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CASE COMPLEXITY AND CASE PROCESSING TIME: AN EMPIRICAL STUDY

by

David Gordon Horne

B.A. Simon Fraser University 1979

THESIS SUBMITTED IN PARTIAL FULFILLMENT OF

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Case Complexity and Case Processing Time: An Empirical Study

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ABSTRACT

Undue delay in the processing of criminal court cases has long been a concern of Anglo-American justice systems. Undue delay denies justice to the accused and defeats the deterrent purposes of the criminal sanction. Many reasons have been advanced to account for delay. This study examined one suggested cause for case processing delay: case complexity.

A review of literature on criminal case processing led to the formulation of the following hypothesis: The greater the administrative complexity of a criminal case, the longer would be the processing delay experienced. Case complexity was measured in terms of numbers of accused persons, numbers of counts and numbers of criminal charges involved in a particular processing transaction in the courts. Delay was measured in terms of length of processing time from first appearance to final disposition.

The descriptive power of this hypothesis was tested for a sample of records drawn from a court

management information. The hypothesis was generally supported.

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I. Introduction

Delay in the administration of justice has long been a concern of many justice systems throughout the world. The raison d'etre of this thesis is an empirical treatment of the problem of delay in the court. This study hopes to shed some light on factors influencing delay in the court. The ultimate goal of this thesis is to supplement criminal court case processing policy with empirical findings.

To this end, the following subjects are dealt with. First, a theoretical discussion of models of the administration of justice will be completed. Too often in delay research the theoretical component is ignored. The discussion focuses on Feeley's work on the Rational Goal model and the Functional Systems model (Feeley 1973).

Second, the problem of court delay will be viewed in a theoretical perspective. It will be argued that focussing on delay presupposes the Rational Goal model as a theoretical underpinning. The analysis will show that over time the use of the Rational goal model has been implicit in the delay literature.

Third, a critical examination of the concept of delay will be undertaken. This is useful because 'delay' means many things to many different people. It will be shown that the term 'delay'

itself is not particularly useful. A substitute concept, case processing time, will be advanced.

The fourth and fifth areas examined are the bodies of research that respectively use the Rational Goal model and the Functional Systems model as a theoretical guide. This strategy was used to classify the voluminous body of literature in the area. It will be shown that the bulk of the research has followed the Rational Goal model.

The sixth section compares alternative research approaches to the problem of delay. Too often the alternative strategies for doing research are not considered. Through comparative discussion the reasons for the choice of the deductive method are given.

The seventh area discussed is the differing units of analysis used in the field of court research. The units of analysis range from 'case' to 'defendant'. Critical examination of these differing units of analysis will highlight the problems and advantages of the respective units.

The ninth matter dealt with is this study's independent variable, case complexity. A theoretical discussion of case complexity will emphasize the relevance of this study. An operational definition of case complexity will also be posited.

With the operational definitions of the independent and the dependent variables made apparent, the tenth and eleventh fields of inquiry will focus on the method and results of the study.

These sections will respectively detail the actual procedures used and the findings that resulted. It will be shown that there is a statistical relationship between case complexity and case processing time.

The twelfth and thirteenth topics discussed are similar in on but different in another. Both the discussion and policy implications interpret the results of the study. However, the discussion section focuses on the results of the study in and of themselves. The discussion is therefore concerned with interpreting the analysis as it relates to the previously discussed ideas concerning case complexity.

On the other hand, the policy implications section is concerned with interpreting the results in a limited policy framework. It should be noted that the thrust of this thesis is not oriented to the policy sphere. This does not however, prevent the interpretation of the results as they relate to the policy process.

Finally, the fourteenth area examined is the project itself, from beginning to end. Herein described are the ideas that originally sensitized the author to the void of empirical knowledge about delay in the Canadian context. Other topics dealt with are; the actual selection of the topic; the mechanics of the literature search; the process through which the data was obtained and problems with the data.

Thus, the ensuing discussion will cover the entire research process. Beginning with the theoretical component, progressing through the empirical hypothesis testing stage, the discussion will return to the theoretical stage. The theoretical component will now be examined.

II. Models of the Administration of Criminal Justice

Theoretical discussions of the administration of justice have for the most part not occupied the literature to any great extent. With respect to a theoretical discussion of the literature on delay in court the reader is left with only surveys of isolated causes and proposed remedies. (see Hearne n.d., Church et al. 1978a). The purpose of this chapter is to briefly outline a theoretical discussion of the administration of justice. Subsequent chapters will focus on the problem of delay in court and will attempt to discuss previous research in light of certain theoretical models.

Drawing upon the works of Weber and Etzioni, Feeley outlines two models of the criminal justice system: the Rational Goal model and the Functional Systems model. Feeley's rational goal model is mainly concerned with "means or formal goals of the administration of criminal justice" (Feeley, 1973:409) Although there is a wide range of methodologies, Feeley asserts that writers in this area are primarily concerned with formal rules (Feeley 1973:409).

> One approach in this style of research is the logical analysis of the interrelationship of the rules of criminal procedure in order to identify and overcome problems of ambiguity, fairness and discretion. These studies are analogous to the analysis and continuous refinement of formal organizational schema. Another form of research this model uses is the empirical description of practices in the administration of justice, which is

> then contrasted to the formal rules and goals of the system in an attempt to identify and measure discrepancies between reality and ideal.(Feeley, 1973:409)

Following Etzioni, Feeley notes that the rational goal approach focuses empirically on measuring "organizational 'effectiveness' by contrasting observed actual behaviour with the stated, formal goals of the organization". (Feeley 1973:411). Again, echoing Etzioni, Feeley asserts that this emphasis produces a unitary view of the process which is "not conducive to theory building and the explanation of the observed patterns of behaviour" (Feeley, 1973:412).

Feeley's alternative model, the functional systems approach, embodies an "implicit concern for 'explaining' the behaviour of the actors (as opposed to simply contrasting it)" (Feeley, 1973:413) Adherents of this approach:

> "all tend to view the organization of the administration of criminal justice as a system of action based primarily upon cooperation, exchange, and adaptation, and emphasize these considerations over adherence to formal rules and defined "roles" in searching for and developing explanations of behaviour and discussing organizational effectiveness"(Feeley 1973;413)

Members of the organization are likely to be influenced by

> "informal 'rules of the game' within the organization, the goals they pursue are likely to be personal or subgroup goals; and the roles they assume are likely to be defined by the functional adaptation of these two factors."(Feeley,1973:413

The focus of the above orientation has shifted from the rational unitary organization pursuing a common goal, to a set of

rational individuals that pursue their own individual goals. (Feeley, 1973: 413-414).

It is obvious that the respective emphases of the models are divergent. In the following chapters on delay in court it will become clear that the use of the respective models of the administration of justice is critical in understanding the research undertaken. In fact, the formulation of the problem of court delay will provide the key to understanding most of the research in the area.

III. Court Delay: The Problem in a Theoretical Perspective

The orderly expedition (or lack thereof) of the processing of cases through the courts has long been a concern in the justice systems of Anglo-Saxon origin. Mr. Justice Jackson of the United States Supreme Court put it accordingly.

> "The law's delay in many lands and throughout history has been the theme of tragedy and comedy. Hamlet summarized the seven burdens of man and put the law's delay fifth on his list. If the meter of his verse had permitted he would perhaps have put it first. Dickens memorialized it in Bleak House, Checkov, the Russian, and Moliere, the Frenchman, have written tragedies based on it. Gilbert and Sullivan have satirized it in song. Thus, it is no new problem for the profession, although we doubt that it has ever assumed the proportion which now confront us. "Justice delayed is Justice denied"" (Gray vs. Gray 1954:606).

The concern for speedy justice and the law's delay has its roots in English Common law. As early as 1215 the Magna Carta declared:

> To no one will we sell, to none will we deny or delay, sight or justice. (Baxter, 1968:p.27)

Expeditious justice and the law's delay again was recognized in the Habeas Corpus Act of 1679:

> "Whereas great delays have been used by sheriffs, gaolers and other officers to whose custody any of the king's subjects have been committed for criminal or supposed criminal matters in making.... Be it enacted... that whenever any person or persons shall bring any habeas corpus directed unto any sheriff or sheriffs gaoler minister or other person.... the said officer or officers... bring or cause to be brought the body of the

> party so committed or restrained into... the judges or barons of the said courtroom..." (Baxter, 1968 p.150).

Indeed it was the delays in the process of the English Crown Court that prompted the striking of a commission to study the distribution of offences between the Crown Court and magistrates courts. (Great Britain 1975:1).

In the United States, the concern for delay is probably most evident in the Sixth Amendment of the Constitution.

> "The Sixth Amendment to the Constitution provides in part that 'in all criminal prosecutions, the accused shall enjoy the right to a speedy and public trial'." (Rudstein 1975: p.11).

The right to a speedy trial has been difficult to define and implement. In an effort to eliminate the confusion surrounding the right to a speedy trial, the U.S. Congress enacted The Speedy Trial Act of 1974 (United States Congress 1974). The act set out specific time limits within which a defendant must come to trial. Similar legislation has been passed in most states delineating time limits in state court systems. (See Midwest Research Institute 1978:59).

While there does not appear to be any legislation dealing explicitly with the problems of protracted processing time in the Canadian legal sphere the concern for delay is evident. In a broad sense the notion of delay is implicitly acknowledged in the objectives of the Canadian Judicial Council as set out in the Judges Act of 1970. The task cited here includes the promotion of "efficiency and uniformity and to improve the

quality of judicial service in superior and county courts (R.S.C.1970 v-1 [am 1971 c.55S.31]) In a much more limited framework the Canadian Criminal Code (Sec. 459) sets out time limits within which an accused in custody must be brought before the court (but not necessarily for trial); 90 days in the case of indictable offences and 30 days for summary offences. (Greenspan 1978:383)[1] Indeed, case processing delay and the caseload crisis were explicitly noted as driving forces in the inauguration of the Report on Administration of Ontario Courts in 1973 (Ontario Law Reform Commission 1973:vol. 1:4).

