik, 1973) and, finally, at least one group of scholars has considered citation indexes to be

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2 Citation analysts often employ graphic representations of networks of interconnected documents. Garfield (1970:670) uses two such examples which illustrate the capability of indexing research techniques for the discovery of major contributors in the history of science and the patterns these documents form by their referencing.
sufficiently important to create a set for the discipline of criminology (Wolfgang, et al., 1978; Green, 1981).

One of the major thrusts of students of the sciences is to use citation indexes and citation counts in order to ascertain if there are patterns in the overall literatures of the sciences (Garfield, 1987). Price (1965:510) claims to describe in very general terms the characteristics of a "total world network of scientific papers". This network is attained by linking together patterns of published papers that are directly associated with each other via citations. He argues that an overview of this network provides familiarity with the characteristics and attributes of the papers as well as the practices of citing and referencing.

There are also several attempts to use citation indexes in order to gain awareness of the arrangements of scientific specialty literatures. Essentially, the aim is to illustrate the relationships among the specialty areas of science via graphs and charts of citation frequencies (Small and Griffith, 1974; Griffith, et al., 1974; White, et al., 1979; Kolster, 1982). For example, the bio-medical literature has been studied through the use of citation indexes (Bayer and Folger, 1966; Mullins, 1972; Brieger, 1976; Mullins, et al., 1977; Mullins and Hecht, 1980; Studer and Chubin, 1980). Some analysts are using citation indexes in order to assess their usefulness in predicting Nobel Prize winners (Inhaber and Przednowek, 1976; Ashton and Oppenheim, 1978; Oppenheim, 1979).
Citation indexes, also, are being used to study the social sciences (Brondus, 1971; Baughman, 1974; Cole, 1975; Cole and Zuckerman, 1975; Oromanner, 1977; Wolfgang, et al., 1979; Green, 1981). MacRae (1969), for example, uses citation frequency patterns to examine growth and decline in disciplines and to argue that sociologists tend to cite the founding fathers more than do some natural scientists.

Using data generated by citation analysis, Cole (1975) examines the literature on deviance and crime as a means of attempting to understand the processes which accompany the growth of and change in ideas. Drawing on the works of Kuhn (1970) and Lakatos (1970), the concept of progress in science and some relationships between theory and research are explored. Cole (1975) uses citation frequencies and content analysis to delineate the "influential" authors and to differentiate the theoretical from the empirical literatures. In order to determine the manner in which theory is being employed by researchers, he derives a list of the theorists most frequently referenced. Then Cole uses content analysis of the citations used by the theorists in order to assess their reactions to and utilization of research. He states that, in these ways, it is possible to evaluate the connections between the researchers and the theorists and, also, the processes by which ideas in criminology "progress".
Due to the predominance of anomie theory in the sociological literature, Cole (1975:184) selects Merton's version for a more focused attempt to assess its "influence" upon research. Through a content analysis of citations to this theory in four leading sociological journals, he argues that anomie theory had a minimal "impact" on deviance and criminology researchers from 1938 until the late 1950's. From this time, citation frequency increased and then declined at the end of the 1960's. By analyzing references made to Merton's theory, Cole investigates the patterns of utilization of the theory. From Cole's (1975:210-211) sample and analysis of literature, he states that it is safe to conclude that theory serves the primary function of a data-interpretation device for researchers having gathered "facts" for nontheoretical purposes.

Problems and Issues in Citation Indexing and Counting

It is clear that the usefulness of citation indexes to examine the sciences depends in part upon the aims of the analysis. Several commentators point to some limitations of these indexes as measures of several kinds of scientific activity (Bayer and Folger, 1966; May, 1967; Cole and Cole, 1971; Moravcsik, 1973; Narin, 1976; Porter, 1977; Wolfgang, et al., 1978; Edge, 1979; Long, et al., 1980; Smith, 1981; MacRoberts & MacRoberts, 1984; MacRoberts & MacRoberts, 1986; Garfield, 1987). The majority of these criticisms and concerns relate primarily to questions about using the frequency of
citations as measures of the "quality" of works referenced and/or the "esteem" and/or the "influence" of authors. The work presented here does not use citation frequencies in these ways, nor does it defend their use as proxy measures. However, citation indexes do have some importance for the study of ideas, some of which are subsequently noted.

Advantages of Citation Indexes as Sources of Documents

Several students of the sciences are using the citation indexes as 1) data in and of themselves, such as in the counting of citations in order to ascertain most frequently cited topics and/or authors; as 2) sources of data, by identifying the contributors to a topic area (Cole, 1975); and as 3) powerful systematic literature search techniques, to identify and locate bodies of literature (Glass, et al., 1981, chapter 3; Cooper, 1984; Light & Pillemer, 1984:31-39). More specific advantages of citation indexes as literature search techniques and as sources of documents are outlined below.

Citation Indexes vs Subject Abstracts

Weinstock (1971:16) points out that citation indexes have several advantages over traditional subject and discipline abstracts. These include the potential of the indexes for identifying relationships among documents and their suitability for computer search methods. Further, those aspects that are
bibliographic descriptions of documents, such as journal names and volume numbers, are not vulnerable to obsolescence as are the terms used in the subject abstracts to refer to the contents and topics of documents.

Standard subject and discipline abstracts are inefficient ways of searching and researching the literature due to several problems. First, traditional subject abstracts became increasingly cumbersome after World War II with the rapid growth of literature which overwhelmed the number of indexers. Second, subject abstracts normally cover only one field or discipline and, therefore, restrict the inter-disciplinary exchange of ideas necessary for the increasing "interrelatedness" of the sciences. The citation indexes provide multidisciplinary searching capability. Third, semantic difficulties arise with subject abstracts due to the ambiguous nature of many substantive terms, particularly in new or rapidly developing fields. Therefore, articles may not be assigned to their appropriate category until some time after an original paper has appeared. Finally, the various intellectual abilities and technical skills of different indexers often lead to the problem of the same documents being classified under different subject headings.³

³ Thus, it is not surprising to find related documents classified under entirely different subject headings with no clue to the searcher that this has happened. For example, an important 1963 paper on the topic of "seasonal variations in birth" is indexed under the subject heading of "Periodicity" in the 1964 edition of Index Medicus. It is highly unlikely that anyone looking for seasonal variations in birth would ever think to look under "Periodicity" since it is quite a different
Comprehensiveness

One advantage of the citation indexes is their coverage of relevant literature. The Social Science Citation Indexes, for example, list all the publications in some 1,500 social science journals, plus they selectively cover some additional 3,000 journals that often include social science topics. In any one year, over 130,000 articles are indexed.

Weinstock (1971:34) notes that attempts to ensure that the journals chosen are the significant ones are made by 1) the recommendations of an editorial board consisting of experts in various fields and their evaluations of subscribers' suggestions for coverage, and 2) by large scale citation analyses to determine which journals are cited most frequently.

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3(cont'd) concept than "Seasonal Variation."

These types of problems made clear the need for a system that would provide a unified index to the scientific literature that was current, free of semantic difficulties, and not dependent on the subject knowledge of indexers (Weinstock, 1971:18).

Comprehensiveness is furthered through adherence to Bradford's Law which states that a small percentage of journals account for a large percentage of significant articles in any given field of science. Thus, if the journals are properly chosen, most of the world's important scientific literature will be indexed even though there are an estimated 30 to 50 thousand journals.
Multi-disciplinary

The interdisciplinary nature of the social sciences citation index is reflected in its coverage of over fifty social science disciplines (Cooper, 1984:49).

The coverage rationale which has evolved from this system places heavy emphasis on the multi-disciplinary journals, supplementing these with the most important journals from the individual disciplines (Weinstock, 1971:31). The interdisciplinary nature of the citation indexes can be expanded by subjecting the topic or author under analysis to a search strategy using both the Science and Social Science Citation Indexes, a process that facilitates comparative studies.

Indexes, Replication and Scrutinizability

Citation indexes are public and can be searched by anyone. Furthermore, they are readily available in many university libraries. This means that studies using these indexes as sources of data or documents can be independently scrutinized and/or replicated without contacting the original authors. This capacity is important because of the trend in the sciences for researchers to "lose" their original data (Sechrest, 1987:270).

Confirmation Bias and the Literature Search

Identifying and locating the literature on a topic is a process subject to several sets of problems which tend to reduce the range or scope of literature searches and reviews. Searching
and reviewing the literature is apparently subject to sets of constraining assumptions (Wagner & Berger, 1985:698); the self-selective nature of information retrieval (Snyder & Uranowitz, 1978); the idiosyncratic preferences of reviewers (Jackson, 1980); and confirmation bias (Cooper, 1984; Greenwald, et al., 1986:216). Confirmation bias is a phrase referring to a cluster of trends, whereby scientists persevere in the commitment to an idea, especially a theory, despite abundant disconfirming evidence. Literature searches and reviews tend to be selective and belief confirming (Rosenthal, 1966; Bush, 1974; Mitroff, 1974; Mahoney, 1977; Greenwald, et al., 1986:216).

A partial methodological constraint on confirmation bias rests in the generation of a population or sample of documents on any topic via the use of the citation indexes (Wienstock, 1971; Martyn, 1975; Studer and Chubin, 1980:232; Glass, et al., 1981, Chapter 3; Cooper, 1984:31-36; Light and Pillemer, 1984:31-39). These indexes exist independently and, therefore, can be used to create a set of documents in a way that reduces the selective confirmation biases of the reviewer/analyst. For those students of the sciences who are concerned to reduce the impact of the self-selective nature of the literature search process, these indexes constitute an important source of constraint.
Disciplinary Bias and the Literature Search

Another source of partiality in the study of the sciences derives from the disciplinary approaches of most analysts. Thus, many students tend to truncate their inquiry by confining their studies to the styles of their discipline. The abstracts and/or journals from only one discipline are often the primary sources searched. However, it appears that the disciplinary nature of the study of the sciences may be breaking down (Knorr-Centina & Mulkay, 1986) and that the sciences themselves are becoming more interrelated (Garfield, et al., 1974:363; Garfield, 1987:23). In any case, for those who are interested in the nature of the sciences beyond the confines of a discipline's approach, or are interested in comparisons among the sciences, the citation indexes allow for interdisciplinary searches of the literature.

Finally, while the citation indexes have a distinctly North American and English bent, within these categories there are, as far as is known, no other systematic sources of bias. Thus the use of these indexes constitutes a single "best possible" unbiased source of documents on almost any contemporary topic.

Summary and Conclusions

There are few textbooks to date which set out procedures for identifying and/or assembling an appropriate or representative bibliography on (a) any substantive topic, or (b) a
methodological or theoretical issue (Cooper, 1984:9). Despite the enormous amounts of literature in the sciences on any one topic, literature searches tend to be narrow and unrepresentative, resulting in a limited scope of analysis (Jackson, 1980; Cooper, 1984:11). This means that conclusions about the topics are often partial and restricted and subject to confirmation bias (Jackson, 1980; Cooper, 1984; Pillemer and Light, 1984). The use of citation indexes constitutes a constraint in these confining approaches.

In the next section, several innovations in the use of citation techniques are exemplified. These have been preliminary attempts to develop citation content analysis techniques for ascertaining patterns in the substantive contents in the sciences and tracing them. Cozzens (1985:127) suggests that examining "what is said about a particular scientific paper when it is cited in later works" and tracking changes in these expressions over time, constitutes a method for describing the process of knowledge growth. Thus, the use of citation indexes as sources of documents plus the content analysis of these papers provides a useful approach for studying ideas. The following discussion sets out some of the literature on the development of techniques for analyzing kinds of citations and ascertaining if there are patterns among them. Typologies of citations as modes of content analysis are recent attempts to increase familiarity about the ways references are used to express ideas in scientific literatures.
Citation Content Analysis

Cole and Zuckerman (1975: 158) point to initial developments in the study of the sciences via citations and the analysis of their contents.

Clearly sociologists of science are now taking the first steps toward understanding the ways in which knowledge develops, and how research by different generations of scholars is linked together as these are reflected in citations. Thus citation analysis at its present stage of development can only take us so far toward understanding the character of intellectual influence. Serious content analysis of manuscripts is required to fill out the skeletal facts provided by citations (emphasis added).

Content Analysis and Citations

To date, it appears that little is known about the norms and behaviours of citing and referencing even though these practices are deemed to be critical to and demanded of and by scholars and scientists (Kaplan, 1962; Edge, 1979). Critical comments on some of the limitations of citation analysis are found in Cole and Zuckerman (1975:158) who state that procedures and techniques:

...for analyzing the types of citations and their frequency are not well developed. In fact, sociologists of science have not even settled on a standardized classification of citations.

The Cole and Zuckerman (1975:158) comment is applicable to contemporary work on these issues. Thus, entry into this field and the attempts to expand and develop a typology of citation types must be considered as preliminary only. What follows is an
overview of some of these efforts (Moravcsik and Murugesan, 1975; Martyn, 1975; Spiegel-Rosing, 1977; Ruff, 1979). Following this, an attempt is made to develop a typology that will be useful in examining the citations to the Cambridge-Somerville Youth Study.

The Citation Content Typologies

Citation content analysis has been approached from a variety of different perspectives and are premised on various objectives. For example, Martyn (1975:292) points out that some studies indicate that the relevance of citations is partially dependent upon where they occur in the document.

Moravcsik and Murugesan (1975) argue that most work on citations has been conducted by sociologists or library scientists who are not trained to understand the scientific content of the papers. Thus, the many subtleties of citations, their contents, and the context in which they are made, are likely to be overlooked or misunderstood. Moravcsik and Murugesan (1975), therefore, concentrate on those aspects of the study of citations which require this type of judgement.

Using references in thirty articles from the journal Physical Review, Moravcsik and Murugesan (1975:88) concentrate on a few categories that might reveal something about the nature of citations. These categories involve the questions of whether the reference is: (1) conceptual, that is, made in connection
with a concept or theory, or operational, referring to a tool or
technique being used in the referring paper; (2) organic or
perfunctory, the former being necessary for the understanding of
the referring paper, and the latter merely an acknowledgement
that some other work in the same general area has been done; (3)
evolutionary, such that the reference provides the foundation
for the referring paper, or juxtapositional, in that an
alternative or contrasting position is noted; and (4)
confirmative or negational, wherein the reference states that
the author agrees or disagrees with the cited paper.

Moravcsik and Murugesan (1975:91-92) suggest four
interpretations of their results. First, there are great numbers
of juxtapositional citations; almost half of the works referred
to describe an approach different from that used in the
referring paper. Second, since the latter pattern is likely to
be indicative of the initial stages of a theory or field in
which no particular approach is very successful, it is possible
that the "evolutionary" to "juxtapositional" citation ratio can
be developed into a quantitative measure of agreement in a given
field of science. Third, the large fraction of "perfunctory"
references raises serious doubts about the use of citations
counts as "quality measures", since barely publishable papers on
fashionable subjects may be highly cited as "also ran"
references. These conclusions require further examination in the
view of Moravcsik and Murugesan (1975:92).
Spiegel-Rosing (1977) attempts to assess the development of a new journal, Science Studies. The data consist of the first four volumes of the journal (1971-1974) which have been subjected to a systematic evaluation by content analysis. This evaluation begins with "a rough content classification of the articles" in order to obtain a preliminary overview of the major topical and methodological orientations of the four volumes (Spiegel-Rosing, 1977:98).