In the Province of British Columbia, backlog, delay and the caseload crisis went "public" late in 1977 when the then deputy attorney general, David Vickers issued a memo to all prosecutors outlining steps to follow in order to combat the growing backlog. Specifically the memo instructed prosecutors to review cases that had been inactive for 180 days excluding cases that had a trial in progress or a guilty plea registered (Vancouver Sun 28 Jan. 1977:2). The review, prompted by the growing caseload, was designed to eliminate cases in which the Crown could not proceed. The memo spawned comments and criticisms from judges, crown counsel and the public. Causes of delay were hypothesized to be the conflict between court administration and crown counsel, the growing number of cases, and inefficient

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[1] For a discussion of time limits in provincial codes of civil procedure see Shetreet, 1979:5-8)

calendaring systems. (Vancouver Sun 21 Jan. 1977:15). Remedies discussed in the press included the use of parajudges, (Vancouver Sun 1 Feb. 1977) and a hybrid calendaring system[2] (Vancouver Sun 19 Jan. 1977:1). This latter measure was touted by provincial court judge Les Bewley as the answer to the caseload crisis and delay. (Vancouver Sun 19 Jan. 1977:1).

The concern for delay as evidenced above implies that the primary model through which the administration of justice has been viewed is the rational goal model. The focus on delay would seem to imply that a goal of the criminal justice system is to expedite the processing of cases. Thus when a case becomes 'delayed', progress towards the goal of expeditious disposition of cases is impeded.

Of course, expeditious processing is only one of the goals of the criminal justice system. Due process is also a goal of the criminal justice system. (Feeley, 1973:414). Packer has asserted that there are two antagonistic belief systems operating in the criminal justice system. The "due process" model emphasizing adherence to legal rules is juxtaposed to the "crime control" model which emphasizes informality and community safety. (Feeley, 1973:414-415).

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[2]The hybrid calendaring system in this instance, consists of a single judge being responsible for the disposition of the case from after the initial appearance to disposition, with all first appearances being handled by a single judge assigning the case to various courtrooms.

While in theory these value systems are opposed to each other they exist concurrently. A prime example is the American right to a speedy trial. The defendant has the constitutional right to a speedy trial but the goal is not entirely that of expeditious justice. The landmark case, Barker vs. Wingo set out four criteria by which to judge a speedy trial claim. (Barker vs. Wingo 1972:514). Four factors in what one author calls the "balancing process" (Rudstein 1975:15) are the length of the delay, reasons for the delay, the defendants assertion of his right to speedy trial and the evidence of prejudice to the defendant. (Barker vs. Wingo 1975:530). The Supreme Court held that, although the length of delay had been five years, the defendant had not been denied the right to a speedy trial largely because the defendant was not prejudiced by the delay and did not actually want a speedy trial. (Rudstein 1975:14).

In the Canadian context, the concern for the expeditious processing of accused persons in custody has been noted above. It should be emphasized that this orientation is limited, if not severely restricted, by the emphasis on due process. A prime example of this is a reaction by Vancouver's Regional Crown Counsel, Bruce Donald, when he was faced with the order to drop cases, aged over 180 days. Donald replied: "No charges will be dropped or stayed where there is evidence to carry on".(Vancouver Sun 17 Jan. 1977:2)

A similar opinion is advanced by Linden on the delays in the civil process.

> "If cases take too long an undue readiness to settle may be fostered...However not all delay is a necessary evil...By waiting a short period of time, the trial of a bitterly divisive issue may take place in a more dispassionate atmosphere. A more objective brand of justice may be dispensed. Moreover, law suits demand preparation. This takes time, but it is vital for a full and proper hearing. (Linden 1966:97)

The point demonstrated is that the goal of expediency is not the only goal of the Canadian or American judicial processes.

Discussions of the evils of delayed justice are often primarily concerned with goals of the process. Delay is often seen to have an adverse effect on the criminal justice system's attempt to deter criminals.(Shetreet 1979:15) Also, delay is often reputed to lead to a loss of public confidence in the legal system. As one writer put it:

> "When the position of the Courts as the duly authorised arbitrators of society is diminished through undue delay, confidence in peace, social order and good government is threatened". (Shetreet 1979:15)

Finally, delay is seen to have an adverse effect on the quality of jusice in general and individual cases.

From the above brief discussion it is obvious that merely looking at the problem of delay in court presupposes a goal orientation. Whether the goal is quick turn around times for cases(Freisen et al.. 1978:3) or "expeditious justice" (Shetreet 1979) the basic orientation is that of the rational goal model as set out by Feeley.

Not all delay research however, falls under the rational goal model. Nardulli takes a distinctly functional approach in his study of "the Courtroom Elite" (Nardulli 1978). Levin follows a similar rationale, he suggests;

> "that criminal court delay tends to be associated with the behaviour of the judges, defense attorneys and prosecutors".(Levin 1975:84)

Before proceeding to review the research in the field a brief discussion of the many definitions of delay will be undertaken.

IV. Delay: Qu'est-ce que c'est?

While the concern for delay presupposes a goal orientation for the judicial process there is a lack of consensus as to the meaning of "delay". The term itself implies as Church et al. have pointed out "any excessive or abnormal lapse of time (Church et al. 1978a:2). Levin similarly described delay as "an aberration in the court system" (Levin 1975:83). Green, in 1959, likewise stated

> Delay in the administration of justice should signify the extra or abnormal time which might reasonably be expected to bring a case to trial. (Green 1959:9).

In light of the above nominal definitions one would expect normal processing time to be included in the operational definitions of "delay". To determine what is abnormal, a conception of normal processing time is required. Typically delay should be operationalized as any time outside the normal processing time. In fact this is not the case. Many authors use time frames which include normal processing time and label it delay. For example, Kaufman cites statistics indicating that 343000 litigants are experiencing a year's delay from indictment to trial, (Kaufman, 1971:146). Other authors view 'delay' as the time it takes to settle a case (Bloom 1969:102, New York 1971:136, Don Ciro, 1972:56-57). Levin described delay as the age of the case from its initial court appearance to its final

disposition (Levin 1975:84). Reed focused on delay between arraignment and the start of a jury trial (Reed, 1973:60). Rosenberg cites the Institute for Judicial administration's measure of delay as the time between the date when a case "is at issue" and the date it goes to trial (Rosenberg 1965:33; see also Zeisel (1971). Zeisel et al. discuss their concept of delay in their early study Delay in the Court;

> Delay in regular order is the waiting time between the date of filing and the date of trial of the last case that reached trial in regular order, that is without either advancement or deferment. (Zeisel et al. 1959:44-45).

Katz et al. used as a measure of delay the average time from arrest to final disposition (Katz et al. 1972:3). Gordon views delay as:

> The period of time from "initiation" (placing a case on a trial calendar in a civil case or arraignment in a criminal case) to disposition. (Gordon 1978:322).

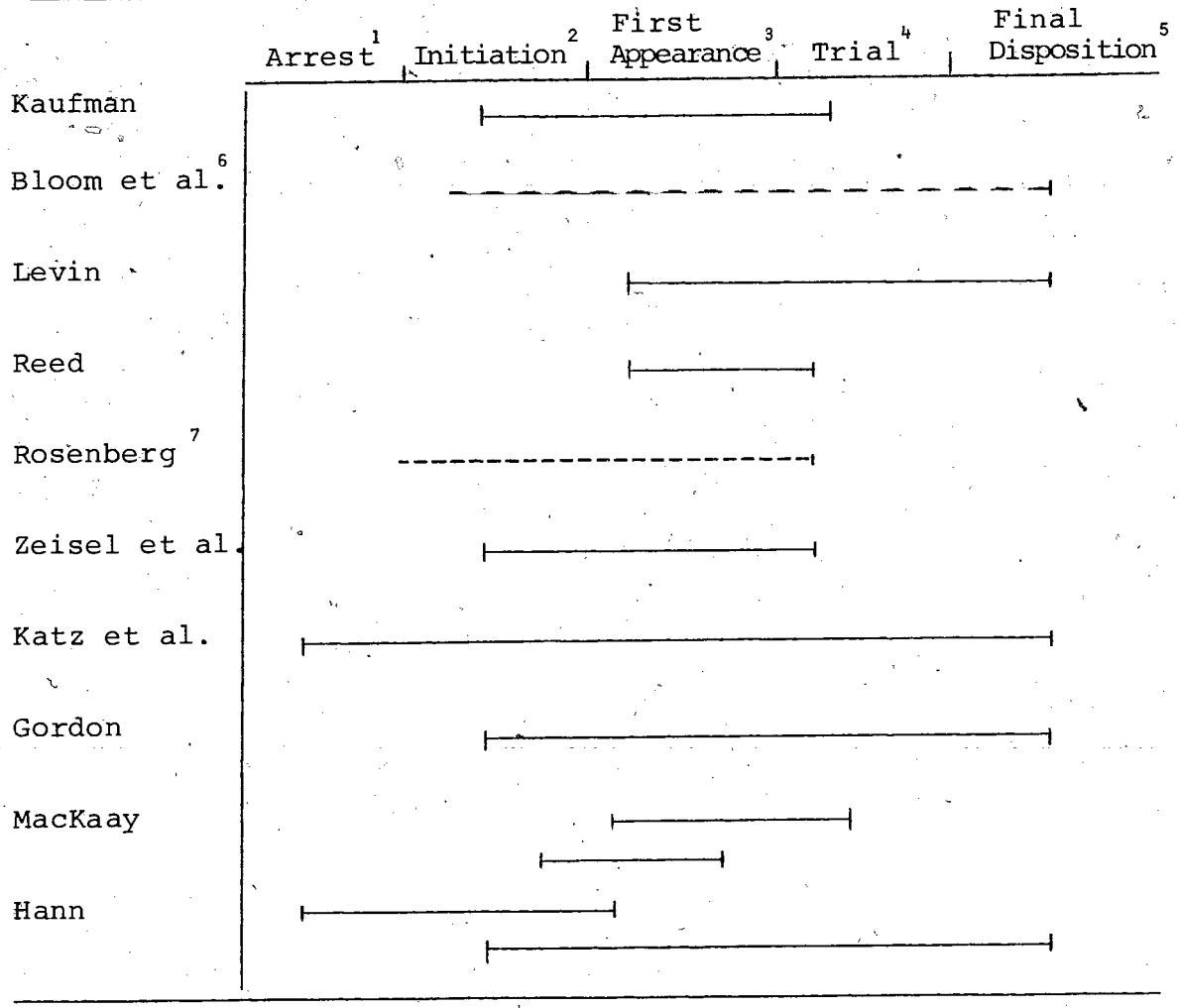
MacKaay, in his study of the criminal courts in Montreal, used the term "delay" to describe different time frames. Delay in his usage denotes time between stages of the process i.e. preliminary hearings and trial and also time within stages (MacKaay 1976:40-48). Hann, in his study of Toronto courts, did not expressly define delay but used "minimal delay" as an indicator of the court's performance. "Minimal delay" consists of indicators such as the time between arrest or summons and appearance observed in provincial court and the time between the laying of an information and the last appearance in provincial

court (Hann 1973:vol 1:112-115). Thus we can see that all the above definitions incorporate "normal" processing time in an operational definition of "delay". In light of the fact that "delay" is a measure of a normal processing time it would seem logical to separate the normal processing periods from the abnormal and produce empirical results for the latter and refer to it as "delay". The problems of determining the normal processing time for a case are immense. Even defining a normal case presents problems (see Eisenstein and Jacobs 1973:716). A much more viable solution is to eliminate the conceptual term "delay" and to retain the operational definition of time within the process. (Luskin 1978:116). Thus the new conceptual term would be case processing time (Luskin 1978:116).