Spiegel-Rosing (1977) then proceeds with two analyses of the references cited in the same four volumes. The first of these addresses the age of the references which refers to "the time between the publication of the articles under review and of the previous research cited in it", and the second consists of a content analysis of the "kind of use" references play in citing papers (Spiegel-Rosing, 1977:101). Spiegel-Rosing derives thirteen classifications of citation uses.5

While Speigel-Rosing (1977) focuses on kinds of citations, Ruff (1979) is interested in citation patterns over time. He notes that one problem in citation studies is that the Science and Social Science Indexes are made up primarily of citations in the 1970's while interest in the sciences often extends back in time. Further, the rates of citations may vary across time periods, and this may make the study of "old" classics difficult. In order to inspect the decay rates of citations over time and thereby examine the reliability of extrapolations to

5 See Appendix C for these classifications.
time periods preceding the development of citation indexes, he undertakes a case study of citations to the publications of an "important" theoretical molecular spectroscopist, Kovacs.

Of the 700 citations made to Kovacs' work between 1937 and 1975, Ruff omits self-citations, repetitions and citations made to less public works. A "sample" of 429 citations is analyzed, in part, by modifying the typology suggested by Moravcsik and Murugesan (1975). Citations are regarded as "perfunctory", (a) if they occur in a review article or (b) if they are "made under more than one reference number within the same context which refer to Kovacs' papers among those of other authors". "Real impact" or "organic" citations are defined as those that are: (c) extensive or made for the purposes of argumentation, (d) made with some reservation, (e) critical and suggest an alternative, and/or (f) extensive or made several times throughout the paper (Ruff, 1979:83). "Perfunctory" citations are deemed the total number of a and b citation types, and "real impact" citations are calculated as c, d, e and f type citations.

Ruff claims to have found that the distribution of perfunctory citations is not uniform among the papers although they are of equal numbers to the "real impact" citations. The resulting data are depicted as showing a fairly consistent pattern of impact associated with three declines in his publications coinciding with Kovacs's involvement in World War II, in an administrative post and in the writing of a monograph.
This chapter has reviewed some of the literature that focuses on the role and importance of citation indexes and the content analysis of citations as modes of learning about the ideas of science. As can be appreciated, this literature is in the initial stages of development and is therefore fragmented and incomplete. Nonetheless, it seems clear that the techniques of locating and content analyzing citations is a potentially useful approach. Therefore, in the next chapter, portions of this literature will be used in attempts to apply these approaches to a sample of journal articles citing the Cambridge-Somerville Youth Study obtained from the Social Science Citation Index. These data are followed in Chapter V by a similar mode of inquiry applied to a group of textbooks referencing the Study.
CHAPTER IV
CITATION ANALYSIS: THE JOURNALS

Introduction

The dissemination and promulgation of ideas in the social sciences to practitioners, academic professionals and some students occurs through the use of journal literature (Hagstrom, 1965; Chubin, 1975). Journals are aspects of disciplines, some of which are located in universities, and these institutions are historically and socially located structures. An analysis of ideas in journals, then, is also an inquiry into the ways that idea systems are socially arranged (Holzner and Marx, 1979).

This chapter begins an analysis of a sample of journal citations to the Cambridge-Somerville Youth Study.¹ A total of 131 citations from 1966 to 1984 to the Study were identified in the Social Science Citation Index. From these, a 25% random sample or 33 articles, was chosen for analysis.² The random sampling procedure is used, not only to enhance the representativeness of the documents but also to compensate for "confirmation bias".³ Out of the sample of 33 articles, there

¹ For the most part, these data will be presented here only; interpretations will be presented in Chapter VIII.
² See Bibliography: Journal Sample.
³ Confirmation bias as outlined in the discussion of the citation indexes (Chapter IV) is the tendency of the scientist to "find" evidence that supports an a priori position and to "screen out" that which does not, to selectively retrieve ideas in order to protect beliefs (Greenwald, et al., 1986).
are 38 citations to the Study. This sample is one of the bases for discerning what the documents inform us about the ways in which the Cambridge-Somerville Study is being portrayed in these articles and incorporated into some of the journal literature. By using some of the categories of the typologies discussed in the previous chapter, an attempt has been made to discover the ways that authors refer to and describe the Study.

The Typological Components

A typology has been developed in an attempt to discern some of the characteristics of the citations to the Powers and Witmer version of the Cambridge-Somerville Youth Study (1951). The authors that have been the sources for the development of this typology are Moravcsik and Murugesan (1975), Chubin and Moitra (1975), Spiegel-Rosing (1977), Ruff (1979), Cozzens (1985), and Dolman and Bodewitz (1985).  

These people are specialists in several different disciplines and some in more than one field. They include physics (Moravcsik and Murugesan, 1975), chemistry (Ruff, 1979), scientometrics (Ruff, 1979), sociology and policy research in science (Cozzens, 1985), sociology and the social studies of science (Dolman, 1985), and chemical and biomedical sciences (Bodewitz, 1985).

All of these authors have had their articles on typologies published in the journal Social Studies of Science. Clearly, the fact that each of these publications occurs in the one journal is a limiting factor in some sense. A more exhaustive investigation and analysis would include a search of other journals in other disciplines to see if the concepts and ideas contained in these articles are being considered in other fields and journals. What is apparent from these diverse approaches is that a citation typology probably works best when it is generated and/or adapted to suit the specific sources, units of analysis, tasks and questions of the inquirer.
The citations will be considered with regard to the following categories: their distribution and frequency over time, the disciplines of the citing sources, the location and length of the citations, the extent to which the citations are perfunctory or organic, and the evaluative aspects of the citations in terms of whether the citing authors laud or are critical of the study or aspects of the study. The last category, which is not part of the typologizing literature, is a topics analysis, wherein the contents of the citations is considered.

The following is devoted to a description of the components of the typology developed for this analysis. The first four categories describe physical characteristics of the journal citations, while the final four and that of "focus" or topics are descriptive of their substantive content. Having identified and outlined these classifications, the next section describes some of the characteristics of the sample of journal citations to the Cambridge-Somerville Youth Study.

The Citation Data

Time

The first component is frequency and is self-explanatory inasmuch as it is simply a count of the number of citations per year to the Powers and Witmer work (1951) from 1966-1985 derived from the Social Science Citation Index. This type of measure has
formed a part of many citation analyses and may be used only as a crude index of the "popularity" of ideas contained in the published literature. More importantly, however, the collection of citation data allows one to establish whether or not and to what degree the study continues to be a part of the literature.

The citations are grouped for the time periods 1966-1970, 1971-1975, 1976-1980, 1981-1984 (see Table III). Between 1966 and 1984, there has been an annual average of 7.27 journal citations to the Powers and Witmer (1951) work. The frequency of citations has remained constant (28%-31% of the total citation population) for the first three time intervals, and decreases by half in the final interval (1981-1984) even when a correction is made for a missing year of citation data in 1985. These data tend to show that the study continues to be carried forward in the literature.

Disciplines

The second component of the typology is the discipline of the journal in which the citation occurs. In knowing the discipline of the publishing source, one can determine where the ideas contained within the cited document are being disseminated and perhaps gain some sense of the radius of the responses to any given work. A more in-depth analysis of this aspect could include the further distinction amongst the citing journals in terms of their being "pure" or "applied" (Dolman and Bodewitz, 1985:515-516). Such an analysis would permit one to determine

51
### Table III
Physical Characteristics of Journal Cites by Time Period

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<tr>
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<td>1</td>
<td>9</td>
<td>3</td>
<td>17</td>
</tr>
</tbody>
</table>

*All categories, except 'Journal Types', are measures of citations rather than articles.*

**The category 'Extensive' is a confounding category, i.e. the extensive citations have often been put into more than one classification which accounts for the fact that there are more numbers in the cells than the total number of citations.
not only the discipline into which any particular idea or set of ideas is being disseminated, but also how the idea is being used.

The majority of citations (18) occur in criminology journals. However, it is interesting to note that the Study is often referred to in disciplines other than criminology. If one collapses the data into two disciplinary categories, criminology and "others", which contains 21 citations, then it appears that the Study has attracted as much attention in other disciplines as it has in criminology.

Location

The third element of the typology is the citation location (Martyn, 1975; Gilbert, 1977). For example, does the reference occur in the introduction, the body, the summary and conclusion or other places within the citing article such as in the notes and references section? The location of the citation is possibly an indicator of the importance of the reference to the citing document. Speigel-Rosing (1977) and Gilbert (1977) consider the introduction and the discussion sections to be locations of primary importance. However, when the portions of the article are not differentiated by identifying headings, it may be difficult to distinguish between the various parts of the article. This can be particularly problematic when the citing article is not empirically oriented, for example, or when it is an editorial comment.
### Table IV

Physical Characteristics of Journal Cites by Discipline

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</table>
Differences between the locations of citations within the articles occurred in the sample across time periods. The largest differences are found in the 1976-1980 and 1981-1984 periods in which the "body" citations are more than twice as frequent as "introduction" citations, a contrast to the first two time periods.\(^5\)

**Length**

The citation length or the amount of text devoted to the reference is the fourth characteristic to be considered (Moravcsik and Murugesan, 1975; Chubin and Moitra, 1975; Spiegel-Rosing, 1977; Ruff, 1979). On the surface, at least, it seems that a citation contained in one sentence would contribute differently to a citing article than would one that consists of a bracketed name and year and still differently than one that constitutes a paragraph. The categories within this work are 'sentence', 'paragraph', 'extensive' and 'other' which includes the footnote, the bibliographic entry only and the chart.

There are only six citations that are "extensive" and all of these occur in journals outside the field of criminology. There does not appear to be a discernable pattern or trend expressed by the category of length as was expected, especially as the category relates to the citation location. The occurrence, however, of the citation lengths such as "sentence" and "other", is highly associated with the frequency of the perfunctory

\(^5\) See Table III.
citations, citations that tend to be one sentence, a bibliographic entry or a footnote.

*Perfunctory Citations*

Moravcsik and Murugesan (1975) and Ruff (1979) use the term perfunctory to refer to an acknowledgement by the citing author that some other work in the general area has been done. Ruff (1979:82-83) describes these kinds of references as follows:

1. citations made by a review article or a monograph which, by its nature, intends to cover all papers in the field comprehensively and
2. citations made under more than one reference number within the same context which refer to papers among those by other authors. Such citations are usually those in the introductory part of the paper or in the theoretical section.

An example of a perfunctory citation is found in Delhees, et al. (1970:231) who cite Powers and Witmer (1951), among others, in the following way:

In the special field of delinquency, the work of Andry (1), Bandura and Walters (4), Burt (11), Glueck and Glueck (28), Powers and Witmer (36) and others gives equal indication of important criterion relations to family attitudes.

Another example of a perfunctory citation is contained in footnote #1 in Brown, McCullough and Hiscox (1972:252): "The Cambridge-Somerville experiment undertaken by Dr. Richard Cabot is also fully documented in Powers and Witmer (1951)". This concept of the perfunctory citation will be considered later in another section in conjunction with a discussion of Kuhn's ideas about citing. Suffice it here to note that there are several
perfunctory citations (28) to the Study.

*Organic Citations*

The sixth element of this typology is entitled "organic". An organic citation is one that, for Moravcsik and Murugesan (1975), is necessary to the understanding of the referring paper. Ruff (1979) also identifies an organic category which he calls a "real impact" citation. It comprises four sub-categories or characteristics including: cited extensively or as an argument, cited with reservation, cited with criticism and used extensively. Also, such a citation is one that is essential to or forms the theoretical, methodological and/or empirical basis of the citing article (Spiegel-Rosing, 1977; Moravcsik and Murugesan, 1975; Ruff, 1979). For the purposes of this section, however, "organic" will designate citations that are essential in nature to the substantiveness or the importance of the cited material for the citing document. The particular focus of the citation, as theoretical, empirical or methodological, will be described by other sub-categories, outlined below.

An illustration of an "organic" citation appears in the work of Grey and Dermody (1972). This article charts various aspects of six studies, one of which is the Cambridge-Somerville Youth Study. The Study forms an intrinsic part of the entire citing article. Of the total number of citations to the Study, there are 11 citations that can be considered as organic citations in this sample.
Evaluating Citations: Positive

If the citing author is in some way laudatory of or in agreement with the cited work, the citation is counted as one of the seventh type, which has been labelled "positive". The following citation is seen to belong in this group because the Powers and Witmer study is appraised positively and is used as a justification for proceeding with the work of the citing authors. Berleman and Steinburn (1967:413-414) write that the study: "... still stands, thirty years after its inception, as the most rigorous evaluation study."

Evaluation of Citations: Negative

Negative citations are those which are either disparaging of or in disagreement with the cited work. The citation to

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6 Garfield, Malin and Small (1978) distinguish between important and correct. These categories are not descriptions of rightness or wrongness but of the positions of the citing author relative to those of the cited author. See also Gilbert (1977:119-120). What is of more concern here, however, is how the reader of the citation perceives, in this case, the Cambridge-Somerville Study, by the reading of the citation. For example, regardless of the outcome of the Study, if the citation says that it was a "fiasco" (Biles, 1974:147), the reader's perception of it may well be negative. However, if the citation says of the Cambridge-Somerville Study "...it did what many social evaluations ideally should do." (Kidder, 1981:87), the impression of the Study, gained by the reader, is probably positive. Given the difficulty of making some distinctions, it may be that even a conscientious analysis of some citations will not result in a correct evaluation of the citing work.

7 These last two categories of appraisal have been included in various typologies of several authors (Moravcsik and Murugesan, 1975; Spiegel-Rosing, 1977). However, the position of the citing author(s) with regard to the cited paper is sometimes difficult to determine, and is a difficulty encountered by Gilbert (1977:119-120).
Powers and Witmer (1951) by Biles (1976:147) is judged to be negative because the aspect of the original study referred to is negative:

Criminologists may not really know much about the causes and correlates of crime, but we are fairly adept at specifying what is not true and what does not work. And that negative information ranging in time from the work of Lombroso (10) to the Cambridge-Somerville (11) fiasco and the Kansas City Prevention Patrol Experiment (12) represents beginnings of an empirical science of crime.

In the present sample, some citations (Raynor, 1978:416) are both positive and negative. An illustration of this is found in Raynor, where he refers to the Powers and Witmer (1951) study as "influential", yet, also states that it "attempted to assess the effectiveness of social work and counselling services, with discouraging results".

These evaluation categories are not definitive and it is often difficult to assign a citation to one of them. In the case of the Cambridge-Somerville Study, there have been many different aspects upon which citing authors have focused: the treatment theory as envisioned by Cabot, the treatment as carried out, and the design and methods used. One citing author (Grygier, 1966) may disagree with a certain aspect of the original study and use this as a justification for pursuing a tangential research direction. Conversely, another citing author (Delhees, 1970) may refer to a minor aspect of the study, such as familial relations, in order to justify his or her pursuit of that aspect in a major way. Stated differently, a minor element of the cited study becomes the major focus of the citing author.
Given these caveats, the analysis of the citations seems to be as follows.

The Powers and Witmer (1951) work is most often cited negatively, in that 16 of the 39 citations are primarily critical or draw attention to a limiting aspect of the Study. Seventeen of the citations are neutral while only five of the references are positive. It may be postulated that the Study is regarded as a seminal work for both its attributed positive and negative elements. It may be further postulated from this that additional credence is given to such a position by noting that an almost equal number of citations (17) are judged to state no position. From this latter observation, it also may be inferred that the contents of the Cambridge-Somerville Study are expected to be known to the reader. This possibility is elaborated upon in a forthcoming section on ideas of communication and citing in the sciences.

Content of Citations

None of the studies that have used typologies to organize the citation data attempts to reveal the substantive content of the sentences and paragraphs which comprise the citation. Because the ideas themselves are important, this work subjects the citations to a "topics" analysis. The next step in the analysis is to attend to the content and focus of each citation; what aspect(s) of the Cambridge-Somerville Study have been attended to by social scientists. Clearly, Cabot stated two main
goals or objectives of the Study. First, he espoused a theory of
treatment for juveniles and second, he proposed to evaluate the
effects of the treatment by using a control group of non-treated
boys. The method of evaluation developed by Cabot and his
colleagues was complex and a great portion of the report is
devoted to the delineation and explanation of that methodology.
The book repeatedly emphasizes the importance of the inquiry
being undertaken for the express purpose of evaluation.