Concurrent with the widespread inclusion of normal case processing time is the alarming lack of congruence in measuring the start and end of "delay". As can be seen from Table I the starting point of the various time frames ranges from arrest to arraignment whereas the end point ranges from trial or jury trial to final disposition. This wide range of time frames could indicate jurisdictional differences in the procedures through which the judicial process is initiated or terminated. Alternatively, the differences in time frames could reflect the author's focus when viewing the judicial process. For example, those authors who advocate the starting point of first appearance, preliminary hearing, indictment, or arraignment

TABLE 1

Time Frames for Delay



[1]Includes Summons

[2]Includes Filing, Indictment

[3]Includes Arraignment

[4]Includes either start or finish of trial

[5]Includes settlement

[6]This time frame has no clear starting point but uses the "time it takes to settle a case as a definition of delay

[7]The time frame cited is "when the case is at issue and date it goes to trial

appear to emphasize the actual physical appearance of a case and its components in court. Others focus on the initiation of documents (ie. arrest, summons, laying of information or filing) and thus begin to measure time frames from these events.

The emphasis on the processing of documents or people is evident at the choice of the starting point of the process. The distinction however becomes less clear at the two end points, trial and dispositon. The choice of trial as an end point would appear to emphasize the individual orientation because the traditional view of the trial is that it is the means by which the guilt or innocence of the accused is determined. The choice of final disposition, appearance or case settled could be construed as either the individual or process emphasis. With respect to the former, the choice of final disposition could be interpreted as a sentencing stage. In terms of the latter, final dispositon could be viewed as a clearing house function with cases being referred to a higher court.

A prime example of the focus on the defendant is MacKaay's study of the Montreal courts. From Table I it can be seen that MacKaay looked at the time from first appearance to trial. Not surprisingly the author looked at the path of the accused through the court system focusing on the nature of the offence, custody status and the presence of legal counsel. (MacKaay, 1976:5)

In a markedly different framework, Hann looked at resources and workload and their effect on delay in Toronto courts. From Table 1 it can be seen that Hann used the time frame "initiation to disposition". Hann's focus on the process is best illuminated in his choice of unit of analysis, the "case", which by definition looks at a set of clients or charges rather than individuals.(Hann, 1973:vol.1:97).

This difference of emphasis is evident in the research with a rational goal orientation. The subsequent chapter reviews research that inculcates the rational goal model either explicitly or implicitly. The literature in this area is further broken down into individual (micro) versus process (macro) orientations with a critical examination of each hypothesized cause and proposed remedy.

V. Research on Causes of and Remedies for Delay: The Rational Goal Model Ratified

It was stated earlier that the bulk of the research to date would, for the most part, fall under the rubric of the Rational Goal Model. Typically, unnecessary delay is seen as counterproductive to the pursuit of the goals of the criminal justice process. This concern for the realization of the goals of the justice system has spawned a plethora of research projects aimed at finding the cause or causes of delay and positing the obvious counteractant (see Church et al. 1978a Hearne n.d.; Reed 1973:5; Wildhorn et al. 1977:156; Neubauer 1978:111; Waheed 1976:85; Santo 1965; Reynolds 1972:13; Berkson et al. 1977 :204; Banfield and Anderson 1968; Levin 1975:97; Rosenberg 1965; Dienes 1974:136; Wilson 1972:88; Miller 1971:2; Zeisel et al. 1959:3-4; Zeisel 1971:48-59 Peterson 1977).

The bulk of 'cause-remedy' literature has focused on the process through which a case is processed. The "macro" approach identifies factors such as resources and workload, legal procedure and court calendaring systems as relevant. The alternative approach involves the individual defendant focusing on individual case characteristics as causes of delay. First a discussion of the research in the macro view and thereafter a discussion of the micro approach.

The first category encompasses the hypothesis that delay is a product of the increase in workload and the lack of sufficient resources (Zeisel et al. 1959:3; Rosenberg 1965:38-46; Miller 1971:4; National Advisory Commission on Criminal Justice Standards and Goals 1973:1; Wilson 1972:88; Katz 1972; Notre Dame University 1972; Hearne n.d.4-7; Banfield and Anderson 1968:266; Kaufman 1971:147; Committee on Court Delay in New York City 1972; Burger 1970:71). It seems that influencing the amount of work appears to be problematic in that this would require a change in procedures or the re-routing of some cases out of the system (for techniques advocated for civil case management see Syracuse Law Review, 1968). The alternative route of supplementing the resources also has many problems. The solution of adding more judges (Syracuse Law Review 1968:732; Zeisel et al. 1959:206) is tempered by the results of several empirical studies on backlog , delay, and judicial productivity. Rhodes (1976: 319-20) found no relationship between the caseload per judge and median days from arraignment to disposition. Gillespie, (1977:19-30), however, discovered that when the number of weighted dispositions was held constant, overall case processing time was found to be influenced by the pending caseload per judge. Gillespie, (1976:258), concluded that "courts produce more output with no additional resources when the demand for court services increases." In light of this Church, et al. concluded:

> "The obvious corollary is that if resources are augmented and the demand for court services stays constant, individual judicial productivity may fall. It is thereby no means clear that the simple expedient of adding judges will necessarily result in a decrease in either pending cases or overall case processing time." (Church et al. 1978a:23)

Judicial resources have thus far been the main focus of the bulk of empirical research. One study asserts that a shortage or concentration of attorneys specializing in one area of civil or criminal work causes delay. (Mitre Corp. in Church et al. 1978a:24 fn.24). Another commentator maintains that the "concentration of the bar" hypothesis actually alleviates delay (Zeisel, 1971:50). Another hypothesis that has not been empirically explored is that insufficient prosecutorial or defense counsel resources contribute to protracted case processing time. (Church et al. 1978a:24). Thus it appears that any policy proposals to add or remove any of the resources available to the court would be based on mixed empirical support or no empirical support at all.

Cumbersome and complex legal procedure has been labelled as a primary cause of delay. (Shetreet, 1979:9; Pound, 1964:278-279; Vanderbilt, 1957). Bilateral state and local courts systems have been singled out as a cause of delay in the United States largely due to the problems of transferring cases from one system to another. (Hearne n.d., p.10. see also Ashman and Parness, 1974). The San Francisco Committee on Crime (1970:47-48) recognized this problem and recommended that the

State of California assume control over the local courts by including the local judges in their budget. In addition, conflicts arise when a defendant is held by federal authorities while concurrently wanted on a state charge, or is wanted by a state other than the one that has custody. (Schindler, 1966:179). In Canada the divided jurisdiction in family matters has been held as a cause of delay (Shetreet, 1979:37). The concept of the unified family court is partly based on the need for expeditious justice in an area of constitutionally divided jurisdiction (see Reagh, 1968:39).

Other mechanisms designed to simplify procedure and thus reduce case processing time within specific court systems include pre-trial discovery. (Cassells, 1975:281). The Law Reform Commission of Canada describes discovery as "all of the formal and informal procedures or means available to the parties to facilitate the pretrial conference and disclosure, preliminary inquiries and plea bargaining."

Pre-trial conferences have been touted as a valuable technique in shortening trials. (Wetmore, 1972:48). The theory is that in disclosing issues, irrelevant witnesses will be eliminated and the trial will be shortened by focusing on the issues. Pre-trial disclosures are reputed to have a similar impact by eliminating any discussion of facts that are not at issue. (Law Reform Commission of Canada, 1974b:59; McMurtry, 1977:254-255. For a different perspective on disclosure see

Cassells, 1975:283).

In Vancouver, pilot projects were undertaken to determine the impact of pretrial discovery on the processing of federal offences and provincial offences. While there was no control group for the Federal Pretrial Project, the Provincial Pretrial Project (Criminal Code offences) revealed "minimal differences between the experimental and control group" with respect to time in the system (Standerwick, 1979:26).

The preliminary hearing (which is the most prevalent form of discovery , L.R.C.C., 1974b:49) serves two functions. The first function is clearly stated in the Patterson Case. (1970 C.R.409 at 412).

> "The purpose of the preliminary inquiry is defined by the Criminal Code to determine whether there is sufficient evidence to put the accused on trial."

This strictly legal function is related to the administrative function of making the adjudicative process more efficient. Efficiency is asserted to be achieved by affording the accused prompt protection against malicious prosecution , protecting against tardy police prosecutions, and providing a written record of proceedings for ensuing trials (Halyk, 1968:191-203). While the preliminary hearing is hypothesized to expedite the trial process the empirical evidence is to the contrary. (Katz et al., 1972:41; Navarro and Taylor, 1967:204). Indeed the Law Reform Commission of Canada rejected the idea of the use of a preliminary hearing in all types of cases:

> "On a purely administrative level to make the preliminary hearing available for all offences including indictable offences presently under absolute jurisdiction of magistrates and summary convictions offences would require massive increases in courts and personnel and it is quite unrealistic to think that this would be done." (Law Reform Commission of Canada, 1974a).

Furthermore, Ontario has instituted new procedures designed to shorten the length of the preliminary hearing (McMurtry, 1977:254). Thus we can see that the mere existence of a preliminary hearing is not a guarantee of an efficient process, In fact it can sometimes delay the process.

"Plea bargaining" has also been hypothesized as a technique that will reduce delay, (Enker, 1967:112; Shetreet, 1979:69). Plea bargaining is defined by the Law Reform Commission of Canada as "any agreement by the accused to plead guilty in return for the promise of some benefit". (Law Reform Commission of Canada, 1975b:45). In this vein, "plea bargaining" is seen as a prerequisite to the reduction of over-crowded dockets (Dash,1951:400; Newman, 1956:780; Alschuler, 1968:50. For a discussion of Canadian attitudes towards the propriety of the plea "bargain" see, Verdun-Jones and Cousineau, 1979:238. See also, Hooper, 1972:460). Indeed, the need for plea discussions and agreements was recognized in Santobello vs. New York (1971:498).

> "Properly administered it is to be encouraged. If every criminal charge were subjected to a full scale, the states and the federal government would need to multiply by many times the number of judges and court facilities.

The Law reform Commission of Canada seems to recognize this exigency but rejects the propriety of the plea bargain:

> "If the courts' caseloads are too big to get through without plea bargaining we may need more courts, fewer prosecutions or better procedures. Limit the scope of criminal law as we suggest and make good use of the diversionary option and the problem may resolve itself". (1975a:14).

The empirical work in this area is at least suspect. Alschuler (1968:50), in support of the use of plea bargaining to expedite cases, points to the high rate of guilty pleas and jumps to the conclusion that it is a product of plea bargaining. He then uses the guilty plea rates as a measure of plea bargaining. Heumann, (1975) and Feeley (1975), take an antagonistic stance to that of Alschuler in conducting macro level research on caseload statistics and plea bargaining in the Connecticut Courts. Feeley's original study is not available for close examination. Upon careful scrutiny, Heumann's study suffers from some methodological criticisms (Nardulli, 1979:92) the most glaring being that he used the guilty plea as an indicator of plea bargaining. Cousineau and Verdun-Jones (1979:296) correctly point out that the use of this indicator assumes that all (or a majority of) guilty pleas are a product of negotiations, which is a tenuous proposition. Guilty pleas could be a result of a defendant merely appearing at his/her trial without any prior discussions with the prosecutor and entering his/her plea. Thus, in the empirical vein, the need or lack thereof for plea

bargaining as a means of expediting the trial process has yet to be founded.

The macro approach to delay also encompasses techniques of case scheduling. A long standing debate exists in the literature on court administration regarding the efficiency and effectiveness of master versus individual calendaring systems. Kaufman distinguishes the nomenclature:

> "They are generic terms describing two ends of a spectrum of procedures for administering the calendar of a court having more than one judge. At one extreme all cases are placed on a master court calendar, each case is segmented into stages and each stage is made the specialized responsibility of one or more judges. When a stage is completed the case reverts to the master calendar and is reassigned to another judge for the next stage of processing. At the other extreme, a case is assigned at the outset to one judge for all purposes, each judge having an individual calendar of cases for which he is responsible from start to finish. Between these extremes are a number of variants: the process may be segmented into only two stages with one judge or set of judges responsible for all stages thereafter;" (1971:1637).

Friesen et al. distinguish between the maximization of the use of judicial decision-making time (individual calendar) as opposed to the efficient use of hearing time (master calendar) and support the individual method (1971:184). Opinion is divided as to the procedure to be used, some jurisdictions using the master calendar procedure (San Francisco Committee on Crime 1970:39; Friesen et al. 1978:37; Wenke 1974:354), while others opt for the individual calendar (Vancouver Sun 1977:1; Kaufman, 1971:1637; Waybright, 1969:334; Miller et al., 1971:719; Jacoby

et al., 1976:12, see also Gall, 1979:115)

Empirical evidence concerning the effectiveness of the respective calendar systems is mixed. Church et al. (1978b:36) compared disposition times of individual calendar courts and courts that used the master calendar or some variant of it. In civil case disposition the authors found "the mean tort disposition time of individual calendar courts is over 200 days faster than the mean of master calendar courts" (Church et al. 1978b:36). Church et al. found that in criminal case processing: "[e]ight of the ten fastest courts utilize the master calendar; so do the two pathologically delayed courts". (Church et al. 1978b:37). Similar results were formed in a much more limited scope by Friesen et al. (1978:32). Of the five criminal courts studied, the most expeditious and least expeditious courts used the master calendaring systems. The analysis here is limited to aggregate disposition times and to draw conclusions about the respective efficiency of each method of calendaring on the basis of this information alone is tenuous. Only when relevant variables such as type and complexity of cases are controlled for can conclusions be drawn regarding the influence of calendaring systems on case processing time.

In the past two decades diverting potential offenders from the formal criminal justice process has been justified partially by its hypothesized effect on alleviating court congestion (Hogarth, 1979:160, Nimmer and Krauthaus, 1976:226; Smith,

1973:40). Hogarth defines diversion as a

> "pre-trial process whereby a police officer or prosecutor uses his discretion on a case by case basis not to lay a charge or proceed with prosecution but refers an alleged offender to an individual or agency outside the formal justice system...".

The alleviation of court congestion and delay is asserted to be accomplished by the rerouting of the potential offender.

A number of assumptions are implicit in the above argument. First, that diversion programs handle a substantial or at least a significant amount of a court's caseload. Nimmer and Krauthaus estimate that portion to be less than four percent (Krauthaus and Nimmer, 1976:229) whereas a commentator in the Yale Law Journal estimates that less than two percent of all arrested persons are diverted (Yale Law Journal, 1974:835-836). Alternatively Vorenberg and Vorenberg point to a sizeable reduction (28%) in court referrals as a result of the introduction of an alternative program in California. (Vorenberg and Vorenberg, 1973:257).

A second assumption in the diversion - delay argument is that cases that are earmarked for diversion would have otherwise gone to trial had they not been diverted. One author notes that most diversion cases are of a less serious nature and would in absence of the diversion provision have been settled by "negotiation and plea rather than by trial on the merits" (Yale Law Journal, 1974:835-836).

A third assumption and perhaps the most important supposition is that the trial rate affects delay, hence any rerouting of cases before trial will reduce case protraction. Empirical evidence on this point is varied. Some authors report a relationship between trial rate and delay (Zeizel et al. 1959; Navarro and Taylor ,1967:204; Wildhorn et al., 1977:215; McKaay, 1976:57) while others report mixed results on trial rate affecting delay. (Notre Dame University, 1972: vol.1:27; Eisenstein and Jacob, 1977:236).

Thus, before diversion can be touted as a remedy for delay three assumptions must be established as correct. First, diversion programs must handle a significant number of cases. Second, these diverted cases should be cases that would have gone to trial in absence of the diversion program. In other words, the diversion program must actually reduce the number of cases that a court must process. Finally the relationship between trial rate and delay must be empirically established.

While the greater part of the rational goal model research has looked at the macro causes of delay there is some research that focuses on the micro "individual" factors. Individual case factors that are associated with abnormal processing time include, for example, bail status (defendants on bail take longer to process than their jailed counterparts) which has been found to be an important predictor variable of delay (Banfield and Anderson, 1968:279; Levin, 1977:267; Petersen, 1977:33;

Wildhorm et al., 1977:119; Eisenstein and Jacob, 1977; Notre Dame University, 1972: vol.11:82). Type of counsel (public or private) has also been found to be associated with delay. (Notre Dame University, 1972: vol.II:78; Banfield and Anderson, 1968:280-82; Gillespie, 1977:47; Levin, 1975:232; Wildhorn et al., 1977:119; Petersen, 1977:83-90 found no effect.)

Type of offence charged has also been found to be related to delay. Navarro and Taylor,(1967:205) found, in one jurisdiction surveyed, that murder, gambling and assault took the longest processing time. Notre Dame University (1972:vol.11:42) found homicide, narcotics and rape cases to be the longest in prearraignment delay. Hann, (1973:vol.1:117) found that the four categories of offences that were delayed the longest were traffic (criminal code 85-112 days), traffic(provincial 85-112 days) ,drugs(57-84 days) and other Federal and Provincial statutes (43-49 days). Petersen (1977:104) and Church et al. (1978:30) found that the seriousness of the charge is not related to delay.

It is possible that these individual case variables are inter-related. MacKaay found that after initial appearance the rate of detention increases with the seriousness of the offence (MacKaay. 1976:8).

The policy implications for these results are not clearly apparent. If the finding that non-serious cases take longer than serious cases is relevant, then alternative processing

procedures could be implemented (say use of a parajudge) in order that a more expedient solution may be found for processing non-serious cases. However, these findings of association between certain individual case variables and delay does not mean that these factors caused the delay. Association is only part of the concept of causality (For a discussion on causality see Hirschi and Selvin, 1973:37-141; and Cook et al. 1976:113-156). Other criteria that must be met before causality may be inferred are the elimination of alternative explanations and temporal ordering of variables. Thus it would appear to be fruitless to advance any remedies until these criteria have been satisfied.

VI. The Functional Systems Model Ratified:Research on Organizational Influences

In the last few years, a distinctly different approach has been taken to studying courts and their problems. While the organizational tradition is still, as one author puts it, in the "embryonic stages" (Nardulli, 1978:65) it has prompted research on delay (see Nardulli 1978 and Levin 1975). The research on delay, however, puts definite theoretical focus on the individual actor's motives and actions. This varies considerably from the rational goal model research. Specifically the organizational approach focuses on the working relationships among the actors (Eisenstein and Jacobs, 1977; Nardulli, 1978) Nardulli has coined the phrase "courtroom elite" to designate this work group (Nardulli, 1978).

The basic contention of organizational studies is set out by Nardulli:

> "factors emanating from the collective efforts of judges, prosecutors and defense counsel (the courtroom elite) have important consequences for the processing of criminal cases. The collective efforts are manifested in the cooperative patterns of behaviour reported by many observers of criminal courts. Further, to abstract a bit from what has been argued in these studies, these common interests can be defined as the shared desire to process cases expeditiously" (Nardulli,1978:66, see also Rovner-Pieczenik, 1978:2-10)

Nardulli's study on delay used, as a conceptual basis, Thompson's idea of a coalition. (Thompson, 1967:126). Nardulli

viewed coalitions as:

> "Linkages of competences or abilities which occur when two or more individuals in discretionary positions believe that their abilities to satisfy organizational dependencies are greater in combination than singly, and where the results of increased power can be shared". (Nardulli, 1978:71).

In attempting to operationalize a measure of coalition Nardulli used scales of responsiveness for each of the courtroom actors. (Nardulli, 1977:135-44)[1].

The rationale for this assertion rests in the organizational approach's contention that "collective efforts are manifested in the cooperative patterns of behaviour reported by many observers of criminal courts" (Nardulli, 1977:66). Thus, a more cooperative participant (as measured by his responsiveness) will be more likely to engage in a coalition.

Without even examining the indicators of responsiveness to determine their construct validity it is apparent that Nardulli has made a tenuous conceptual leap in linking responsiveness indicators to the concept of coalition. He does not have a

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[1]Judge responsiveness indictors used were mean proportion of jury trials, mean proportion of all nonconvicted cases that were dismissed before before trial and the mean absolute number of cases disposed of each month. Defence counsel responsiveness was guaged by a participation scale based on the number of cases defended by a particular attorney in light of the total number of cases he or she could have represented. Prosecutor responsiveness was measured on a 'reasonableness of inital plea bargain offer' scale. This method assigned scores on the basis of the difference between the expected jail sentence (measured by case seriousness score for a guilty plea) and the sentence that the prosecutor was advocating. Apparently the lower the score (smaller the difference) the more reasonable the offer.

direct measure of coalition but rather a direct measure of responsiveness.