As can be seen in Table III, the foci of the journal
citations are diverse. They have been, for the purposes of this
work, condensed into six large categories:
1. delinquency prevention techniques
2. causes of crime
3. prediction of delinquency
4. methodological issues
5. review of evaluation studies and
6. miscellaneous.

Even though a primary emphasis of the Study was on the
design and methodology used, only ten citations address this
topic while 20, over twice as many, attend to delinquency
prevention and treatment techniques. Several things are of
interest here. First, in the criminology journals, one half (9)
of the citations (18) attend to various types of prevention and
treatment techniques while the remaining nine citations are
distributed throughout the other five classifications. Second,
the psychology journal citations equally address techniques of
prevention and methodological issues. Third, the social work journals in this sample attend exclusively to prevention and treatment issues.

Summary and Conclusions

It was expected that a pattern of perfunctory/organic citation types would be identified in the 18 year period. The discerning of a pattern in which more organic-type citations would be evident at a time closer to the publication date of the cited work, while the perfunctory type citations would become proportionately more numerous as there is a move away from the publication date might be anticipated. In fact, this anticipated pattern does not emerge in the sample. While no conclusions on the basis of these trends are arrived at, it is possible that a sample of earlier citations to the Cambridge-Somerville Youth Study would comprise a larger proportion of organic or "real impact" type citations.

It is apparent that there are some limitations to the above data analysis which show a direction for further study. First, at the time when the Social Science Citation Index was introduced in 1966, the Cambridge-Somerville Study (1951) had been published for 15 years. As a result, this sample does not contain any of the initial citations to the Study. An analysis of early responses to the Powers and Witmer work may provide a

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8 See Table III.
<table>
<thead>
<tr>
<th>FOCUS</th>
<th>Crim</th>
<th>Psychol</th>
<th>S.W.</th>
<th>Other</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency - articles</td>
<td>73</td>
<td>II</td>
<td>4</td>
<td>5</td>
<td>33</td>
</tr>
<tr>
<td>- cites</td>
<td>18</td>
<td>II</td>
<td>4</td>
<td>6</td>
<td>39</td>
</tr>
<tr>
<td>Delinquency Prevention</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>9</td>
<td>20</td>
</tr>
<tr>
<td>and Treatment Techniques</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Causes of Crime</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Prediction of Delinquency</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Methodological Issues</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Review of Evaluation Studies</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Note: The totals exceed the number of cites due to the fact that some cites focus on more than one of the elements of the table.
different picture of how the Study was treated in the journal literature between 1951 and 1965. One possibility is that the large proportion of perfunctory citations found in the 1966-1984 period could be explained by a process of standardization of the citations occurring in the years just after the original publication. In the same way, the lack of extensive citations in the criminological literature between 1966 and 1984 may be explained by the possibility that the Study had become "old hat" to criminologists by 1966; that the extensive citations had appeared prior to 1966 and a pattern of thorough accounting of the work had passed.

The study now appears to be undergoing a second generation of citations where the original study is no longer being referenced. For example, Kidder (1981:87-89) in a methods text extols the study as a "true experiment" and focuses on both its methodological and substantive features. Over the two full pages devoted to the study it is referenced nine times. Not one of these is to the Powers and Witmer (1951) version. McCord's (1978) appraisal is documented seven times and Sobel's (1976) review of McCord's (1978) evaluation is referenced twice. Possibly the McCord's versions are becoming the accounts of the Study that are more frequently cited. It is, for example, a McCord (1981:394-405) account that appears in the Committee on Research on Law Enforcement and the Administration of Justice (Martin, Sechrest, and Redner, 1981).
The study is also probably being tied more directly to the renewed debate about rehabilitation effectiveness initiated by Martinson (1974). For example, it is cited in the same paragraph with Martinson (1974) in the Raynor (1978:416) article, and is also linked in the Higgins' (1974:233) citations. Marquis and Gendreau (1979:181) link the Cambridge-Somerville Youth Study to the Martinson (1974) debate via references to the McCord (1978) and Sobel (1978) articles.

It is tempting to conject that the changes in the location patterns, as ascertained in the data, may be associated with an increase in attention along with an increased number of publications on rehabilitation and deterrence that follow the documents of Martinson (1974) and Lipton, Martinson and Wilks (1975).

Also, with regard to position, it was anticipated that there would be a predictable relationship between the location of the citation in the document and the substantiveness of the citation. For example, a citation contained within the body should be longer and more "organic" than "perfunctory" in nature, compared to a citation contained in the introduction only. Such a pattern does not occur in this sample except in those cases which have been classified as extensive citations. However, the shift in the number of citations from the introduction to the body between 1976 and 1980 may indicate that the study was being given increased attention in the latter years.

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9 See Table III.
part of the 1970's. While these assessments and appraisals are preliminary and exploratory, it is possible to conclude that the methods that are explicated in this work are useful in enhancing both familiarity with the communication of ideas and the power of these techniques.

One of the advantages to the methods used in the work presented here is that such conjectures about the changes in citations associated with the emergence of the debate on the effectiveness of rehabilitation could be assessed. For example, one could inspect all or a sample of articles citing the Cambridge-Somerville Youth Study after 1974 and their bibliographies for citations to the Martinson (1974) and Lipton, Martinson and Wilks (1975) works. Further, it would be possible to look for co-citations where the Martinson works are cited along with the Study. Thus the frequency of these works occurring together might be gauged. In addition, the text surrounding these citations could be inspected for content. For example, the article by Marquis and Gendreau (1979) is a rejoinder to the McCord (1978) and Sobel (1978) argument and these references do link the Cambridge-Somerville Youth Study to the Martinson debate.

In the next chapter, citation analysis is applied to a collection of textbooks that refer to the Study. These data provide the basis for some comparisons.
CHAPTER V

COMMUNICATING IDEAS: THE CRIMINOLOGY TEXTBOOKS

Introduction

The promulgation and dissemination of criminological ideas to students takes place, in part at least, through the use of textbooks. Textbooks are often components of courses, which are parts of departments or schools, that comprise at least a portion of a discipline. These aspects are, in turn, integral to an historically located, socially structured institution such as a university. A study of textbooks, then, is partially a study of socially structured idea systems even though disciplines and the sciences may not be coherent, monolithic enterprises (Kuhn, 1970:49-50).

The use of textbooks appears to be an integral component of the educational process (Kuhn, 1970, 1979). Their use, as both a means of storing and communicating ideas to the student is a commonly accepted practice within the realm of the sciences (Oromaner, 1969:124; Rothman, 1971:125). The student receives a very general introduction through the textbook, where the effort is to present various theories, ideas and concepts that are relevant to the area of study.

A few authors have researched the content of textbooks. For example, Mills' (1943) work on early social problems textbooks has been seen to be a "classic". More recently, Scully and Bart
(1973)' searched the contents of 27 gynaecological textbooks published in the US from 1943 to determine if there were biases toward women in these texts. Hedley and Taveggia (1977)' conducted a study of some 41 sociology textbooks to discern the ways in which original research is reported and Steffensmeier and Clark (1980)' claim that they surveyed the "traditional" criminology textbooks published between 1918 and 1965. Their purpose was to identify biological/sexist bias in the treatment of sex differences in crime.

Textbook Citations to the Cambridge-Somerville Youth Study

An examination of a purposive collection of 33 textbooks, containing 55 citations to the Cambridge-Somerville Youth Study is made. Unlike the sample of journal articles, this assemblage of textbooks was not randomly selected. However, it is useful as

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1 Scully and Bart (1973:1045) claim to have found that

one of the primary professional socialization agents for practitioners in the field, revealed a persistent bias toward greater concern with the patient's husband than with the patient herself.

2 Hedley and Taveggia (1977:114) claim that

serious discrepancies occur between original research reports and textbook treatments of these same reports.

3 Steffensmeier and Clark (1980:246) conclude, from 34 criminology texts that

rather than a biological bias in the textbooks, there exists a preponderant sociological or sociocultural bias.
a basis for a crude comparison with the journal articles. The purposive set includes only those texts which contain citations or references to the Cambridge-Somerville Study. This was determined by a search of the indexes of each textbook. Page numbers of references to the Study as well as references to Powers and Witmer (1951) were noted and examined.

Each textbook reference was then summarized and its length noted together with the chapter and subheading titles under which that reference appeared. The summaries were subsequently examined for content and tabulated according to the issues and topics discussed in the citation passages. Subheading titles were used to classify the topical issues because these were often more specific than were the chapter titles.

A tabulation of the subheading titles reveals the following: the largest proportion of references (28) are under "prevention and treatment" headings and the next largest groups are designated as "perspectives and approaches" (18) and "experimental designs" (5). These are out of a total of 49 subheading titles.

Most frequently, the accounts of the Study are summaries that rarely contain interjections by the authors. Textbook

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4 See Table VI.
5 See Table VII.
6 See, as an example, Barnes and Teeters (1959:602).
7 See Sutherland and Cressey (1978:73) and Riley (1963:572), as examples.
Table VI

Textbook Issues*

<table>
<thead>
<tr>
<th>Issue</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cabot's hypothesis</td>
<td>15</td>
</tr>
<tr>
<td>Design issues</td>
<td>15</td>
</tr>
<tr>
<td>Sample</td>
<td>22</td>
</tr>
<tr>
<td>Prevention and Treatment</td>
<td>28</td>
</tr>
<tr>
<td>Counselors</td>
<td>9</td>
</tr>
<tr>
<td>Variables</td>
<td>5</td>
</tr>
<tr>
<td>Reliability</td>
<td>1</td>
</tr>
<tr>
<td>Attrition</td>
<td>1</td>
</tr>
<tr>
<td>Results</td>
<td>28</td>
</tr>
<tr>
<td>Prediction</td>
<td>5</td>
</tr>
<tr>
<td>Ethics</td>
<td>1</td>
</tr>
<tr>
<td>Rates of official action</td>
<td>4</td>
</tr>
<tr>
<td>Citing author critical</td>
<td></td>
</tr>
<tr>
<td>of design</td>
<td>5</td>
</tr>
<tr>
<td>of perspective</td>
<td>11</td>
</tr>
<tr>
<td>Negative conclusions (general)</td>
<td>2</td>
</tr>
<tr>
<td>Includes evaluations by other authors</td>
<td>29</td>
</tr>
<tr>
<td>Abstract only</td>
<td>12</td>
</tr>
<tr>
<td>Bibliographic note only</td>
<td>3</td>
</tr>
</tbody>
</table>

* The total number of references to the Cambridge-Somerville Study is 55 in 33 textbooks.
authors seldom assert a position with regard to the individual treatment approach so obviously espoused in the Study by the workers and by Cabot. Few authors, even those who are sociologists, interject, disclaim, or offer caveats to the orientation of the Study, nor do they put forth alternative sociological explanations.

Comparing the Textbooks and Journals

A comparison of the contents of textbook references and journal article citations to the Cambridge-Somerville Study reveals some thought-provoking differences as well as some similarities. Many of the differences are not surprising because of the possible separate functions of the two types of publications.

Differences

One outstanding difference between the textbooks and the journals is that the latter focus essentially on substantive matters. Ninety-four percent of the journal citations, compared to 49% of the textbook citations focus on substantive topics. Generally, the textbook accounts discuss the Study on a much wider scope than do the journal accounts. Rather than focusing on discrete elements of the Cambridge-Somerville Study, such as the selection of the subjects or the impact of the family milieu

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8 For examples of such accounts, see Robison (1961:83); Reckless (1967:782-3); Johnson (1974:547).
### Table VII
Comparison of Foci

<table>
<thead>
<tr>
<th>Focus**</th>
<th>Journals</th>
<th>Textbooks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N=39*</td>
<td>N=55*</td>
</tr>
<tr>
<td>Substantive issues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- treatment and prevention</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>- causes</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>- research evaluation</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>- seriousness</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>- side effects of treatment</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>- class distribution of delinquency</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>- types of offences</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>- prediction</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>- other</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Methodological issues</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>- experimental method</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>- treatment variables</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>- measuring techniques</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>- compulsory participation</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>- self, official reports</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>- other</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Other—includes summaries, bibliography notes, footnotes only</td>
<td>1</td>
<td>18</td>
</tr>
</tbody>
</table>

* N refers to the number of citations, not articles.

** The focus of each textbook citation was determined on the basis of the subtitle heading under which the citation appeared. There are other ways of making this determination, which would possibly yield different results.

The N's of the references do not correspond to the number of textbooks in the sample because of the multiple references contained within several of the textbooks.
on the predelinquent boys, the texts tend to contain an abstract or overview. There are 12 of these summaries or abstracted accounts in the 33 textbooks. Where there is more than one reference in a text, there is usually a focus on some discrete element(s), such as the design or the effects of the counselors on the boys' rates of deviance.\(^9\) In conjunction with the comprehensiveness of the references, the length of the references varies between one and 22 pages.

Perhaps the most obvious difference between the journal and the textbook references is the large percentage of abstract-type accounts to be found in the textbooks. These references are generally lengthier than those to be found in the journals and they are generally more substantively inclusive, meaning that they tend to overview many aspects of the Cambridge-Somerville Study, including the hypotheses, the subject selection, matching and assignment to treatment and control groups, the experimental design, the treatment program and the results and conclusions.

In contrast, the journal versions are usually shorter and substantively less inclusive. In other words, they are focused on specific issues or aspects of the Study and are more diverse in their collective contents. Even when the journal article deals extensively with the Powers and Witmer (1951) work, the

\(^9\) See, for examples, Barnes and Teeters (1959:622-625); Robison (1961:490-496); Riley (1963).

\(^{10}\) See Reid (1976:297-298).
citations are most often focused on a specific element, such as the predictions of delinquency or casework effectiveness in delinquency prevention.

The relative high frequency of evaluations and versions in the texts attributed to writers other than the textbook authors themselves is also apparent. Twenty-nine (or 52.5%) of the citations relied either completely or in part on these secondary renditions and evaluations. These reports appear, often, to be regurgitations or direct quotations from the McCord's (1959), Witmer and Tufts (1956), Mannheim (1953), Murphy (1946) or Allport (1951).

Another difference is the comparative lack of critical comment by the textbook authors. This is not to say that there are not criticisms of the original Study but that the majority of the critical comments and qualifications are those of writers other than the textbook author. Evaluations of this type may or may not represent the position held by the textbook authors. There are, however, a small number of references that do appear to be critical commentaries by the textbook authors. Riley (1963:636-640), for example, takes the Cambridge-Somerville Study to task on the representativeness of the sample and on the ethical issue of withholding treatment from some of the "predelinquent" boys in the Study. Reid (1976:89-90) notes the prevalence within the study, of potential uncontrolled variables and the lack of attention given to the "role" of the treatment. However, these critical appraisals are rare in the textbook.
sample. Conversely, the authors in the journals are shown, overall, to be quite critical.\textsuperscript{11} Even though the differences are more numerous, there are also a few similarities between the two types of publications.

\textit{Similarities}

The preponderant foci of both the journal articles and the textbooks, when they refer to the substantive issues in the Cambridge-Somerville Study, are similar. The similarities are noted by comparing the "focus" category\textsuperscript{12} of the journal articles to the subheading titles under which the textbook references occur. For both samples, the emphasis is on treatment and prevention. Approximately 69\% (or 38)\textsuperscript{13} of the textbook references appear under headings designating treatment and prevention issues, and the about 54\% (or 21) of the journal citations are contained within this classification. However, there is a slight difference. The journals tend to discuss or refer to the Powers and Witmer (1951) Study as a "failed" treatment program. Alternatively, the textbooks tend to discuss the Study as an example of a particular treatment approach to the problem of juvenile delinquency (Robison, 1961:490-496; Reckless, 1967:782; Reicken and Boruch, 1974:288). Robison categorizes the approach as "friendly counselor" treatment

\textsuperscript{11} See Tables III and IV.