Nardulli's results are limited to defence counsel responsiveness, since judge and prosecutor data were unavailable. In examining the decision to dismiss a case, Nardulli found that the responsiveness of the defence counsel index only explained two percent of the total variance. Therefore, the influence of the defence counsel on decisions of potential expeditious processing alternatives is small.

VII - Inductive versus Deductive Approach to Delay

Luskin notes, in her helpful discussion of case processing time, that a large part of the research in the area uses the deductive method to engage in the discovery of predictor variables. (Luskin, 1978:120). The deductive method of logic i.e. theory guided research, begins with established concepts (theories), hypotheses, reasoned from theory and ends with observations from the empirical world which ideally disprove or prove the hypotheses and ultimately the theory. (Wallace, 1971:18). Indeed, a cursory review of the literature affirms Luskin's assertion. For example, witness the work by Nardulli on the organizational influences on the processing of cases (Nardulli, 1978:65-101), Petersen's dissertation on workload and charge distribution (Petersen, 1977:94-149), and Reed's application of operations research to the area (Reed, 1973:22-50). The limitation of the axiomatic approaches as Luskin correctly points out, is that the variables measured are limited to the areas identified by the relevant theories. (Luskin, 1978:122).

The alternative approach to theory guided research is the inductive method. In this approach we turn the deductive method "on its head" beginning with real world empirical observations, constructing empirical generalizations based on the observations

and finally abstracting the empirical generalizations into concepts and propositions that make up theory (Wallace 1971:18). The hypothesized advantage of this technique is that variables that could have a substantial causal impact on a phenomenon such as protracted case processing time are not eliminated from analysis because of theoretical impertinence (Luskin, 1978:126). Obviously a limitation on this method is time and budget constraints in the collection of empirical observations. In addition, some variables may be difficult if not impossible to measure in a field setting such as the court system. One would not expect to find a group of judges willing to undergo psychological tests measuring racial prejudices.

The limitations of both approaches are evident. For the purposes of this thesis, the deductive method is chosen. The reasons for this choice are varied. To build inductively, one must have available large quantities of data to increase external validity of the grounded observations. The data used here spans only one year's cases from one court location. Another reason for working deductively stems from the fact that the independent variables examined below have not heretofore been examined. These considerations are discussed below.

VIII. Unit of Analysis

Only a quick review of the published caseload statistics is required to see the variability in the units of analysis employed to describe their activity. From State Court Caseload Statistics: Annual Report, 1975 we get this assessment of the field:

> "The most common unit of count in general jurisdiction criminal cases used in twenty-one states is the information, indictment, or complaint (some states count criminal cases when the complaint is filed, while others require an information or indictment before a criminal case is counted). There are nineteen states that use the defendant as the unit of count - reporting as cases each defendant on each information, indictment, or complaint. One state uses as the unit of count the case number assigned at arraignment; one state simply counts a 'case'". (United States, National Criminal Justice Information and Statistics Service, 1979:5) see also United States National Criminal Justice Information and Statistics Service 1979b:23)

In Canada, statistics are reported by case counts (Ontario 1976: Ministry of Solicitor General, 1977:30) person counts, (Ministry of Solicitor General 1977:30) and counts of charges (Statistics Canada, 1979:3). In Great Britain, figures are also given for "cases" (undefined) and persons (Lord Chancellor's Department, 1979:25-26). Thus there does not appear to be a consensus on the unit of analysis for activity in the courts.

This lack of consensus on a unit of analysis is reflected in the research on court delay. Most researchers have used the defendant as the unit of analysis (Nardulli, 1978:186,

Eisenstein and Jacob, 1978:176; Petersen, 1977), while still others, report findings on flow of cases and defendants (Banfield and Anderson, 1968) or defendants and trials (Reed, 1973:42-44). MacKaay focused on the defendant as his unit of analysis but where there was more than one charge per defendant he took the most serious charge as the key offence (MacKaay, 1976:5). In effect, MacKaay has collapsed his data, equating cases to defendants. Hann did not explicitly define "case" but his concern for the actual workload of the courtroom itself would seem to indicate that a case would involve the appearance of one or more accused persons in the court room, on one or more charges (Hann, 1973:vol.1:96-97). Hann, also collapses his data to designate the case offence type and the case defendant, noting that the first category encompasses the offence that requires the most court resources (the "key count") and the latter category involves the defendant charged with the "key count" (Hann, 1973:vol.1:96). Hann ranked "key counts" based on past performance with respect to the utilization of court resources as a predictor of future usage. (Hann, 1973: vol 1:97). Hann justifies this use of the "case" by pointing to his focus on measuring workload in the court (Hann, 1973, vol.1:97) This a priori emphasis presents problems when a "case" consists of two counts that are closely ranked in the scale of use of court resources. The count that is ranked higher will be designated as the "key count" whereas the lesser ranked count

will be ignored even though it might require a substantial amount of court resources. Furthermore, multiple defendant "cases" will be misrepresented as single defendant cases using Hann's "key count" classification.

Other problems with the use of the "case" as a unit of analysis are identified by Eisenstein and Jacob (1973). The authors point out that a "case" can vary in terms of the number of defendants (single vs. multiple), the number of events in question (single or multiple related or unrelated events) and the multiplicity of counts of the same charge. (Eisenstein and Jacob, 1973:716). In addition to the variability of the dimensions, discussed above, classification of the types of "case" requires one to make a priori decisions (like MacKaay and Hann) that would eliminate variables that would possibly explain the progress of the "case". For these reasons the unit of analysis to be employed in this thesis is not the "case" but the "individual".

The use of the individual as the unit of analysis first eliminates the dilemna of an a priori classification of the units of analysis (such as Hann's attempt). "Individual" is assumed to be a separate and distinct unit. Thus collapsing of data would be eliminated. A second advantage is that the unit does not vary. Third, the use of the individual as the unit of analysis would be traditionally correct in that historically the case is thought of as a conflict between society and the

individual (Reed, 1973:42). Fourth, an advantage of the "defendant" as a focus would provide consistency with studies on diversion (Blomberg, 1979) and legal aid (Wilkins, 1975). Fifth, a criminal "case" with multiple defendants could be split into two cases, resulting in the accused persons following different paths (Flanders, 1977:44). Finally, it is often the case that more than one information will be dealt with at one appearance; tracking the defendant will make this evident.

The specific unit of analysis employed for this thesis reflects both the "case" aspect as well as the individual. It is drawn from the definition of a "record" on the Vancouver Provincial Court Case Processing System. Records are distinguished by an individual information number (the document on which the counts and charges are written) and an accused number. Thus each record reflects counts or charges against an individual from a single information. Herein lies the definition of "case" for the purposes of the ensuing analysis.

One obvious problem that is evident here is the occurrence of multiple informations at one court appearance. The data base will reflect the occurrence of two appearances (one for each information) whereas only one appearance took place.

In Vancouver, when a 'fail to appear' charge is laid (in response to a nonappearance by the accused) a new information is is laid. The existence of a 'fail to appear' charge could explain the lack of progress of the original charge, but for the

purpose of this thesis each record will be assumed to be independent of each other. Another problem of the unit of analysis includes the different times at which information is recorded. For example, if co-accused are charged with an offence after an information has been laid against another person or persons then a new information is laid for this additional co-accused, thus producing a new record. This situation could possibly hide a complex case as two simple cases. In these aspects the unit of analysis is deficient.

IX. The Dependent Variable: Case Processing Time

When one embodies the Rational Goal Model as a theoretical guide one is left with the question "What is the goal of the organization". From Packer we can see that efficiency (Crime Control) and effectiveness (Due Process) are goals of the criminal justice process. In terms of operationalizing a measure of effectiveness one is faced with the relatively non-quantifiable concept of justice[1]. Obviously one component of efficiency is the time taken to process a case.

Efficiency cannot be measured by isolated gross measures of time . There must be some standard by which to compare the actual times with the ideal case processing time (Shetreet 1979:4). One stategy is to take an arbitrary standard to guage case processing times[2]. An alternative method would be to take a population of cases ,measure their case processing times, in order to discover the 'normal' processing time. This will enable one to develop standards to measure the efficiency of future processing times. Such an approach would 'localize' the

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[1]One author who has operationalized the concept of "justice" is Phillip Selznick (1969:184-221)

[2]This method was employed by a major research project in the United States;see Notre Dame University.1973. Court Services produce a report on cases that have an age of over 180 days ;see British Columbia. Ministry of Attorney General. 1977:25-39.

standards rather than opting for a provincial or national measure. Not only would the standards be specific to that jurisdiction, but the inductive approach would enhance the validity of the measure. No longer would a case be considered deviant from an arbitrary limit but rather deviant from the normal processing times for it's jurisdiction.

Case processing time can be measured from a variety of starting and end points (see Table 1). One must be careful to select a time frame that reflects the emphasis of the overall project. If one is concerned with actual court processing time it would be logical to measure the time from the first appearance to disposition. This time frame would best reflect the courts involvement with and responsibility for the case. The choice of first appearance as the starting point reflects the first activity of a case in terms of scheduling it in a court room.[3] First appearance also reflects the presence of the defendant or his agent in court. The choice of disposition as the terminus reflects the last event in the "life" of the case for that particular level of court.

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[3] The choice of first appearance is consistent with Court Services' definition of the beginning of the life of a case; see British Columbia. Ministry of Attorney General. Court Services. 1977:39.

X. Complexity of the "Case" - A Forgotten Factor

In case law in the United States the complexity of the case has been viewed as a legitimate reason for delay (United States vs. Rosenstein 1973:716; United States vs. Schwartz 1972:506; People vs. Anderson 1973:366). Complex evidentiary requirements in mail fraud and embezzlement cases have been cited as valid reasons for delay. Other factors that have been noted as complicating a case are multiple defendants and multiple charges (United States vs. Davis 1973:117).

The question of the variability of the previous dimensions of the unit of analysis has not been fully addressed in the research on court delay. MacKaay in his Montreal study acknowledged the potential problem of the multiple defendant case, stating that they "may need more court time" (MacKaay, 1976:5) but did not include it in his analysis. Hann operationalized his unit of analysis (the "key count") so that examination of the multiple defendant or multiple count or charge case is not possible.(Hann, 1973:vol.1:95) Petersen looked at charge distribution and concluded that multiple charge cases will often be dismissed at trial proceedings thus shortening hearing time. (Petersen,1977:132). These findings are at best fragmentary, suggesting that a comprehensive analysis designed to explore the interrelationships between numbers of

charges, counts, defendants and case processing time would be fruitful.