\textsuperscript{12} See Table VII.

\textsuperscript{13} These figures do not appear this way in Table VI because some of the items counted in "Cabot's hypothesis" are under headings of prevention and treatment.
approach, while Reckless presents it as "demonstration research" and Reicken and Boruch refer to it as an hypothesis testing experiment.

Another similarity is the attention given by the journals and the texts to methodological issues. Eight (or 20.5%) of the journal references contain discussions of the selection, matching and assignment of the subjects, three of which were critical of the research design and two of which question the use of compulsory participation in experimental situations. Ten (or 18%) of the textbook references centre on methodological issues, five on the experimental method and two on the efficacy of official reports as measures of delinquency and recidivism.

Summary and Conclusions

It is claimed that a textbook represents the collective judgement of authors on a particular issue or topic and, inasmuch as textbooks are aimed directly at the student, may preclude the professional as an audience (Steffensmeier and Clark, 1980:254). This could explain, at least in part, the fact that there is virtually no overlap of authors in the samples of journal and textbook references to the Cambridge-Somerville Youth Study.

These findings may indicate one of two possible situations. Either the issues of concern within the Cambridge-Somerville Study were general or widely held or the textbook accounts are
largely regurgitations of what Kuhn (1970) might call symbolic generalizations.\textsuperscript{14}

The last two chapters have generated some data on the ways that the Study is carried in some social science journals and a few textbooks. However, these data are not placed into any interpretive context. In the next chapter, it is pointed out that bibliometrics is a useful tool in studying "theoretical perspectives" (Pfohl, 1985:4-12) or schools of thought. In the next chapter, it is argued that the Study typically represents the individual pathology perspective on crime and deviance.

This group of textbooks, then, reflects Kuhn's (1970:79-80) thesis that they fail to put forth alternative interpretations and rarely draw attention to problems in science for which there appear to be no solutions. In the ensuing cursory examination of texts that refer to the Cambridge-Somerville Study, there is reinforcement for this position. It is as if the material is academically predigested.

\textsuperscript{14} This concept of symbolic generalizations will be discussed in more detail in Chapter VII.
CHAPTER VI

THE PATHOLOGY PERSPECTIVE AND THE CAMBRIDGE-SOMERVILLE YOUTH STUDY

Introduction

One of the ways that a bibliometric approach may be useful is in its capacity to delineate and explore schools of thought. For example, Gilbert (1976:296) anticipates that citation patterns are capable of allowing one to locate research networks and to measure allegiances to particular communities of scientists. In this way, analysis of citations to the Cambridge-Somerville Study may be used to probe and depict aspects of a major school of thought in sociological criminology referred to as the individual pathology perspective.

The Pathology Perspective on Crime and Deviance: History and Background

"How common it is to describe that which disturbs, offends or disgusts us as 'sick'" (Pfohl, 1985:84). The pathology or medical model of crime and deviant behaviour rose to prominence in the late 19th century to challenge the demonic and classical perspectives. From the pathology perspective, no longer was crime seen to be a sin, nor was it seen to be a chosen path; rather, crime was seen to be a sickness that had one or more causes, the diagnosis of which would permit treatment and a
medical mode of cure.

This type of theorizing became increasingly popular and, while having taken many different forms (Lavater, 175; Gall, 1758-1828; Rush, 1812; Hooten, 1939; Sheldon, 1949), it commonly explained deviance as the product of "irrational defectives"; that is, people who are unable to control their behaviours (Pfohl, 1985:84). Such deterministic or causal thinking is, according to Pfohl (1985:85), tied to evolutionary theory and the rise of positivism.¹

More specifically, Comte's biological and evolutionary model of society provided a theoretical basis for the individual pathology perspective, wherein society is viewed as a self-regulating system comprised of moral, intellectual and physical parts. The "good health" of the unified whole is dependent upon the "good health" of its individual parts.

By 1840, the evolutionary model of society and its attendant assumptions of individual pathology became a part of the social science movement, combining aspects of social philosophy, Calvinistic morals and science in order to attempt to effect social reform. "Reform and science became the twin links that forged a coalition between philanthropic charity and reform groups, and the still undifferentiated academic disciplines" (Davis, 1975:32). While this movement consisted of several

¹ This is a rather hopelessly vague word, having so many meanings and connotations that it requires its own conceptual analysis (von Mises, 1951). In this work, positivism will refer to the notion of the quantification of behaviour.
different reformist ideas and strategies, none of them were focused on or were directed to the structural aspects of society.

The amelioration movement began when the social reform movement separated from its philanthropic aspects around 1870 and began to attend primarily to mental illness, welfare and the abolition of alcohol consumption, especially among immigrants. These changes are characterized by Davis (1975:37) as shifts from social reform to amelioration. Government and private agencies were created along with the emergence of the professional "helpers". The professionalization of social work linked up with the mental hygiene movement in promoting a psychological perspective on social problems. The case history and casework techniques were developed, approaches which focused social workers on the description and explanation of deviant and maladjusted individuals. The crucial theme for these pathologists became that of changing personal values based on identifying and "curing" moral, intellectual and physical deficiencies (Davis, 1975:31-55). In other words, departures from some norms are seen as personal failure, maladjustment and deficit rather than as structural failure, maladjustment or deficit. Such a perspective serves as a justification for social control, administered usually by the "helping professions" of social workers, nurses, psychologists and physicians. Their modes of control often have been translated into therapy and defended by the legal principle of paresens patriae (Pfohl,
The primary aim of the professionals became that of helping individuals to adjust to social situations.

The amelioration movement tended to dissipate when it formed into sub-specialties or the disciplines of ethology, economics, political science and history, which, in turn, became part of academia. However, according to Davis, sociology as an academic discipline incorporated many of these beliefs and justifications of the social science and amelioration movement. Early sociology, thus, was primarily a discipline oriented towards social problems and reform.

The pathology perspective depicted social problems and their solutions as resting within the individual (Davis, 1975:38). Davis, for example, maintains that, from the pathology perspective, the "immigrant poor" were stereotyped as "ill-absorbed" and, "with their foreign values and folkways, could not be trusted to guide their own destinies." The resulting psychological approach to these people emphasized rehabilitation and adjustment, and was seen to be a solution to and for these classes of people. This approach is accompanied by the denial of access to legitimate avenues of political power (Davis, 1975:45).
Textbooks and the Pathology Perspective

Davis (1975:38) suggests that the Small and Vincent (1894) textbook was the first to use the phrase "social pathology". It was defined as "...the study of all phenomena which are apparently inconsistent with the best interests of society, and the determination of clearly abnormal or healthy structures and functions" (Small and Vincent, 1894:267, cited and quoted in Davis, 1975:38). The textbook, according to Davis, uses an organismic model of society and portrays healthy society as normal and the "abnormal" aspects as diseases. These diseases include inactivity, physical disability, vice, poverty and crime. Early notions of social pathology were somewhat sociological in that they identified the sources of individual maladjustment to be rooted in social situations. Thus, the text stated:

...abnormal social arrangements and functions [that] react upon individuals, offering opportunities for personal degeneration and unsocial conduct, if not actually making them necessary... (Small and Vincent, 1894:39; quoted in Davis, 1975:39).

However, a textbook written some ten years later, shifts the sources of social problems and individual adjustment to "...maladjustments in social relationships" (Blackburn and Gillin, 1923:463 in Davis, 1975:39). This begins the more typical social pathology perspective, in which the social structures and functions are no longer seen as sources of problems and the emphasis is on the deviant, antisocial, sick individual.
Davis (1975:51-53) notes that this perspective was perpetuated by academic sociologists and that their orientation set the principles for selecting and organizing materials for textbooks. As objects for student audiences, early textbooks are portrayed as commonplace and devoid of any level of abstraction.

The Pathology Perspective on Crime and Deviance: Some Studies

The popularity and prominence of the individual pathology perspective continues to persist. This is portrayed by recent studies of social science journal literature by Galliher and McCartney (1973), Repucci and Clingempeel (1978) and Gregg, et al. (1979). All three studies report the almost exclusive focus on individual pathology models of human behaviour. Whether the research focuses on rape, delinquency, job satisfaction, or suicide, the delinquent or non-conforming individual is the primary unit of analysis. Sociological approaches, focusing on structural approaches to the study of deviancy and delinquency, are conspicuous by their virtual absence, according to these authors.

Galliher and McCartney (1973) note that their sample of articles from sociology journals characteristically describes research as placing an emphasis on hypothesis testing, active collection of data, measurement and "scientific" methodologies, all of which tend to focus on the individual as the unit of analysis. Inasmuch as funding agencies or research sponsors are
concerned with policy making, the capacity to be able to predict future events is paramount. As well, to be able to show "hard facts" about individuals is politically appealing in its simplicity (Galliher and McCartney, 1973).

Repucci and Clingempeel (1978) go further in their analysis. They address the direction of inquiry with reference to the "impact" of prevailing values or the "influence" of the *weltanschauung* on research designs. They reportedly examine journal articles focusing on the study of inmate populations in order to appraise various research designs, internal and external validity problems, ethical issues, and the role of values. They note that most of these studies focus on the individual and his or her personal deficits to the exclusion of positive attributes. Rarely do these studies attend to the possible effects of situations and environments.

Gregg, et al. (1979:41) review research to defend the same argument, that "the investigation of these problems has focused primarily on personal characteristics". By profiling each of the articles in their sample, according to "causal" factors (independent variables) related to the problem under investigation, these authors established a continuum of variables that illustrates how the problem was being defined, i.e. whether the problem was seen to be one of person, milieu or systems-based factors. Their sample consisted of articles taken from the journals of several disciplines including medicine, psychiatry, psychology, sociology and criminology. They selected
a forty-year span of literature, sampling the years 1936, 1956 and 1976. In this sample of 698 articles, 20% are categorized as emphasizing systems factors, 18% milieu factors, and 62% individual characteristics. The consequence of this, they say, "mystifies the whole social world, concealing larger social institutions behind intrapsychic obfuscations" (Gregg, et al., 1979:48).

The Pathology Perspective: The Cambridge-Somerville Youth Study

Taking the foregoing into consideration, the Cambridge-Somerville Youth Study appears to typify the individual pathology perspective, with its inevitably moralistic overtones.

The pathology perspective is often proselitized by moral entrepreneurs and Cabot can be seen to be such an advocate (Becker, 1963:147-163; Platt, 1969:18). Cabot clearly stated that he was testing the usefulness of his Christian and moral values in the treatment of delinquent and predelinquent boys. He believed that "moral suasion" was a fundamental element in effecting character change in a boy and he "made clear to the counselors how spiritual growth would become an essential focus of treatment". In keeping with this objective, the workers were

2 Cabot (1951:94) is quoted as stating:

Before and beyond any special kind of treatment or influence which we should try to bring to bear upon any child in our Study, is our desire that he come face to face with the two greatest realities which concern him,
"hand picked" on the basis of the goodness of their "characters", intelligence and tact and professional experience in dealing with people (Powers and Witmer, 1951:92-96). They were to have "a lively faith" in the value of the project, although specialized or formal education was not a prerequisite to being hired (Powers and Witmer, 1951:92).

Another feature of the individual pathology model is that treatment is individualized and consists of attempts to get the subject to adapt to his or her circumstances in such a way as to conform behaviourally (Davis, 1975). Cabot's (1951:94) philosophy embodies these in his utterance:

To make him understand himself and the world he lives in, so that he can find satisfaction in his life without harming himself or others, will be the chief effort of our workers.

In this way, the ambition to alter the moral values, attitudes and behaviours of the individual boys is made explicit throughout the Study. Indeed, even Witmer's evaluations were made on the

(2) (cont'd) God and his own soul; that is, the material, mental and spiritual resources of creation which God and man offer to him but which he must freely appropriate and assimilate to the needs of his individual growth.

We believe that religion and the spiritual life are not one among many other human interests, but are the center of all special interests of man. Unless the resources of creation which can be drawn into the individual's life are recognized by him, unless he gets himself into the moving current of creation - physically by proper nutrition and hygiene, - mentally by an enlightening education, and spiritually by the recognition of his dependence on God, the individual's free will cannot be effectively used to promote his own growth. It will run into perversions and conflicts whereby his growth will be arrested or destroyed.
basis of the "adjustment" made by the boys.

The pathology perspective also focuses on the quantification of individual behaviours (Pfohl, 1985:857). There is an obvious emphasis in the Study on documentation and collection of data as well as on data analysis. For example, some 22,000 pages of information were collected over the duration of the experiment, the keeping, organization and analysis of which must have been overwhelming. The published report, itself, contains 84 tables which describe many relationships between many variables. Further, attention was given to the selection and assignment of subjects and counselors, the reporting methods, the collection of data, the "objective" analysis of the observations and the "unbiased reporting" of the findings and conclusions.

Immigrants are seen to require, within the pathology perspective, integration and adaptation to a new way of life. This assertion is given some consideration by attending to the ethnicity of the subjects and families in the Cambridge-Somerville Study. While not greatly elaborated on and not counted among the first twenty variables, it is considered as an accessory factor and does appear in the home visiting schedule questionnaire. It is not given the same importance, for example, as religion; it never appears in any of the 84 indexed tables and, when mentioned, it is as "dominant stock" or "parent's nativity". Also, most discussion is buried within the text under other headings. The two exceptions to this are: a) a statement that boys of Irish or Italian decent were paired
wherever possible but that this was disregarded "when the cultural pattern of the home was thought to be more significant than parental nativity" (Powers and Witmer, 1951:72), b) a note that ethnic preferences of the counselors were taken into account in the assignment of subjects and c) a statistical breakdown of the parental nativities of the subjects.

Many of the case studies included in the report give information on the ethnicities of the families but to find any analysis or discussion of this requires a search in the text that goes beyond the use of the index or table of contents.

Still another element of the individual pathology model is the emphasis on personal deficit both as a cause and as a focus of assessment and treatment (Gregg, et al., 1979). The Cambridge-Somerville Youth Study has taken this approach. It was argued by Cabot, a renowned medical doctor, that, in improving the health care, education, recreational opportunities and moral values and, in removing physical and personality "handicaps" of the subjects, then delinquency in the cohort would be decreased.

Treatment would, then, be focused upon the individual child, directed toward discovering his potentialities for growth spiritually, intellectually, physically and socially (Powers and Witmer, 1951:4).

Attempts to gauge the attributes and characteristics of individuals via psychometric testing is an element of the

3 It is written that about 1/3 (or about 108) of the 325 cases had both parents born in the U.S. and that 124 cases had both parents born outside the U.S. Therefore, more than 1/3, or 38%, of the subjects had both parents born outside of the U.S. In addition, there were 27 Negro boys.
pathology model. The measuring instruments employed by the Study were many and consisted of various attitude scales and personality tests, delinquency statistics, adjustment ratings and case analyses. Of particular interest in relation to the individual pathology research is the use of I.Q. tests, the Haggerty-Olson-Wickman Schedule and the Altruism Scale among many others that are often used to identify characteristics that are seen to be correlated to or even to be causes of delinquency and deviance.

As has been pointed out earlier, the measurement or evaluation of the degree to which such efforts were effective in decreasing delinquency was immensely complex. The concepts of "growth", and "strength of character" used by Cabot (1951:xvii) and "adjustment" used by Witmer (1951:xvii) were difficult to concretize or operationalize. At the same time, these concepts are illustrative of the medical or individual pathology model. In these ways, the Cambridge-Somerville Study typifies the individual pathology model.

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Some of the tests administered by the researchers are: Vineland Social Maturity Scale, Furfey's Test for Developmental Age, The California Test of Personality (one section), The Fels Parent-Behaviour Ratings, The Boys' Activities Schedule, Boys' Interest Schedule, Boys' Vocational Future Ratings, The California Test of Personality (all but one section), and School Schedule A. (Powers and Witmer, 1951:296)
The Pathology Perspective: A Content Analysis of the Journal Articles

It is clear that the Cambridge-Somerville, itself, is emblematic of the individual pathology perspective on crime. What is not yet apparent is how the study is portrayed in the literature. What follows is an attempt to ascertain how this is done in the sample of referring journal articles.

In keeping with the claims made by Galliher and McCartney (1973), Repucci and Clingempeel (1978) and Gregg, et al., (1979) that much of the research done in the area of crime and delinquency is approached from an individual pathology model, an analysis of the sample citations to the Cambridge-Somerville Youth Study reinforces these arguments. Following Gregg, et al. (1979), the unit of analysis for this categorization is the citing article rather than the citation. On the basis of the following four criteria, the sample articles have been designated as primarily focusing on the individual, the milieu, or social system factors:

1. the discipline of the citing author,
2. the citing article contains citations to research that is predominantly of a particular orientation i.e. individual, milieu or systems perspective;
3. a particular position is stated by the citing author and;
4. that which is emphasized as the cause(s) and/or cure(s) of crime.
If the discipline of the author of the citing article is psychiatry or psychology, for example, it is unlikely that the emphasis of the article would be on social systems, either as a source of crime and criminality or that which would be in need of change. The focus is more likely to be on the individual or perhaps on a milieu such as the family. The disciplinary orientation of the author is often, although not always, provided in an article in two different ways. First, the type of degree, and the institution at which the degree was attained by the author may be stated. Second, the current institution and department or faculty of the author may be given.\(^5\)

The second criterion is illustrated, for example, if the majority of citations or studies considered in the citing article is discernibly oriented toward one perspective. The following example article is categorized as a milieu approach:

This study, in that it takes electoral wards as its frame of reference, and attempts to find associations between environmental factors and crime within them, should not be looked at in isolation from other ecological studies (Brown, et al., 1972:250).

The third criterion is documented when a particular position is explicitly taken by the author. Jeffery (1969:54), for example, states:

The future of crime control might well be a matter of urban planning, surveillance technology, game theory and systems analysis.

Throughout this article, Jeffery has described and disparaged

\(^5\) This latter information may not, however, be necessarily indicative of the educational base of the author and is less reliably a source of information.
the individual approaches to criminal diagnosis and prevention.

The fourth and final criterion is associated with the previous one and refers to that which is seen to be the primary causes and cures of crime. This standard is illustrated in the Walsche-Brennan article. On the topic of "Is there a remedy?", Walsche-Brennan (1976:7) states:

For example, while not wishing to return to 1801, when a boy of 13 (Andrew Benning) was hanged for stealing, Britain's largest organization of head teachers, the National Association of Head Teachers, has called for much harsher sentences to be passed on young offenders, as too many are getting "kid glove" treatment.

Thus, the solution, in part at least, to juvenile crime, is a harsher, more punitive response to the individual offender.

Where possible and where applicable, all four criteria are considered in the categorization of each article. In a few cases, there is a combination of preponderant approaches such as in the Byles (1979) article in which the emphasis is on both the individual and the family milieu as being the causes of crime as well as the targets of treatment.

Discussion of Journal Results

Out of the 33 articles, 22 (or 66%) emphasized an individual pathology perspective, six are predominantly milieu oriented, two attend to systems factors, and three articles do not fit into any of the other categories. These last three articles (Grygier, 1966; Geis, 1974; and Sobel, 1978) are generally
surveys or evaluations of studies which cannot be included in any of the three models as described by Greg, et al. (1979).

This sample is not large enough to permit a comparison of journal types regarding their emphasis on any of the three perspectives. However, this method does clearly illustrate the potential of the technique of citation content analysis to make such a comparison on a larger sample.

From the foregoing, it can be seen that at least one of the ways in which the Cambridge-Somerville Youth Study has been incorporated into this sample of literature is by illustrating, reinforcing or emphasizing the individual pathology model. The claims of the earlier authors (Galliher and McCartney, 1973; Repucci and Clingempeel, 1978; and Gregg, et al., 1979), that the individual pathology orientation is pervasive in the social sciences and criminological literature, tends to be supported by these data.

While this sample of articles is based upon the citing of the Cambridge-Somerville Youth Study and the Study typifies the pathology perspective, it could be argued that one should expect these findings. However, another possibility is that, at least for sociologically or social systems oriented authors, the Study, its history and the perspective it represents could be disclaimed or criticized. Steffensmeier and Clark (1980), for

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example, claim that criminology textbook authors did exactly this in discussing biological and psychological explanations for female criminality. The textbook authors, after setting out these approaches, offer sociological rejoinders and alternative explanations.

Finally, the sample of articles in this work constitutes a more powerful demonstration of the pervasiveness of the pathology perspective than those of Repucci and Clingempeel (1978), Galliher and McCartney (1973), and Gregg, et al., (1979). Because the literature search is not subject to self-selection or a priori biases, and because the articles are "randomly" selected, chances of confirmation bias are diminished.

Pfohl (1985:114-123) advises that the pathology or medical model as a criminological perspective is pervasive and popular. Evidence of its vitality, he suggests, can be demonstrated by reference to the 1978 agenda of academic contributions to the American Society of Criminology meeting or by the creation of new forms of pathology such as hyperkinesis (Conrad and Schneider, 1980, in Pfohl, 1985:115-118). Similarly, Davis (1975:31) states that many aspects of the perspective in contemporary approaches to crime is testimony to its persistence and endurance. The data generated in this thesis certainly do not contradict the earlier claims.
This chapter develops a major thesis about the ways that the Cambridge-Somerville Youth Study has been communicated in the journal literature. Citation types and subject matter are used to discover "what" has been communicated about the study. In this section, it is shown that the study and most of the sample references to it are illustrative of or exemplify the individual pathology perspective.

One major limitation in the use of citation indexes and reference content analysis, however, is the failure to take into account some of the more theoretical notions about the communication of ideas. In Chapter VII, some ideas about citing are delineated and Kuhn's (1970) conjectures on this topic are explicated. In Chapter VIII, some of the data from Chapters IV and V are interpreted in the light of Kuhn's notions.
Introduction

While it is apparent that the use of citation indexes, citation typologies and citation analysis are becoming common techniques in the study of the sciences (Gilbert, 1977; Small, 1978), there has been little progress in the development of theories\(^1\) upon which to base the analysis of these studies. Gilbert notes that several authors (Cole and Cole, 1967; Small and Griffiths, 1974; Moravcsik and Murugesan, 1975; Chubin and Moitra, 1975) have made some "interesting contributions to our understanding of science and scientific activity" but without any theoretical underpinning. There is little basis upon which to answer "why" it is that scientists cite other authors (Kaplan, 1962) or "why" they cite particular papers to the exclusion of other documents (Gilbert, 1977:114). Just as importantly, however, there are few theories to guide research on "how" citations are used by scientists in their written, communicative endeavours.

Small (1977) proposes that citation practises are acts of symbol usage in which a citation "stands for" or "gives meaning

\(^1\) The word "theory" will be used interchangeably with the terms "ideas" and "sets of ideas" to connotate a theme, a treatise or a dissertation. It is not to be confused with "formal theory" as found in Zetterberg (1966) and Cohen (1980). To date, none of the works on communication of ideas can be considered to be a formal theory (Gibbs, 1972; Hage, 1972).
to" an idea expressed by the citing author. He argues that in many studies about citations, the documents that are referred to are treated primarily as if they are the sources for some of the ideas of the citing author. In this sense, the "sources" are regarded as giving meaning to the text of the citing author. Small reverses this logic and claims that authors "impart" meaning to the documents to which they refer.

Latour and Woolgar (1979:88) envision science primarily as a special form of writing. They portray science as the "organization of persuasion through literary inscription" wherein the process is one of attempting to transform conjectures, which are accompanied by caveats and qualifications, into "facts" that are no longer conditionally written. Pinch and Collins (1984:523) argue from the thesis of Latour and Woolgar (1979) that claims undergo transitions in their "facticity", so that initial statements and arguments often contain caveats and qualifiers but, as the statements are incorporated into the literature, these "modalities" disappear.

Recently, some attempts have been made to develop theories and methods for tracing patterns of ideas in the sciences by examining "what is said about a particular scientific paper when it is cited in later works" and tracing changes in these expressions over time (Cozzens, 1985:127; Dolman and Bodewitz, 1985). First, Cozzens (1985:127) proposes to use the "knowledge claim" as the fundamental unit of analysis at the micro-level. By treating the knowledge claim as "an interactive link between
the claimant and the audience" or as a sociometric connection, these micro-units can be aggregated to create networks of interactions or macro-units of "knowledge claims".

Second, she suggests that, rather than "a fixed input which constrains action", citations as knowledge claims should be treated as repertoires of ideas which may be used by scientists in putting forth new knowledge claims. In this way, one may be able to discern the ways in which these bits are used to create new claims. Finally, she proposes that "all generalizations are to be grounded in directly observable characteristics of the process of knowledge production" (Cozzens, 1985:130-131). The current paucity of awareness of substantive or cognitive contents in the sciences is due to the fact that these cannot be observed at the larger level of the discipline, but may be discerned at the level of the interactive link between the author and the audience. Cozzens (1985:133) describes this approach for studying knowledge claims as "citation context analysis", which entails "the close examination of the text surrounding footnote numbers in published scientific writings".

Another study that is instructive for the analysis of scientific ideas by examining references is that of Dolman and Bodewitz (1985). The purpose of their work is to argue for the usefulness of some of the theoretical notions of Fleck (1935, 1979) in order to "show how the process of sedimentation of a scientific concept can be analyzed by the use of citation analysis". The sedimentation process generally refers to the
institutionalization of cognitive elements in scientific fields. Fleck (1935) is described as arguing that an individual scientist is part of a "thought collective" and shares a "thought style". He maintains that this "thought style" tells the scientist what to do, how to perceive things and see the world. These cognitive processes are comprised, in part, of "active and passive linkages", which can be expressed as different types of citations. The A-type, or active linkage citation, refers to that which belongs to the collective, that which is supposedly undisputed. Conversely, a P-type, or passive linkage citation, is one that is characterized by reference to and possible confrontation of the thought collective with the author's own ideas, a jumping off point for one's own research (Dolman and Bodewitz, 1985:506-508).

Some of the above authors, in developing their ideas about citations and the communication of ideas, refer to Kuhn's work (Gilbert, 1977; Small, 1977). However, both Gilbert and Small focus exclusively on Kuhn's conjectures about exemplars, and do not fully elucidate his notions on communications. Therefore, what follows is an attempt to address this topic by setting out Kuhn's thesis and by detailing his views on symbolic generalizations and exemplars as well as his notions on the textbook and journal literature.²

² Kuhn's work has been highly criticized on a variety of issues but, to date, his ideas about communication in science have not been explicated, analyzed or subjected to enquiry.
Kuhn On Scientific Communication

Kuhn (1970:181-210) views science as proceeding essentially from a set of beliefs and assumptions, held by the community and referred to as a disciplinary matrix. This matrix consists of four major components, (a) a set of shared scientific values such as the accuracy of prediction, simplicity of theories, plausibility and consistency; (2) a collection of shared ontological and/or heuristic models, referred to as metaphysical aspects; (3) a group of shared examples for solving problems referred to as exemplars, and (4) a roster of symbolic generalizations that are the logical, mathematical or verbal formulations or expressions about subject matters and the inter-relationships among them (Kuhn, 1970:174-210).

Kuhn (1970:176) points to important emerging techniques for the empirical study of the community nature and the disciplinary matrix of science and he refers to the works of Hagstrom (1965), Price and de Beaver (1966) and Crane (1969). He contends that historians of science tend to overlook the group or community aspects of science and he makes several comments about how ideas may be communicated within and between these communities (Kuhn, 1970:176).

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3 In the 1970 postscript, Kuhn redefines and refines his 1962 concept of paradigm into that of a disciplinary matrix.
Kuhn On Citing

Kuhn (1970:178) contends that studying the disciplinary matrix and the nature of scientific communities requires access to: a) the scientists' activities at conferences; b) their manuscripts in all their forms; and c) their communicative patterns, especially those involved in citations. While access to these formal and informal sources is important, his primary concern is with the evidence for communication networks found in correspondence and the connections entailed in citations in published documents. He (1970:175) notes some of the early works on citation analysis on this point, referring to Garfield (1964) and Price (1965), and conjectures that if:

... each scientific revolution alters the historical perspective of the community that experiences it, then that change of perspective should affect the structure of post-revolutionary textbooks and research publications. One such effect - a shift in the distribution of the technical literature cited in the footnotes to research reports - ought to be studied as a possible index to the occurrence of revolutions (Kuhn, 1970:ix).

Symbolic Generalizations and the Discipline Matrix

A more specific approach to communication may be found in Kuhn's (1970:181-183) notions involving the idea of symbolic generalization, which he suggests is one of the central components of the disciplinary matrix. These are aspects of the community of scientific specialists that are shared and communicated. They are taken for granted, accepted "without
question or dissent by group members ..." Symbolic
generalizations tend to be descriptions of the substantive or
subject matters of the sciences. Some of these generalizations
also entail definitions of the components of these substantive
matters and the relationships among them. While sound science
may proceed with few symbolic generalizations, "the power of a
science seems quite generally to increase with the number of
symbolic generalizations its practitioners have at their
disposal" (Kuhn, 1970:181-182).

What is apparent is that the Kuhnian concept of symbolic
generalization conflates content and form. His thesis also mixes
realms, so that some aspects of symbolic generalizations are
found in the social realm, such as the "degree of acceptance" by
the relevant community, while other components are located in
documents. The social component requires access to information
about the scientists and their communities or networks and may
or may not be part of the documents of science themselves. The

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4 Crane (1980:25) following Kuhn (1970) refers to symbolic
generalization as including "laws of nature and definitions of
symbols employed by the group".

5 Crane's (1980:48) analysis of theoretical high energy physics
leads her to conclude that:

What holds this large and complex field together is the
commitment of its members to a set of remarkably durable
judgemental principles - relativist quantum mechanics.
This gives them a common perspective and a common
language, regardless of how diverse their specific
interests may seem.

Quantum Mechanics is deemed to be a set of symbolic
generalizations for this specialty area of science (Crane,
analytic separation of these realms may be necessary in order to
devise ways of discerning symbolic generalizations in documents.

Symbolic Generalizations and Citations

A key characteristic of the concept of symbolic
generalization for the present analysis is that it is a written
expression wherein the content is taken for granted, accepted
without question or dissent. Further, a citation which is seen
to be a symbolic generalization can symbolize, stand for, or be
an expression for which a particular concept or idea is a
referent. In this sense, the concept or idea necessarily is a
"formal or readily formalizable component(s) of the disciplinary
matrix" (Kuhn, 1970:182).

While it cannot be discerned whether the sentence containing
the citation is accepted without question by the community or
the reader, a symbolic generalization can be recognized when the
construction of the citation presumes familiarity with the
contents of the referred to documents. From the foregoing, it
seems probable that some citations may be symbolic
generalizations. They describe aspects of written communication
and presuppose shared referents, thus a degree of consensus
within any one particular discipline or scientific field of
study. This does not explain or describe how the referent
becomes shared or "if" or "how" there develops a degree of
consensus. However, while Kuhn's (1970) arguments about symbolic
generalizations require consideration about how they are acquired and exchanged, the analysis of citations in terms of their possible roles as symbolic generalizations is important for learning about how written ideas are communicated independently of how they are created and accepted or rejected in the community. Therefore, some citations can be analysed in terms of what they assume or presuppose about the reader (Vande Kopple, 1986:73).