Similarly, statistics on court activity ignore the multiple defendant and/or charge case. It has been shown that published statistics reflect activity in terms of counts, cases or defendants. What ever unit of analysis is used, it appears that the prevailing assumption is that one case (or count or defendant) is equivalent to another in its demand for resources. This research endeavour challenges that assumption by attempting to empirically establish the variation in the units of analysis used and by relating the variance to case processing time. In essence, this is an attempt to redefine the differing concepts of inputs for the courts.

The assertion made here is that individual case complexity affects the processing time of that case. Indicators of complexity to be used in the ensuing analysis are number of accused, number of charges, and number of counts. This contention falls under the rubric of the Rational Goal model discussed above. I am taking these indicators as reflecting properties of a "case" rather than as measures of prosecutor behaviour in the charge process. Multiple charges could be construed as an attempt to obtain a conviction. In this light more than one charge could be seen as an attempt by the prosecutor to obtain a guilty plea to one of the charges in exchange for dropping the others. Alternatively, multiple

charges could be a result of merely multiple incidents with the prosecutor pursuing redress for these wrongdoings. An additional compounding problem in this particular instance is the lack of specificity of indicators as to who laid the information. Various actors (police, Crown Counsel, Justice of the Peace) can, and often do, lay informations in the Vancouver Provincial Court. Thus, to infer behaviour from these indicators leaves one open to varying interpretations of the result, and searching for an actor (or actors) to whom to attribute the result.

Index of Complexity

The index advanced here uses as indicators of complexity, charges, counts and accused. A case with multiple accused could be complex in that it would posssibly require the scheduling of more than one defence counsel. Also multiple defendant cases could produce mutually antagonistic defences for the respective accused. In this instance the hypothesized multiple defences could protract the questioning of the witnesses and the argument. A case with multiple counts could require more court time (if the facts are different for each charge) than a single count case in that multiple witnesses might be required to prove each count. A case with multiple charges could be complex particularly if the charges were a result of the same set of facts. Multiple charges could produce differing burdens of proof

for either the Crown or defence counsel resulting in lengthy questioning of witnesses and protracted argument.

The variables used here reflect only the delineation between multiple and single events for the respective variables. No attempt is made to examine different types of charges (summary vs indictable). Nor is any attempt made to breakdown the category of multiple events for the respective variables (eg;1-5 charges; 6-10 charges)

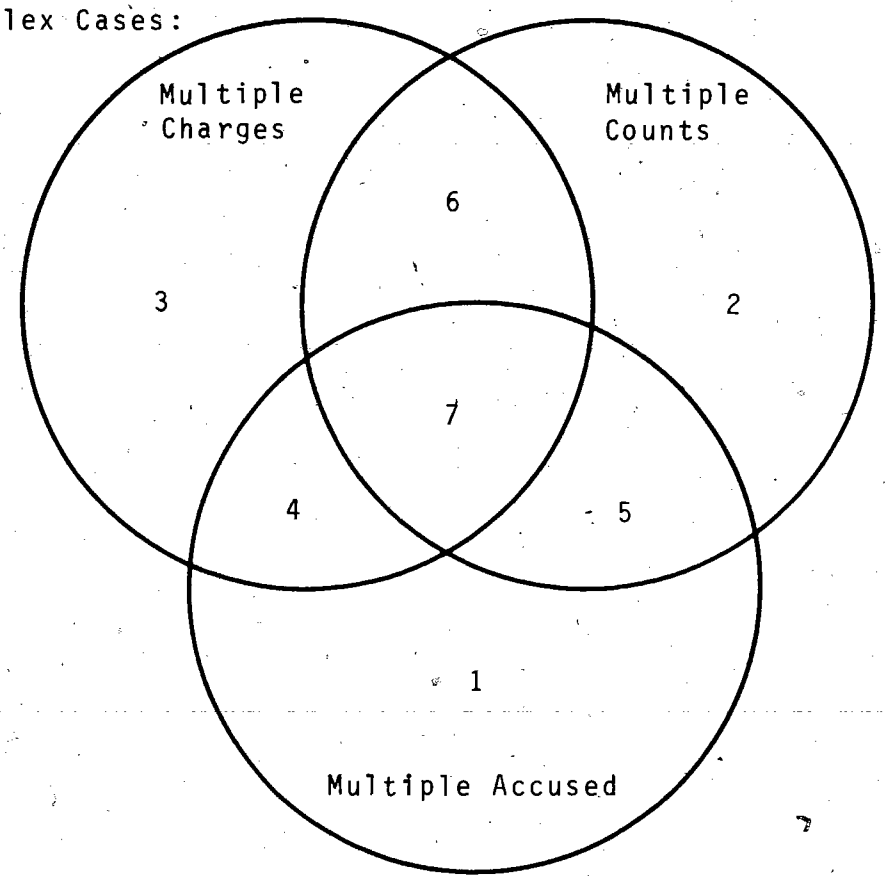
The index of complexity (see Table 2) contrasts simple cases with the categories of complex cases. A simple case has one count of one charge against one defendant. A complex case has more than one occurrence of the respective variables (counts,charges or accused). For the categories 1, 2 and 3 of complex cases there is only one variable that has multiple occurrences. For categories 4, 5 and 6,two of the three variables have multiple occurrences. Finally, category 7 has multiple occurrences of all three variables.

This project does not intend to discriminate between cases that have only 1 multiple occurrence of the variables. For example it is not the intention to state that a multiple charge case is any more or less complex than a multiple defendant case. Little is known about the relationships between the variables ,charges, counts and defendants. To make distinctions between cases with multiple occurrences of only one of these variables would be unjustified on the basis of the lack of empirical

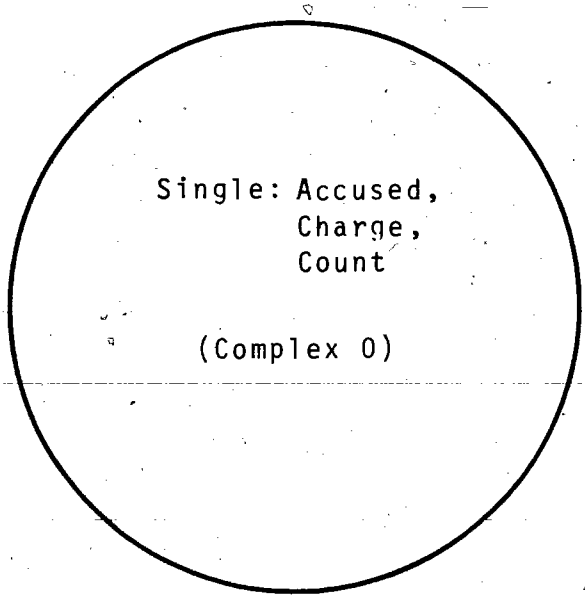
TABLE 2

Simple and Complex

Complex Cases:



Simple Case:



evidence.

What is advanced here is that cases with only 1 multiple occurrence of one of the variables (categories 1, 2, 3) are less complex than cases with 2 multiple occurrences of the variables (categories 4, 5, 6). Certainly the cases in categories 1 to 6 are less complex than cases with multiple occurrences of all 3 variables (category 7). It follows then that any one of the categories with 1 multiple variable should be less complex than any one of the categories of cases with two multiple variables.

XI. The Study

An index of complexity was constructed using the aforementioned variables. Cases were sorted into categories depending on their relevant characteristics. For example, if a case had a multiple accused, a single charge and a single count it was assigned to category 1. Categories 1, 2 and 3 were aggregated to form group 1 (cases with only one multiple variable). Categories 4, 5 and 6 were combined to form group 2 (cases with two multiple variables). Finally, category 7 formed group 3 because it is the only category with three multiple variables. Statistical analysis was used to determine if there were differences between groups of categories (1 or 2 or 3 multiple variables) and individual categories vis a vis case processing time.

The data used in this project were extracted from the Provincial Court Case Processing System, a management

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[1]These variables were recorded when the case was first initiated. As such, the index does not handle cases that have elements dropped at some later point in the process. It is assumed that the case will remain constant throughout the process. Therefore, it is possible that some cases may look complex when in fact they are actually simple cases. For example, 'drinking/driving' charges are often laid together under sections 234 and 236 of the Criminal Code. Often the bulk of the court's time will be spent on only one charge. Alternatively, one or more of these charges will often be dropped or stayed. This phenomenon could inflate the multiple charge cases. In this regard the strategy is deficient.

information system used in the provincial courts of British Columbia. For this analysis the data base is limited to cases disposed of in Vancouver Provincial Courts (Criminal Division) in 1978.

Variables not included in the analysis are "case" variables and accused demographic variables. Case variables not employed in this analysis are type of defence counsel, seriousness of offence and previous record of the accused. Demographic variables not used are age, race, or sex. The main reason for exclusion of these variables is the limited information base[2]. Race, type of defence counsel, previous record and seriousness of offence are not recorded by the information system.

For the purposes of the information system it was discovered that, in cases where an accused failed to appear at any point in the process, the case remained 'active'. An active case is a case that is currently awaiting its next court appearance. In the instance where an accused fails to appear , a new charge of failing to appear and a bench warrant are initiated. In addition the original charge remains outstanding.

The cases where an accused fails to appear could bias the mean processing time of any group of cases that a fail to appear charge is in. An example of this is an accused who fails to appear on his first court date and does not appear until he is

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[2] This information was not always recorded on the file.

apprehended on the warrant for his arrest, some 2 years after the original first appearance. In this case the processing is equal to the time from initiation to first appearance plus the two years that the accused was at large on the warrant for his arrest. Clearly, the two years between the time that the warrant was issued and the time the accused is brought before the court is not a true reflection of case processing time. It was therefore decided to eliminate all cases with processing times of over 360 days from the analysis[3]. The assumption offered here is that these cases (3445) have protracted case processing times as a direct result of a non-appearance. It was thought that the inclusion of these severely protracted cases would bias the case processing time for all categories of cases.

Statistical analysis was performed on the manipulated data set[4]. The statistical tests used were analysis of variance,

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[3] A better strategy would have been to exclude all original cases where an accused fails to appear. Unfortunately this technique requires technical prowess that is beyond the scope of this thesis. Eliminating all cases with processing times of over 360 days assumes that this group of cases include cases that have protracted processing time due to the non appearance of the accused. This group may contain cases that are simply long, due to other reasons. It is hoped that cases of the latter instance are small in number. Also, the strategy used here does not eliminate cases where an accused fails to appear, is apprehended and disposed of in less than 360 days. In this regard the strategy is deficient.