Kuhn on Exemplars

Kuhn's (1970:181-189) work involving the ideas of exemplars may also be considered in terms of citations. Exemplars, as shared examples, are the major component of the disciplinary matrix and include specific or concrete accomplishments of scientific communities. They also consist of solutions to problems that students learn in their apprenticeship, in labs, on examinations and in textbooks. Exemplars are modes of solving puzzles; they are perception-forming and ways of "seeing" (Masterman, 1970:70). These ways of seeing are a consequence of the student's learning experiences, an important outcome or "the main thing a student acquires by doing exemplary problems" (Kuhn, 1970:189). The exemplars are also what direct the daily and ongoing activities of the scientists (Eckberg and Hill, 1979:927).
While exemplars are learned primarily in the apprenticeship process, the practising scientist is also exposed to them through documents such as journals and other periodical literature. On this point, Kuhn (1970:187) writes that:

at least some of the technical problem-solving found in the periodical literature that scientists encounter during their post-educational research careers... show by example how their job is to be done.

Kuhn (1970:187) also comments on the role of textbooks in the communication of exemplars and he writes:

Exemplars will therefore require more attention than the other sorts of components of the disciplinary matrix. Philosophers of science have not ordinarily discussed the problems encountered by a student in laboratories or in science texts, for these are thought to supply only practice in the application of what the student already knows.

Like the notion of symbolic generalization, Kuhn's idea of exemplar is a mixture of at least two separate domains, that of the laboratory or the working scientist and that of the written document. As noted in the discussion of symbolic generalizations, the study of exemplars requires an analytic separation of the realms so that one may fashion modes of detecting exemplars if they appear in documents.

Kuhn argues, subsequently, that exemplars, like symbolic generalizations, appear in both the journal and textbook literature. What these arguments establish is that, if Kuhn's thesis holds, there is a requirement to find ways of recognizing or detecting if and to what extent there are symbolic generalizations and exemplars in the documents of the sciences.
The above proposals are an exploration and are expanded upon in Chapter V.

Kuhn On Textbooks

Kuhn (1970:45-46) makes several comments about the role of textbooks in the communication processes in the sciences. First, he argues that there have been great difficulties in attempting to derive the rules that supposedly govern the scientific enterprise or its traditions. This may be due to the possibility that science proceeds not so much by way of the application of or adherence to established norms set out in textbooks but more by imitation. The process of modelling or copying is inspired by the similarity of problems in textbooks to recognized and established scientific accomplishments. Textbooks are not modes of learning rules but are, instead, collections of examples to be emulated. Kuhn, (1970:46-47) contends:

Scientists, it should already be clear, never learn concepts, laws, and theories in the abstract and by themselves. Instead, these intellectual tools are from the start encountered in a historically and pedagogically prior unit that displays them with and through their applications. A new theory is always announced together with applications to some concrete range of natural phenomena; without them it would not be even a candidate for acceptance. After it has been accepted, those same applications or others accompany the theory into the textbooks from which the future practitioner will learn his trade. They are not there merely as embroidery or even as documentation. On the contrary, the process of learning a theory depends upon the study of applications, including practice problem-solving both with a pencil and paper and with instruments in the laboratory.
Kuhn suggests that a second reason why it has been impossible to locate a set of norms that govern the enterprise is because textbook versions of the sciences are inaccurate and misleading. Textbooks fail to set out alternative interpretations and explanations and rarely draw attention to problems for which there appear to be no solutions (Kuhn, 1970:79-80). He also writes that textbooks do not accurately portray the history of science, especially its dramatic changes. He argues that the textbook as an authoritative source on and about the science "systematically disguises" both the occurrence and importance of revolutionary changes in ideas. This process occurs both as a result of the selective ways that material is chosen for inclusion and also as a result of distortion of that which is retained (Kuhn, 1970:137). Another reason why this concealing process occurs is because science, like theology, is characterized by high degrees of authority, and he notes that there are three sources for the ensuing dogma. The primary outlet is the textbook itself, followed by the subsequent philosophical renderings of science constructed from them. The final sources are the popularized versions of these textbooks and philosophy of science accounts. All three of these sources are similar in that:

They address themselves to an already articulated body of problems, data, and theory, most often to the particular set of paradigms to which the scientific community is committed at the time they are written. Textbooks themselves aim to communicate the vocabulary and syntax of a contemporary scientific language. Popularizations attempt to describe these same applications in a language closer to that of everyday life. And philosophy of science, particularly that of
the English-speaking world, analyzes the logical structure of the same completed body of scientific knowledge (Kuhn, 1970:136).

While these three types of official versions of science, textbooks, popular articulations and philosophy of science accounts probably also include pronounced differences in their depictions, it is their common themes that Kuhn (1970:137) addresses. He writes:

All three record the stable outcome of past revolutions and thus display the bases of the current normal-scientific tradition. To fulfill their function they need not provide authentic information about the way in which those bases were first recognized and then embraced by the profession. In the case of textbooks, at least, there are even good reasons why, in these matters, they should be systematically misleading.

Kuhn (1970:138) suggests that an "invariable concomitant of the emergence of a first paradigm in any science", is the increasing role of the textbook. He contends further, that a hallmark of the mature sciences is their domination by textbooks and that this governing is what distinguishes their advanced development from other intellectual endeavours. He writes that both the layman and the practitioner gain their awareness of science primarily from these textbook versions.

It is, however, the pedagogical and educational aspects of textbooks that Kuhn (1970:136) focuses upon. He argues that when changes in the standards, problem-structures and/or the language of a science takes place, textbooks are re-written and these new versions "hide" the dramatic nature of changes. The reconstructions disguise the occurrences of the changes as well
as mask their importance and function. Kuhn (1970:137) writes that textbooks not only truncate the history of science but that they "supply a substitute for what they have eliminated". One consequence of these accounts is a depiction of science as a cumulative process. He writes:

Characteristically, textbooks of science contain just a bit of history, either in an introductory chapter or, more often, in scattered references to the great heroes of an earlier age. From such references both students and professionals come to feel like participants in a long-standing tradition in which scientists come to sense their participation is one that, in fact, never existed. For reasons that are both obvious and highly functional, science textbooks (and too many of the older histories of science) refer only to that part of the work of past scientists that can easily be viewed as contributions to the statement and solution of the texts' paradigm problems. Partly by selection and partly by distortion the scientists of earlier ages are implicitly represented as having worked upon the same set of fixed problems and in accordance with the same set of fixed canons that the most recent revolution in scientific theory and method has made seem scientific. No wonder that textbooks and the historical tradition they imply have to be rewritten after each scientific revolution. And no wonder that, as they are rewritten, science once again comes to seem largely cumulative (Kuhn, 1970:138).

The re-writing of history to reflect sets of interests is not unique to science in Kuhn's (1970:138) view. However, the reconstruction of history is more tempting in the sciences because research tends to be reported without notice of the context within which the inquiry took place. Also, the sense of security among scientists leads them to rewrite with confidence. Accurate recording of the past and its details only emphasizes human confusion, mistakes and idiosyncracy. Accurate accounts might elevate those ideas that have been discarded as a result
of science's most persistent and efficient activities.

One paradox of this reconstruction process is the denigration of accuracy and therefore the idea of "fact" that is, supposedly, a centerpiece of the belief systems of science. Thus, while practitioners place a high value on accuracy and factual detail in their daily enterprise as scientists, this notion of correctness is systematically avoided in historical renderings. In addition, this process is considered to be an advantage to science in Kuhn's (1970:138) view and is defended in part by a quotation from Whitehead that "a science that hesitates to forget its founders is lost". For Kuhn, one contribution to science of this process of anti-accuracy in depicting the past is the production and protection of "needed heroes." Another consequence "... is a persistent tendency to make the history of science look linear or cumulative, a tendency that even affects scientists looking back at their own research" (Kuhn, 1970:139).

Kuhn On Textbooks In Natural vs. Social Sciences

Kuhn (1970:169) speculates on the functions of textbooks in the arts and social sciences with those in the natural sciences. He writes that these documents in the arts play a minor role in the educational process and only present the apprentice with the works of other artists. In the social sciences, students are exposed to the classical works of several different kinds. One
consequence of this wide exposure is supposed to be an awareness among students of the great variety of problems and the large selection of proposed solutions to them. Kuhn states that in the social sciences students must evaluate these problems and solutions for themselves.

The role of textbooks in the arts and social sciences contrasts with their contributions in the natural sciences, claims Kuhn. In the latter, works are written specifically for students, especially graduate students, and supplementary reading follows up strictly on textbook material. The original creative material that makes the textbooks possible is neglected. The original works are recapitulated, in brief forms deemed more systematic and precise than the original versions. This form of education is viewed by Kuhn as very effective (1970:169-170).

Kuhn and Fleck on Textbooks vs. Journals

Kuhn's (1979:ix) foreward to the translation of Fleck (1935) also contains suggestions about the relationships between textbook accounts and the journal versions of science. Fleck is given credit for suggesting that journal science tends to be tentative, personal, and incoherent and requires "... the essential and creative act of the individuals who add order and authority by selective systematization within a vademecum".
Kuhn's (1979) and Fleck's (1979) views suggest greater diversity in the journal literature than in textbooks. In addition, texts tend not to address those problems for which there appear to be no solutions. Further, texts and journals, as different versions and sources of scientific communication are representative of differing "thought collectives" and the transmission of ideas between them is seen as problematic. However, Kuhn writes that these are important aspects that are worth further analysis, especially because they are amenable to empirical study.

Summary

This explication of Kuhn's ideas or conjectures about the communicating of ideas is not the basis of a strict attempt to test, confirm or refute them. Rather, this is the basis for an illustration and exemplification in the manner of theory-guided inquiry rather than theory testing or theory building. One aspect of theory-guiding is that researchers attend to some of the issues and questions that may be posited by the theoretical literature (Wallace, 1971:16-29).

Another important consideration of Kuhn's views about textbooks and journals is that not a single citation or

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6 The possibility that books and articles serve different functions is also noted by Friedrichs (1972:449) who asserts that in sociology "competing paradigms are more apt to find their initial way into print in book form rather than via the route of the major journals."
reference occurs in his book as a source of data or authority for his arguments. Finally, another interesting aspect is that few analysts of Kuhn's work have focused on these topics at all (Reingold, 1980:479). For example, Gilbert (1977) and Small (1977) attend exclusively to Kuhn's (1970) conceptualization of exemplar, overlooking that of symbolic generalization.

In the next and final chapter, Kuhn's ideas are used to elucidate and interpret some of the data from earlier chapters.
CHAPTER VIII
THE MEANINGS OF THE CAMBRIDGE-SOMERVILLE YOUTH STUDY

Introduction

An interpretation of some of the data that has been generated in this dissertation will be made in the ensuing chapter. First, some comments on Kuhn's and Fleck's conjectures about textbooks and journals will be made and, second, some arguments on how some citations may be Kuhnian-type symbolic generalizations and/or exemplars will be suggested. The ensuing discussions provide the basis for the conclusions of this thesis.

Textbooks and Journals Compared on the Fleck-Kuhn Thesis

In general, the data in Chapter V tend to support Fleck's (1935) and Kuhn's (1979) notions about the uniformity to be found in the textbook or vademecum,¹ and their position that alternative explanations are not posited in the textbooks. The data also supports their suggestion that the journals are more diverse in content than are the texts. On the other hand, while Kuhn and Fleck argue that the vademecum represents the collective judgement of scientists, it could be argued that it represents the collective judgement of a particular faction or

¹ Vademecum is a Latin word which Fleck and Kuhn use to refer to a text or handbook.
perspective of criminological or sociological thought. What is included and what is not included as examples or explanations in a textbook may say more about the intellectual (academic) perspective of the textbook author than the collective judgement of those in a discipline.

The foci of each type of publication was tabulated under collapsed categories in order to compare and contrast the contents of the two types of publications and to address the suggestions of Kuhn and Fleck. These authors have suggested that the content of journal articles is more diverse than that of textbooks and Kuhn (1970) contends that textbook accounts of scientific developments tend to gloss over and distort their histories. They

systematically disguise... partly for important functional reasons... the existence and significance of scientific revolutions.

Further, textbooks fail to set out alternative interpretations and rarely draw attention to problems in science for which there are no apparent solutions (Kuhn, 1970:79-80). In these ways, Kuhn argues that textbooks are inaccurate and misleading.

The first point, the diversity of content, can be discussed from two different perspectives. As a collection or total sample, it can be shown that the journal articles are more diverse in terms of the variety of issues that are discussed. However, on an individual basis, or in terms of any one

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2 See Table VII.

3 See Tables V and VII.
particular document, there is more diversity of substantive content in the textbook accounts of the Cambridge-Somerville Study. This is particularly true of the textbooks that either briefly or extensively abstract the Study. For example, twelve of the textbooks contain more than one reference to the Powers and Witmer (1951) work. Generally, when there is more than one reference, one of them is an abstract or overview of the Study while the remaining references are to specific elements, such as the effects of discipline and punishment (Bloch and Geis, 1965:276) or the validity of official records (Reckless, 1961:369). One text (Robison, 1961) contains ten pages on which there are references to the Study, while Riley (1963) contains 22 pages of discussion on it. Most, of course, do not comprise such extensive references, but it is noteworthy that some do. Thus, textbooks show diversity because of their broader scope, but they also demonstrate some conformity of expression.

The second point derives from Kuhn's (1970:70-80) conclusion that textbooks are inaccurate and misleading because they gloss-over or "systematically disguise... the existence and significance of scientific revolutions" and that they do not present alternative interpretations and rarely draw attention to problematic issues. This contention is not entirely borne out by this sample of textbooks. As can be shown by Tables VI and VII, many textbooks contain extensive accounts of the Cambridge-Somerville Study, often including Cabot's philosophy

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\[^4\] See Tables IV and V on pages 54 and 63.
and hypothesis, details of the design and treatment, as well as
the results and conclusions. However, given these presentations
of the Study, it is rare to find the textbook author intervening
critically as a commentator. Seldom does the author, in
discussion of the Study, challenge the individual treatment
model or suggest that a sociological model might more
effectively address the delinquency issues encountered in the
Powers and Witmer Study. One of these rare cases can be found in

If we scrutinize the present negative findings, we note, for example, that the conceptual model (vague though it perhaps is) focuses clearly on treatment of the boy as a discrete individual. Thus the research results may cast doubt upon the assumption that delinquency may be effectively treated apart from the roles of the individual boy in the many social systems of which he is a member (his family, his gang or clique, his school).

Quinney (1975:244) presents another position which is also anomalous in the textbook sample. Not only is the reference critical of the Cambridge-Somerville Youth Study\(^5\) but Quinney conceptualizes and criticizes it as a milieu study in which he erroneously states that "The study indicated that behaviour cannot be altered by limited change in social conditions" (Quinney, 1975:244). While there are several milieu factors integral to the Study, the focus of the workers, diagnostically and therapeutically, was the individual boy. Quinney's previous statement is an inaccurate reflection of the central goals and objectives of the Study.

\(^5\) One of the first community-centred juvenile delinquency programs, and the most limited in scope, was the Cambridge-Somerville Youth Study (Quinney, 1975:244).
It was overwhelmingly evident that the task taken on by the textbook authors has been that of presenting the Cambridge-Somerville Study in, while not an uncritical manner, a uniform way. By this, it is meant that the criticisms presented are those that have become standardized by repetition and are often direct quotations from few other authors.

The overall impressions one gets from the foregoing are that the two types of publications are written for different audiences, in general, and that readers of the two different types of publications, the journal and the textbook, learn different things about the Cambridge-Somerville Study. For the most part, the readers of the textbook learn more about the Study than if they were to read the journal articles, except possibly in the case of the "extensive" article. However, even the "extensive" citations in the journals often focus narrowly on the Cambridge-Somerville Study while, at the same time, allocating much space to it. Thus, the reader of the "extensive" journal citation is likely to learn a lot about a specific element of the Study, the reader of the majority of the articles in the sample will probably learn little about the Study, overall, while the reader of the textbook will usually gain the most amount of general information.
The Meaning of Citations

The meanings of citations can be studied in at least two ways: a) by what the citation communicates to the reader who is not familiar with the ideas that are referenced and b) by comparing the citations to the ideas to which they are alluding. While this section focuses on the former approach, the approaches are not mutually exclusive and an ideally designed study would combine them.

Small (1978: 327) claims that in many studies of citations, the documents that are referred to are treated as if they are the sources for some of the ideas of the citing authors. In this sense the "sources" are regarded as giving meaning to the citing authors' texts. Small reverses this logic and claims, that, for the most part, authors "impart meaning to" the documents to which they refer. References regarded in this way take on the meanings supplied by the citing author in a process of labelling. The language surrounding the citation designates, characterizes and tags the documents or ideas being described and referred to. This procedure encompasses and entails the citing author's interpretations of the referenced works and consequently imparts meaning to the citation. Citing is a mode of symbol creation and in this way, a reference becomes a "concept symbol" (Small, 1978:326). Small argues that a dialogue among citing authors may lead to the homologization of some concept symbols so that they become standardized by usage or
"standard symbols".

Latour and Woolgar (1986: 273) write that a standard approach to text material is the attempt to find its "real" meaning, to ascertain what the author actually intended. They claim that a more recent trend has been to abandon this form of analysis so that the text is granted its own status. Also, the "...'real' meaning of a text is recognized as an illusory, or at least, infinitely renegotiable concept."

Latour and Woolgar (1986: 107-108) also argue that the "facticity" of a "phenomenon", embedded in a reference, is relative to the context in which the "phenomenon" is used, the network or networks of its employers, and the numbers of persons who know its meaning or meanings. Therefore, the meaning of a reference is partially ascertained by determining the ways that it is used in various contexts, such as disciplines, the kinds of specific readers or clusters of consumers, such as students and professionals, and the various settings for its usage, as in the "basic" and "applied" occupations. Thus, physicians, students, and/or researchers may "find" and/or "assign" different meanings to the same ideas and documents. They may also "give" and "discover" varying meanings in different sources of ideas, whether that be in journals, literature reviews, review books or textbooks. The various interpretations are not necessarily those intended by the cited author (Gilbert, 1976:295). In what follows, it is suggested that some citations

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6 However, while Latour and Woolgar (1986: 107-108) address the
may be regarded in terms of their "meanings" as symbolic
generalizations and exemplars.

Symbolic Generalizations

As set out in Chapter VII, Kuhn's (1970:181-183) notion of
symbolic generalization is a central component of the
disciplinary matrix. Symbolic generalizations are aspects of the
scientific enterprise that are common to and communicated among
the members of the community. They are taken for granted and
accepted without question by the members. Symbolic
generalizations tend to be descriptions of the substantive or
subject matters of the sciences. Some of these generalizations
also entail definitions of the components of these substantive
matters and the relationships among them. Kuhn suggests that the
sine qua non of a science rests on the numbers of symbolic
generalizations upon which its practitioners are able to call
(Kuhn, 1970:181-182).

As noted in the previous chapter, the Kuhnian concept of
symbolic generalization mixes form and content as well as the
social realm and that of the documents of science. If Kuhn's
ideas are to be useful in studying communications in the

*(cont'd)* possible variations in meanings that attend to these
sources and readers, they do not consider the possibility of a
uniformity of meanings, an outcome that might lend support to
the ideas of standard usage, "cumulativeness," "continuity" or
"universality" of interpretations as implied in the uniformity
of symbol usage thesis of Small (1977) and, perhaps, in the
notions of symbolic generalization and exemplar of Kuhn's (1970)
normal science.

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sciences, then ways of detecting symbolic generalizations in documents need to be devised.

**Symbolic Generalizations and Citations**

Symbolic generalizations as written expressions presume that the content is taken for granted, accepted without question or dissent. In other words, symbolic generalizations can be recognized when sentences or paragraphs are written in such a way that they include a presupposition that the reader is aware of what is entailed in the documents to which the citation refers. Drawing upon the discussion above, it is tentatively suggested that a symbolic generalization may be recognized by the following characteristics: 1) it is not a single, unique or idiosyncratic citation, that is, it must occur with some frequency in a body of literature (Small, 1977:329-330); 2) it presupposes that the reader is familiar with the content of the reference, as in "taken for granted". This aspect can be recognized when there are few or no adjectives that evaluate and/or describe the idea contained within the citation or reference. It is assumed that the reader is aware of these, hence the sentence carrying the reference is without qualifications, caveats or disclaimers (Latour and Woolgar, 1986:75-88). In other words, these are sentences that primarily denote. Third, many of these expressions are highly standardized in their phraseology, like the "recurrent pattern of language use" in the published literature that is part of the "empiricist

**Symbolic Generalizations and Perfunctory Citations**

The citation studies of the natural and physical sciences, noted in Chapter III, have revealed a large number of perfunctory citations.

*Table 1: Perfunctory References in the Physical Sciences*

<table>
<thead>
<tr>
<th>Author</th>
<th>% Perfunctory Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moravcsik and Murugesan, 1975</td>
<td>40 - 43 %</td>
</tr>
<tr>
<td>Chubin and Moitra, 1975</td>
<td>40 %</td>
</tr>
<tr>
<td>Murugesan and Moravcsik, 1978</td>
<td>41 - 79 %</td>
</tr>
<tr>
<td>Shearer and Moravcsik, 1979</td>
<td>32 - 56 %</td>
</tr>
<tr>
<td>Ruff, 1979</td>
<td>49.9 %</td>
</tr>
</tbody>
</table>

(from Cousineau and Rae, 1988)

These large percentages lead Moravcsik and Murugesan to disparage the counting of citations as a measure of the quality of ideas. However, it is the contention of this work that many of these perfunctory citations, as well as many of those to the Cambridge-Somerville Study, also may be symbolic generalizations.

It is suggested that when an author uses a reference, then, in some cases, it may be either a perfunctory citation or a symbolic generalization or both. Thus, citations entailing
symbolic generalizations are entirely possible within one sentence or may be in a footnote. For example, Latour and Woolgar (1986: 107-108), in arguing about the "meanings" of a "substance" upon which several laboratories have been established, hundreds of articles written about, and thousands of "users" have read about, note that the meanings of this phenomenon is often conveyed in a very few lines of text. The "origin" of the substance is often depicted "by means of a tail of perfunctory citations..." (presumably, they mean a trail of perfunctory citations).

If some short, terse citations and/or footnotes are symbolic generalizations, then many of these types of citations may have an entirely different meaning than that conveyed by the definitions or connotation of the term "perfunctory." The analysis of some citations, then, becomes an attempt to ascertain if they are solely perfunctory references, and/or if they are symbolic generalizations, and/or if the symbolic generalization is carried in a perfunctory citation. For this reason this work advocates distinctions between "perfunctory" citations that seem trivial or superficial and symbolic generalization for those that fulfill the above criteria. What

7 For example, the danger of taking the category of perfunctory citation at face value is seen in the Wolfgang, et al. (1978:28) work where they warn about the possibility of large numbers of "junk" citations. This is an important warning, because some apparent "junk" may be the very essence of communication in the sciences as symbolic generalizations.

8 For example, Galliher and McCartney (1973: 81) describe some citations in a way that captures some of the sense of a symbolic generalization as follows:
follows is an attempt to illustrate and exemplify some of these ideas by using citations to the Cambridge-Somerville Youth Study (Powers and Witmer, 1951) in order to distinguish between some "perfunctory" citations and several references that are more like symbolic generalizations.

Perfunctory Citations

It seems clear that at least some of the citations to the Study contained in the journal articles are primarily perfunctory.9 One example of such a perfunctory citation is found in Delhees et al (1970: 231) who cite Powers and Witmer (1951), among others, in the following way:

In the special field of delinquency, the work of Andry (1), Bandura and Walters (4), Burt (11), Glueck and Glueck (28), Powers and Witmer (36) and others gives equal indication of important criterion relations to

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8 (cont'd)

One, some references are ritualistic in nature. For example, a work may be acknowledged in the introduction of the paper as "previous research in the area" but ignored thereafter. This may be true especially of older work that is remembered but is no longer the focus of research; by citing it the author shows familiarity with the history of the field. Second, a person's work may be cited frequently in the analysis of the data in order to acknowledge similar findings or methodology.

9 The re-examination of Moravcsik and Murugesan (1975) by Chubin and Moitra (1975) subsequently came to our attention as well as Gilbert's (1977) and Small's (1977) work on citation theory. These works lead us to re-examine and reconsider the nature of perfunctory citations. It is also noted that the above authors' discussion of the organic and perfunctory citations are still naively attempting to capture the "real" minds of the scientists whose work they analyze. This work focuses more directly or descriptively on "what the paper says."
family attitudes.

Another example of a perfunctory citation is contained in a footnote in Brown, McCullough and Hiscox (1972:525): "The Cambridge-Somerville experiment undertaken by Dr. Richard Cabot is also fully documented in Powers and Witmer (1951)."

**Symbolic Generalizations**

It seems possible that some footnotes may be symbolic generalizations. An example of such a footnote is found in the works of Lundman and Scarpitti (1978: 208-209) and Lundman, *et al* (1976: 197-300). These researchers employ powerful literature search techniques to generate a bibliography on delinquency prevention programs. Out of 1,000 studies, they identify 127 of them as having satisfied their methodological criterion. These authors report that only 25 studies met this standard. The Cambridge-Somerville Study is included as one of them. These authors then appraise delinquency prevention programs based on these screened studies and all of the studies upon which they base their analysis are listed out only in a footnote. To categorize this type of footnote as *only* perfunctory would be a mistake. The fact that the Study is listed in the footnote is dramatic evidence of its importance, rather than its lack of importance.

Another example of a symbolic generalization may be found in the body of the article by Wright and Dixon (1977: 36-37). They
review 6600 abstracts related to the topic of the treatment of juvenile delinquency and community prevention programs up to January of 1974. This search procedure involved computer scans of literature data banks, solicitations from more than 200 public and research agencies, and the Joint University Libraries at Nashville, Tennessee. Placed among the studies reviewed is the Cambridge-Somerville Youth Study. The author's description is succinct and perfunctory and the citation is also a symbolic generalization:

The studies by Powers and Witmer (1951) and McCord, McCord and Zola (1959) of the Cambridge-Somerville project still stand as one of the most carefully documented studies of individual treatment for officially defined delinquents.

Some symbolic generalizations can be recognized by their recurring standardized phraseology. For example,

The special work of the counselors was no more effective than the usual forces in the community in preventing boys from committing delinquent acts (Mannheim, 1953:211).

is an expression that is repeated in at least five of the textbooks. Hagen (1984:192) states, as another example, that "One of the earliest and most ambitious treatment programs was... the Cambridge-Somerville Youth Study." Also commonly occurring as an expression is the following:

The treatment group did not differ significantly from that of the control boys who had received no attention from the study team (Bloch and Geis, 1965; Julian, 1973:174).

Still another is "It is the only experiment known to us which made use of a properly chosen control group..." (Eysenck,
As has been pointed out, some uniformity in expression is evidenced in the citations and, in fact, some comments are repeated almost verbatim (Eysenck, 1960:702-705; Raab and Selznick, 1964:117-122; Julian, 1973:174; Hagen, 1984:192).

As was noted in Table III in Chapter IV, 17 of the citations were judged to be neutral i.e. devoid of evaluative terms. It is suggested, then, that many or most of these references are also symbolic generalizations. In addition, most of these same citations, plus some 11 more, are perfunctory. Thus, most of the citations to the Study may be symbolic generalizations, in that first, all of the citations are part of a larger body of literature, second, they tend to be terse, descriptive statements and, third, they are characterized by uniformities of expression.

**Exemplars**

Kuhn argues, subsequently, that exemplars, like symbolic generalizations, also appear in written form, both in the journal and textbook literature. What these arguments establish is that there is a need to find ways of recognizing or detecting exemplars in the documents of the sciences. Applying the same arguments about symbolic generalizations to exemplars, it is

\[10\] For additional examples, see Jones (1956:256) and Riley (1963:614).
provisionally suggested that an exemplar may be recognized as an element of a citation when 1) it is not a single citation, that is, it must occur with some frequency in a body of literature (Small, 1977:329-330); 2) it informs, instructs, describes and/or evaluates that to which it refers. This process assigns meaning to the cited ideas. In other words, sentences which can be deemed to be exemplars, are descriptions and evaluations of the ideas in the reference (Small, 1977); 3) the ideas that are communicated about the reference are proposed solutions to problems and/or are described as accomplishments; 4) it may require at least several sentences for its expression.

An example of a footnote citation that is an exemplar\(^1\) is found in Biles (1974:147), who writes:

Criminologists may not really know much about the causes and correlates of crime, but we are fairly adept at specifying what is not true and what does not work. And that negative information ranging in time from the work of Lombroso to the Cambridge-Somerville fiasco and the Kansas City Preventive Patrol Experiment represents beginnings of an empirical science of crime.

**Some Implications**

Symbolic generalizations and exemplars may not only carry important ideas along in the literature. In some cases, they may have constraining effects, reducing the possibility of accepting new ideas (Dixon, 1980:70-76; Gieryn, 1982:285-286). Further, some symbolic generalizations and especially some exemplars may

\(^1\) For additional examples, see Jones (1956:256) and Riley (1963:614).
be so compelling that they limit the potential range of approaches to phenomena. For instance, the experimental design and its use in the Study may constitute an example of Zuckerman's (1978) thesis about how some aspects of science "fix" their employers' perceptions by "reification." This fixing of perceptions then forecloses "...the possibility that certain phenomena might be seen as other than what those concepts and labels imply" (Zuckerman, 1978; also see Gieryn, 1982: 287 for reference).

Perhaps it is that the experimental design has come to be reified and to have such power with social scientists, including criminologists, that alternative perspectives, such as the sociological, have diminished roles to play. It appears that the true experiment can only focus on individuals and, inasmuch as it seems to be highly valued as an investigative methodology by social scientists, perpetuates the individual pathology model of doing research.¹²

¹² It is also possible, when a social scientist is looking for relationships, causal or otherwise, between human beings and their environments, that the measurement of those relationships can be rarely more than the measurement of individual characteristics and attributes. These may be treated either as individual variables or they may be treated as aggregated data. Common criticisms of this method of aggregating data collected on individuals for the purpose of developing and assessing sociological concepts are that it is an inappropriate approach and that this mode of analysis is better called "aggregate psychology" rather than sociology (Coleman, 1964:87). Blalock (1967:21), too, points out a similar position with:

One of the most challenging problems that continually arise in almost all substantive fields within the social sciences is that of just how one translates back and forth between the macro level, where groups are the unit of analysis, and the micro level where the focus is on
Of at least equal importance to the question as to what constitutes the differences between sociological and psychological analysis, is the necessity of social scientists to be explicit about their data and the capability of their analyses to allow them to make a legitimate conclusion.\textsuperscript{13} For example, in their review of criminology textbooks, Steffensmeier and Clark (1980) claim that the textbook authors did exactly this in discussing biological and psychological explanations for female criminality. The textbook authors, according to Steffensmeier and Clark, after setting out these approaches, offer sociological rejoinders and alternative explanations.

In addition, the degree and extent to which students are apprenticed into the view that the experimental design is the most powerful tool for exploring human behaviour, is a measure of the likelihood that the individual will continue to be the primary unit of analysis in the social sciences. On the other hand, if research tools and designs, such as those of Cook and

\textsuperscript{12}(cont'd) the individual. The problems are both conceptual and empirical: there are questions of definition, aggregation, and the practical limitations of time-cost factors in gathering data on both levels. However, when confronted with attempting to articulate a social science that is other than aggregated individual data, one is hard put to find examples of what that may be. Even when the comparisons in a study or piece of research are between large geographical areas such as countries or continents, which are clearly macro levels of comparison, the data is rarely independent of aggregated individual data. Thus, aggregated data transformed into rates, are still more closely aligned to aggregated micro data than to macro sociological data. However, this is an old debate which will not be resolved here.