[4] For a discussion of the problems in using this information system for research purposes see Appendix A: The Project.

differences in means tests and t-tests.[5]

Analysis of variance is appropriate for this project. As an extension of the difference of means test, analysis of variance allows for the testing of a relationship between variables with "nominal (or higher order scale) and an interval scale" (Blalock. 1979:335). For this project the nominal scale variable is the complexity of the case, whereas the interval level variable is case processing time.

Analysis of variance produces an F ratio. If the F ratio is interpreted as significant then there is a statistical relationship between the two variables that requires further investigation. The t-tests are then used to determine if there are any differences between any means of the groups of the categories (ie; group 1 vs group 2 vs. group3)[6]. Finally, the differences in means test, Scheffe's test (Kerlinger. 1973:235), compares all possible pairs of category means to determine significant differences.[7]

Certain assumptions about data are inherent in the use of these tests; normality of distribution, equal population

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[5]For an excellent discussion of these tests see Blalock:1972

[6]This is done with a series of priori contrasts. A priori contrast allows the user to specify the groups to be compared. This test is available in the one-way analysis of variance facility in SPSS. (Nie et al. 1975:425-426)

[7]Scheffe's test is on a posterior test in SPSS. It was selected because its calculation is exact for unequal group sizes. (Nie et al. 1975:428)

standard deviations, independent random samples and the null hypothesis that the population means are equal (Blalock 1972:318). The assumptions of normality of distribution and equal population standard deviations hold that "there will be a constant area (or a proportion of cases) between the mean and ordinate which is a given distance from the mean in terms of standard deviation units" (Blalock 1972:99). The assumption of independent random samples holds that the selection of a case for one sample will have no bearing whatsoever on the probability of a different case being selected for another sample (Blalock 1972:220). Randomization is employed in order that any case may have an equal chance of being included in the sample. Thus, an unbiased sample is chosen.

The analysis that follows here, has not used sampling techniques, but encompasses the entire population of cases (subject to aforementioned limitations) disposed in 1978. Thus, the data may be biased or skewed. Therefore, the results should not be used to infer characteristics of cases in general. Rather, the results should be interpreted as being merely descriptive of the population studied. The assumptions of normality and equal population standard deviations can be relaxed as every category of complexity has more than 50 cases (Blalock 1972:223).

XII. Results

From Table 3 it can be seen that the bulk of the cases (11514 or 93%)[1] are either simple or have only one multiple occurrence of the variables. Of these 11514 cases, 7474 (60.4% of the total cases) are simple and 4040 (32.6% of the total cases) are either complex 1 or complex 2 or complex 3 (single occurrence of multiple variables). Of the remaining 765 (6.2% of total cases) are either complex 4 or complex 5 or complex 6. The remaining 98 (.8% of the total cases) fall into category 7, the most complex category.

From Tables 4 and 5 the distribution of the caseload by categories of complexity can be seen. For categories 0 through 6 the bulk[2] of the caseload is processed in 60 days or less, 66.9% (23.6 + 30.1 + 13.2) of simple cases (complex 0) are terminated in 60 days or less. Similarly, for this time frame, the following proportions of cases are disposed; 61.4% ((16.1 + 30.6 + 14.7: complex 1), 67.2% (32.2 + 24.3 + 11.7: complex 2), 54.2% (22.0 + 19.8 + 12.4: complex 3), 52.5% (10.6 + 24.7 + 17.2: complex 4), 57.9% (24.3 + 21.9 + 11.7: complex 5),

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[1]This number was calculated by summing the cases in categories 0, 1, 2, and 3.

[2]The 'bulk' of the cases is determined when greater than 50% of the cases are processed.