\textsuperscript{13} For an empirical comparison of the same set of data analyzed at both a macro and micro level, see Robinson (1950:351-357).
Campbell (1979) were to become exemplars, then more sociologically oriented investigations and knowledge might ensue.

Summary and Conclusions

First, contrary to what Kuhn suggests (1970), there are symbolic generalizations and exemplars in the social sciences. Thus, this analysis of citations to the Cambridge-Somerville Youth Study argues that many citations are more like symbolic generalizations than strictly perfunctory references and, in addition, several of the references can be viewed as exemplars.

Second, if some of the citations deemed to be perfunctory by Moravcsik and Murugeson (1975), Chubin and Moitra (1975), Murugesan and Moravcsik, (1975), Shearer and Moravcsik, (1979) and Ruff (1979) are also symbolic generalizations, then Moravcsik and Murugeson's argument that perfunctory citation counts are poor measures of the quality of publications may require reconsideration.14

Third, symbolic generalizations and exemplars are not judged by Kuhn (1970) or any other analyst (Crane, 1980) in terms of their veracity. The function of symbolic generalizations and

14 There are several other possible interpretations of these citations. They could be "standard symbols" (Small, 1978), "codifications" (Zuckerman and Merton, 1973) or "sedimentations" (Dolman and Bodewitz, 1985) for example. These possibilities require the analysis of citation patterns over time and such an inquiry is underway.
exemplars in the communication of ideas, therefore, can be independent of their verisimilitude. This issue is captured in Small’s (1979: 329) comment that there is no necessary similarity between the actual document and the ways that it may be used by a citing author. Thus, the author’s description or interpretation of the "...content of a document is independent of the document itself." Consequently, "erroneous" and/or "false" ideas can also be perpetuated as symbolic generalizations and carried forward in the literature as exemplars.

Finally, the findings in this study constitute a more powerful demonstration of the pervasiveness of the pathology perspective than those of Repucci and Clingempeel (1978), Galliher and McCartney (1973), and Gregg, et al., (1979) and enhance the argument about symbolic generalizations and exemplars because the literature search is not subject to self-selection or a priori biases, and since the articles are "randomly" selected, the chances of confirmation and selection biases are reduced. This argument does not hold for the textbook sample, however.

One possible use of bibliometrics is its ability to explore dimensions of schools of thought such as the pathology perspective, discussed in this work. Schools of thought could be explored more comprehensively in terms of Fleck’s (1935) notion of "thought collective" and/or Kuhn’s (1970) ideas on the disciplinary matrix.
It is also realized that the mere naming of certain kinds of citations, sentences and paragraphs as symbolic generalizations and/or exemplars is not an explanation. However, tying the content analyses and typologies of citations to some of the "theories" of referencing and citing might lead to more productive lines of inquiry than each approach proceeding separately.

Sobel (1979:1021) refers to the Cambridge-Somerville Study as "classic"; and one of the powers of a bibliographic approach may be in its capacity to discern some of the attributes of such studies. It is proposed that classic studies are highly cited as symbolic generalizations and exemplars in both the journal and textbook literature of a discipline.
APPENDIX A

Manual Citation Searches of the S.S.C.I.

Research usually requires the author to compile a data collection in the form of relevant literature to the research topic. One method that may be used to satisfy this requirement is a manual search of the Social Sciences Index (SSCI). It is the intention of this brief discussion to describe in simple words the steps involved in a manual citation search; the problems encountered in such a search and the solutions to these problems; and a comparison will be made between what the literature says and what we (Cousineau, 1986) discovered about citation searches from personal experience.

The SSCI is "a citation index for the journal literature (that) identifies and groups together all newly published articles that have referenced ... the same earlier publication. The earlier publication becomes, in effect, an indexing term for current articles that deal with the same subject" (Institute for Scientific Information, 1980:3; Cooper, 1984:49). The first SSCI volume commences in 1966: at Simon Fraser University there is a volume for each subsequent year up to and including 1985.

There are three basic types of searches: citations to books; citations to journal articles; and citations to articles within edited books wherein the author of the article (1) is also the editor of the book, or (2) the author of the article is not the editor of the book. Essentially, the procedure for each of these
searches is the same: The only thing that changes is the way the headings appear in the SSCI. Examples will be provided, where possible, for each type of search discussed.

To begin a citation search, one must first have a list of the authors and articles one intends to search for, and some means of keeping track of the citing authors. One method is to use lined file index cards, 8"x5"; using one card for each citing author as one goes down the list in the SSCI. The information to be recorded on the index cards will be discussed under the section on citations to books. It is also a good idea to use one index card for keeping track of the Citation Indexes that have been searched. This can be done by writing the the name of the author and the article on one index card and then noting in parentheses the year of each SSCI as it is searched starting from 1966 (or whenever the article was published if it was after 1966) and going to whatever year has been decided upon.

It is important to remember when doing a citation search that the SSCIs commence in 1966; thus, one should keep in mind that for articles published before 1966, one will have to begin searching for citations in the 1966 SSCI. For articles that have been published after 1966, one simply starts searching in the SSCI for that year.
Citations to Books

When an individual is searching citations to a book, the first heading that will be found is the author's surname and initials: e.g. Eysenck HJ........... Under this heading will be a chronological list of all books or journal articles written by that author commencing from his/her first published work and theoretically continuing up to the year of the SSCI, although this may not happen in actuality. If the article (or Book) that one is searching cannot be found in one year of the SSCI, simply go on to the next year's SSCI. Assuming that the article is in the SSCI for the year that is being searched, one will come across a heading set up in the following manner:

EYSENCK HJ ........... 1
47 Dimensions Personali (Note: Title is usually in abbreviated form)

Under this heading, will be citations which are set up in the following format:

Surname initials Journal Title/Book# Volume Page Year.
The individual doing the search will then go down the list, and, using one index card per citing author, record the required information on the first line of the card. If a journal article is making the citation, then one writes the following information on the index card: Surname Initials (Year) Journal Name (in abbrev. form) vol:page#. E.g. Mudd EW(1966) Jl. Abn. Psyc. 20:43. On the other hand if a citation appears in a book, then one simply substitutes the book number that is given and
This procedure applies to all three types of searches. The following point may also be considered general information which applies to all three types of searches: Book numbers and journal abbreviations can be looked up in the Guidebook for the year in question.

Unfortunately, citation searches are not without their problems. Following is a brief discussion of some of the problems encountered in citation searches. Some of these problems apply to all types of searches, whereas others are more specific to citation searches for books.

The first problem is the spelling of the author's name (of the book being cited). Occasionally, the author's name is either misspelled or spelled in a variety of ways in different parts of the SSCI. Similarly, the author's initials may be omitted altogether, given in various ways, or otherwise incorrect. Other name related problems are that if there is more than one author, only the first author will be listed; and if the author's name is longer than 8 letters, the name will be abbreviated after the 8th letter, with a period appearing after the 8th letter (e.g. DeGregorio will appear as DeGregor.). The simplest way to correct for "name" problems is to check and see if the article is listed under various spellings of the surname and combinations of the initials.
Another problem that one encounters when doing citation searches to books is that the book title may be abbreviated in various ways throughout the Index. Overall, it is best to include **Everything** which reasonably appears to be the book in question, even where the author's name is misspelled, initials are omitted or incorrect, or several different abbreviations for the title appear. At the retrieval stage (i.e. when the citing books/articles are obtained and/or photocopied), articles and books that are not referring to the correct document can be discarded or replaced according to the reason for the Index search.

**Citations to Journal Articles**

In terms of the steps involved, citation searches for journal articles are the same as citation searches for books. The only differences are in the headings that appear in the SSCI, and some of the problems that may be encountered in such a search. When conducting a citation search for a journal article, the heading in the SSCI will appear as in the following example:

(author) Luborsky, L ..........

75 Arch Gen Psychiatry 32 995 yr. Journal (Abbrev.) vol. page

The citations will appear as follows:

Author J1. Title vol. page yr.

Among the problems encountered in journal article citation searches are problems with misspelled names and incorrect
initials, missing or incorrect page/volume numbers, and multiple articles by the same author in one journal. As the solution to "name" problems has already been discussed, it will not be discussed at this point. With regard to missing or incorrect page/volume numbers, it is best to correct this problem by actually looking for the journal in question and confirming whether the cited article is on the page or in the volume in question, or otherwise finding the location of the article in the journal by examining the index in the journal. The solution to the problem of multiple articles by the same author in one journal is to consult the journal in question and locate the correct article within it.

**Articles Within Edited Books**

Individuals doing citation searches for articles within edited books should note that there are two situations with which one must contend: The first situation is one in which the author of the article is also the editor of the book. The second situation is one in which the author of the article is **not** the editor of the book. In the latter case, the heading in the SSCI will appear as follows:

Author's surname and initials..........

year **Title of Book** (abbrev. form) page# (sometimes a chapter #).
When searching for articles within edited books, the major problem arises out of a tendency to forget to indicate the page numbers of the article within the book in the SSCI. Consequently, the article appears under the same heading as the entire book. The solution to this problem is to include both specific citations and general citations, and citations which may indicate the chapter in which the article is located, but not the actual page. Again, when the articles/books are retrieved those not citing the correct article can then be discarded and/or replaced.

Source Items

The individual conducting a citation search will notice that some citations include a letter before the journal volume. These letters indicate source items, and refer to publications that are something other than ordinary articles or books. Following are the codes for the types of source items:

B - Book review
C - Correction
D - Discussion
E - Editorial
I - Biographical Item
K - Chronology
L - Letter
M - Meeting
N - Note
R - Review
Sorting Index Cards

Upon completing a citation search, an individual may have anywhere between 0 - 100 or more index cards for a cited author depending on how widely cited they are over a given number of years. At this point, it is best to put the cards in chronological and alphabetical order. That is, the cards should first be sorted into piles according to the year. Once the cards are separated in this manner, they can be placed in alphabetical order. At this stage it is also a good idea to make note of the number of citations for each year on a separate index card that includes the name of the author(s), the year of publication, and the title of the book or journal article being cited. In the latter case, the journal title, volume and page number must also be included.


<table>
<thead>
<tr>
<th>Year</th>
<th>No. Cities</th>
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<tr>
<td>1978</td>
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<tr>
<td>1979</td>
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<td>1980</td>
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<td>1981</td>
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<td></td>
<td>74</td>
</tr>
</tbody>
</table>
Summary

Cooper (1984:49) describes the SSCI as "a unique indexing service because it categorizes documents based on the work cited in it as well as its topical focus". This means that one can use the SSCI as a starting point for a search on a particular topic even if one does not have specific authors that one wishes to do citation searches for. In this instance, one can refer to the Permuterm Index which lists significant words in article titles and pairs them with other key title words, subsequently establishing a two-level system of indexing (1984: 51). One can also enlist the aid of the Source Index, which lists citing publications in alphabetical order, contains the full title and bibliographic references to the article, and a summary of citations to the article, and is also a good starting point in a citation search (Cooper, 1984:49). Cooper (1984:49) claims that there is no general answer to the question of which and how many information sources to use as this is essentially determined by the topic being researched and the resources available to the researcher. Cooper does, however, strongly urge researchers to use multiple channels of resources as a precaution against introducing a bias into one's research (1984:55). Our experience (Cousineau, 1986) indicates that a manual citation search appears to be unbiased and provides one with a generous sample of literature from which one can randomly select articles to be retrieved for research purposes.
One point on which Cooper (1984) and Cousineau (1986) differ is the use of computer searches. Cooper (1984:52) advocates the use of computer searches as a way of saving considerable time and money. Cousineau (1986), on the other hand, appears to be of the opinion that manual searches are more thorough, more reliable, and introduce fewer problems than computer searches even though manual searches are more time consuming.

Overall, it can be said that manual citation searches are an effective means of collecting data in the form of literature for research purposes. This method is relatively easy to use, is thorough, and appears to keep biases to a minimum. These advantages it might be argued, outweigh its costs in terms of time and possibly money.
APPENDIX B

The Citation Index

Garfield's (1970:669) verbatim description of a citation index is as follows:

A citation index is an ordered list of cited articles each accompanied by a list of citing articles. The citing article is identified as a source, the cited article as a reference. The Science Citation Index (SCI), published by the Institute for Scientific Information, is the only regularly issued citation index in science. It is prepared by computer and provides an index to the contents of every issue published during the calendar year of more than 2,000 selected journals. Journals covered by the index are chosen by advisory boards of experts in each of the topics represented and by large scale citation analyses.

The entry for a cited article (reference) contains the author's name and initials, the cited reference year, and the publication name, volume, and page number. Under the name of each cited author appears the source article citing this work. This line is arranged by citing author's name, publication, type of source item (article, abstract, editorial and so on), citing year, volume and page. The researcher starts with a reference or an author he has identified through a footnote, book, encyclopedia, or conventional word or subject index. He then turns to the Citation Index section of the SCI and searches for that particular author's name. When he has located the name, he checks to see which of several possible references fits the particular one he is interested in. He then looks to see who has currently cited this particular work. After noting the bibliographic citations of the authors who are citing the work with which he started, the searcher then turns to the Source Index of the SCI to obtain the complete bibliographic data for the works which he has found.

After finding several source articles, the searcher can use the bibliographies of one or several of these as entries into the citation index; this process is called "cycling". Since authors frequently write more than one closely related paper, additional articles by the author of the starting reference can also be used as entry points to the index.
Basically, then, the SCI does two things. First it tells what has been published. Each annual cumulation cites between 25 and 50 percent of the 5 to 10 million papers and books estimated to have been published during the entire history of science. Second, because a citation indicates a relationship between a part or a whole of a cited paper and a part or whole of the citing paper, the SCI tells how each brick in the edifice of science is linked to all the others. Because it performs these two fundamental functions so well, important applications for the SCI have been found in three major areas: library and information science, history of science, and the sociology of science.

The SCI was originally designed to be a retrieval tool for use in library and information science work. It has served this purpose well. The unique retrieval effectiveness of the SCI has already been reported by several investigators. The worldwide adoption of SCI in its short history confirms its ability to augment traditional indexing methods.
APPENDIX C


Content Category

1. Cited source is mentioned in the introduction or discussion as part of the history and state of the art of the research question under investigation
2. Cited source is the specific point of departure for the research question investigated
3. Cited source contains the concepts, definitions, interpretations used (and pertaining to the discipline of the citing article)
4. Cited source contains the data (pertaining to the discipline of the citing article) which are used sporadically in the citing text
5. Cited source contains the data (pertaining to the discipline of the citing article) which are used for comparative purposes, in tables and statistics
6. Cited source contains data and material (from other disciplines than citing article) which are used sporadically in the citing text, in tables or statistics
7. Cited source contains the method used
8. Cited source substantiates a statement or assumption, or points to further information
9. Cited source is positively evaluated
10. Cited source is negatively evaluated
11. Results of citing article prove, verify, substantiate the data or interpretation of cited source
12. Results of citing article disprove put into question the data as interpretation of cited source
13. Results of citing article furnish a new interpretation or explanation of
the data of the cited source. (Spiegel-Rosing, 1977:102)


Garfield, E. 1964. The Use of Citation Data in Writing the History of Science. Philadelphia: Institute of Scientific Information.


Garfield, E. 1987. "Mapping the World of Science: Is Citation Analysis a Legitimate Evaluation Tool?" pp. 18-37 in Jackson and Rushton (eds.) ?????


BIBLIOGRAPHY: TEXTBOOK SAMPLE


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