TABLE 3

Complexity Groups 0-7

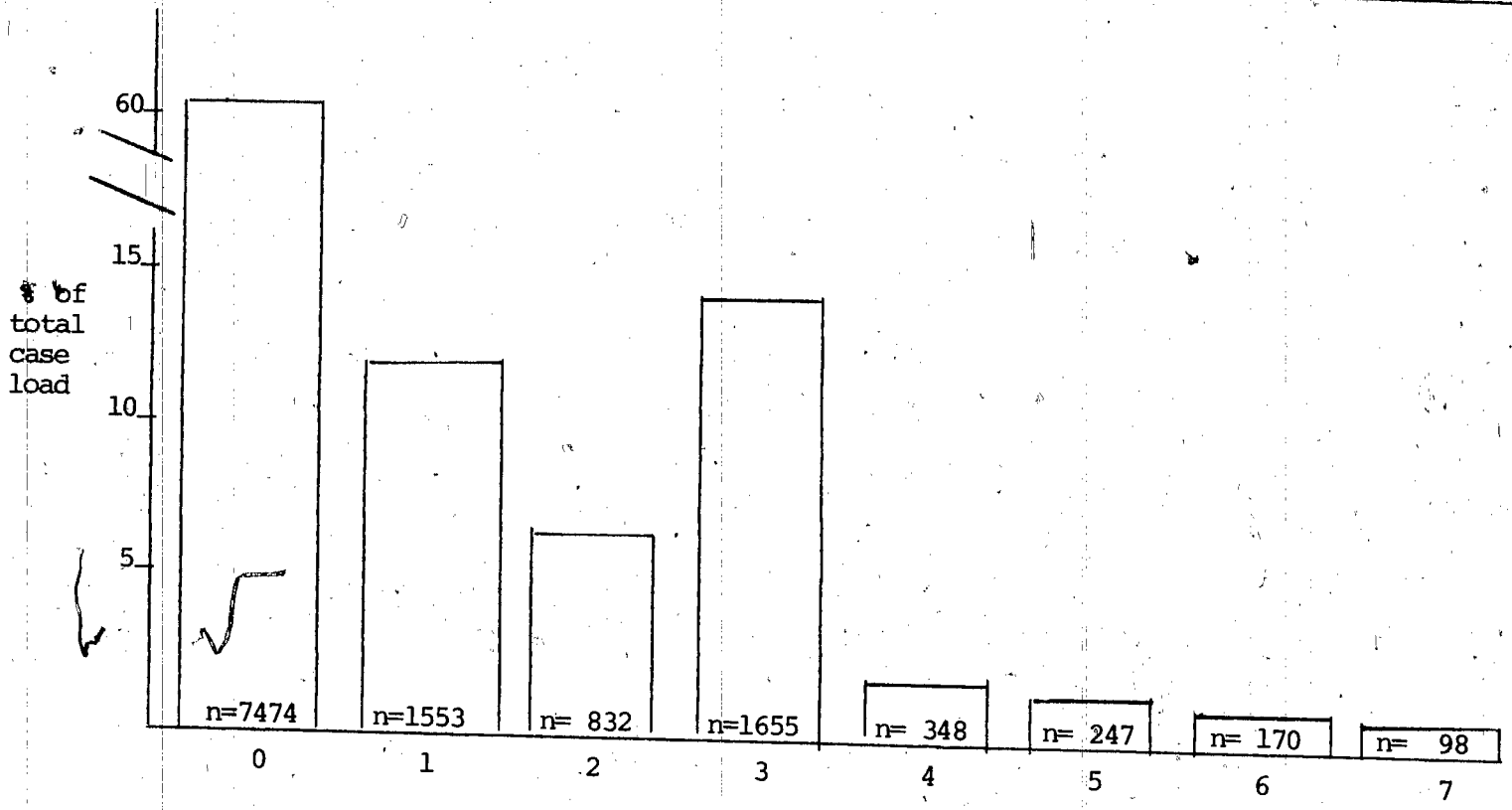

TABLE 4

Processing Time For Categories of Complexity

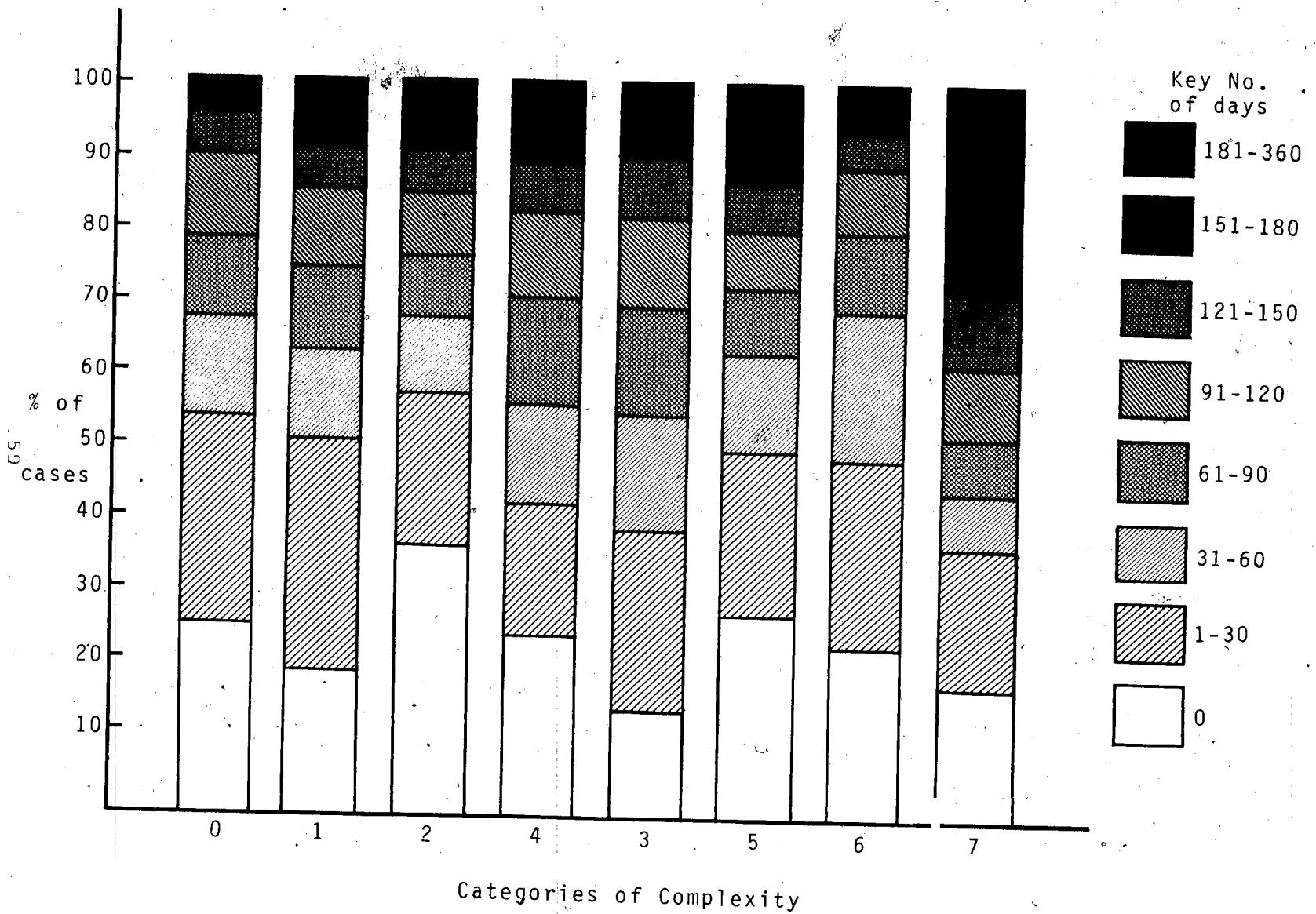

TABLE 5

Case Processing Time (In Days) by Categories of Complex Cases

Complex	Count / Row Pct / Col Pct / Tot Pct	0	1-30	31-60	61-90	91-120	121-150	151-180	180-360	Row Total
	0	1767	2247	986	896	720	379	225	254	7474
		23.6	30.1	13.2	12.0	9.6	5.1	3.0	3.4	60.4
		63.5	64.9	60.0	58.4	57.6	51.4	56.8	44.5	
		14.3	18.2	8.0	7.2	5.8	3.1	1.8	2.1	
	1	250	475	228	209	161	112	35	83	1553
		16.1	30.6	14.7	13.5	10.4	7.2	2.3	5.3	12.3
		9.0	13.7	13.9	13.6	12.9	15.2	8.8	14.5	
		2.0	3.8	1.8	1.7	1.3	0.9	0.3	0.7	
	2	268	202	97	75	54	57	32	47	832
		32.2	24.3	11.7	9.0	6.5	6.9	3.8	5.6	6.7
		9.6	5.8	5.9	4.9	4.3	7.7	8.1	8.2	
		2.2	1.6	0.8	0.6	0.4	0.5	0.3	0.4	
	3	364	328	205	251	215	121	69	102	1655
		22.0	19.8	12.4	15.2	13.0	7.3	4.2	6.2	13.4
		13.1	9.5	12.5	16.4	17.2	16.4	17.4	17.9	
		2.9	2.7	1.7	2.0	1.7	1.0	0.6	0.8	
	4	37	86	60	49	52	28	19	17	348
		10.6	24.7	17.2	14.1	14.9	8.0	5.5	4.9	2.8
		1.3	2.5	3.7	3.2	4.2	3.8	4.8	3.0	
		0.3	0.7	0.5	0.4	0.4	0.2	0.2	0.1	
	5	60	54	29	25	21	20	4	34	247
		24.3	21.9	11.7	10.1	8.5	8.1	1.6	13.8	2.0
		2.2	1.6	1.8	1.6	1.7	2.7	1.0	6.0	
		0.5	0.4	0.2	0.2	0.2	0.2	0.0	0.3	

TABLE 5 (continued)

	Count Row Pct Col Pct Tot Pct	0	1-30	31-60	61-90	91-120	121-150	151-180	180-360	Row Total
	6	28	47	30	21	21	10	5	8	170
		16.5	27.6	17.6	12.4	12.4	5.9	2.9	4.7	1.4
		1.0	1.4	1.8	1.4	1.7	1.4	1.3	1.4	
		0.2	0.4	0.2	0.2	0.2	0.1	0.0	0.1	
	7	9	24	7	7	7	11	7	26	98
		9.2	24.5	7.1	7.1	7.1	11.2	7.1	26.5	0.8
		0.3	0.7	0.4	0.5	0.6	1.5	1.8	4.6	
		0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	
	Column	2783	3463	1642	1533	1251	738	396	571	12377
	Total	22.5	28.0	13.3	12.4	10.1	6.0	3.2	4.6	100.0

61.7% (16.5 + 27.6 + 17.6: complex 6). This trend does not hold true for the most complex category of cases, complex 7. Only 41.8% (9.2 + 24.5 + 7.1)of these cases are disposed of in 60 days or less.

This difference between complex 7 and the remaining categories is also evident in the proportion of cases disposed of in less than 360 days but greater than 180 days time frame. The proportion of cases in group 7 in this time frame is almost double that of the highest percentage of cases in all the other categories (26.5% for complex 7 as compared to 13.8% for complex 5).

This difference is not evident for the interval between 61 and 180 days. Table 4 and 5 also show that in the time frame between 61 and 180 days, the processing of cases in category 7 is similar to that of all the other categories. While 32.5% (7.1 + 7.1 + 11.2 + 7.1) of the cases in category 7 are completed in this time the proportions of cases completed for the other categories is as follows: 29.7% (12.0 + 9.6 + 5.1 + 3.0: complex 0); 33.4% (13.5 + 10.4 + 7.2 + 2.3: complex 1); 26.2% (9.0 + 6.5 + 6.9 + 3.8: complex 2); 37.9% (15.2 + 13.0 + 7.3 + 4.2: complex 3); 42.5% (14.1 + 14.9 + 8.0 + 5.5: complex 4); 29.3% (10.1 + 8.5 + 8.1 + 1.6: complex 5); and 33.6% (12.4 + 12.4 + 5.9 + 2.9: complex 6).

For Table 5 the F score produced by the analysis of variance is 34.87. This score, with 7 degrees of freedom, is significant at the .05 confidence interval. Thus, there appears to be a relationship between the two variables, case processing time and case complexity.

From Table 6 the significant differences between the groups of categories were as expected. Group 1 (no multiple variable cases) had a lower mean processing time than the other groups and significant differences resulted. Similarly group 2, the single occurrences of multiple variables, cases had the next lowest mean processing time and was significantly different from the other groups. Also group 3, with two occurrences of multiple variable cases had the second highest mean processing time. As expected, group 3 was significantly different from other groups of cases. Finally, group 4 cases, with 3 multiple occurrences of variables (the most complex type of case) had the highest processing time. Again, as expected the most complex group of cases was significantly different from the other groups. Thus the index of complexity advanced here is an empirically valid predictor of case processing time. Put simply, the higher a case's complexity score the longer the processing time. At this point it would be interesting to determine the effects of the individual categories of complex cases on case processing time.

From Table 7 the individual category means can be seen. Unlike the groups of category means the distribution of the

TABLE 6

Significant Differences Between

Groups of Cases

Complexity	Group 1	Group 2	Group 3	Group 4	Mean (Days)
Group 1 Category (0)	NA	*	*	*	48.28
Group 2 Category (1,2,3)	*	NA	*	*	58.82
Group 3 Category (4,5,6)	*	*	NA	*	68.16
Group 4 Category (7)	*	*	*	NA	110.06
Total Cases					53.44

TABLE 7

Significant Differences Between Category Means

Category of Complexity	0	1	2	3	4	5	6	7	Mean (Days)
0									48.28
1	*								57.19
2									50.66
3	*		*						64.4
4	*		*						69.46
5	*	*	*						73.76
6									57.35
7	*	*	*	*	*	*	*		110.06
Total Cases									53.44

individual category means are not as expected. Complex 6 has a mean of 57.35 days which is lower than Complex 3. It was expected that a mean of a category with two multiple variables would be higher than a mean of a category with only one multiple variable. It was also expected that individual category means of one group of complex cases would be significantly different than individual category means of another group of complex cases.

Table 7, illustrating all possible combinations of category means reveals that this is not the case. From Table 7 it can be seen that Complex 7 is significantly different from any of the other categories. Complex 5 is significantly different from 3 other groups; Complex 0 (simple cases), Complex 1 and Complex 2. However, Complex 5 is not significantly different from Complex 3 as would be expected. Complex 4 is only significantly different from Complex 0 and Complex 1. From the initial hypotheses it would be expected that Complex 4 would also be significantly different from Complex 3 and Complex 1. Similarly an unexpected finding involves the significant difference between Complex 3 and Complex 2. It was expected that since these groups each had only 1 multiple variable that they would have no differences in their processing times. Table 6 reveals otherwise. Another surprising result is the lack of significance between simple

cases (Complex 0) and Complex 6 (multiple counts and multiple charges). From the initial hypotheses it was thought that at least the simple case would be significantly lower than any one of the 2 multiple variable categories.

XIII. Discussion

We have seen that the index of complexity advanced here has empirical support in the results of the groups of categories. Cases with three multiple variables have significantly longer processing times than two multiple variable cases, one multiple variable cases and simple cases, respectively. Similarly, two multiple variable cases have longer case processing times than one multiple variable cases and simple cases. Finally, one multiple variable cases have longer processing times than simple cases.

From the literature in this area it has been suggested that there is a definite absence of research on the impact of multiple variable cases on case processing time. Even what little research there is concerning the impact of individual variables on case processing time largely ignores the variables included in the index constructed here (counts, charges and defendants). However it is to the relative importance of the individual variables that I now turn.

While this index of complexity has empirical support, questions about the relationships between the variables have not been answered. From the discussion on the construction of the index it was made apparent that there were to be no <u>a priori</u> assessments of the relative importance of the 3 variables.

Multiple counts, multiple charges and multiple accused were all assumed to be independent and equivalent in their respective effect on case processing time. Table 7 reveals that this assumption may not be valid. It can be seen that multiple charge only cases (complex 3) have significantly longer processing times than multiple count only (complex 2) cases. This may indicate that multiple charges are more important than multiple counts in influencing case processing time.

In the same vein, questions concerning the relative impact of multiple accused and counts are evident. From Table 7 it can be seen that these types of cases are not significantly different in terms of case processing time. Does this mean that their respective effects on case processing time are equivalent?

Also, when one is seeking to establish rankings among variables another question concerns the magnitude of the differences between the variables, namely, "How much more important are multiple charges than multiple counts and multiple charges"? Unfortunately these questions can not be answered from the analysis presented here.

Further Research

To answer these questions concerning ranking of the variables further data processing and analysis is required. First, the nominal scale used to describe the categories of

cases must be changed to an ordinal scale by using dummy variables.[1] Dummy variables create an ordinal scale from a nominal scale by assigning a zero or one score to each of the nominal cateogries. In practice one of the nominal categories is "supressed" (Blalock 1979:535), that is it is assigned a score of zero and acts as a basis of comparison for the other categories. The supressed variable gives the scale a starting point, thus providing the necessary hierarchy for the requirements of an ordinal scale.

Once the categories have been reduced to an ordinal scale multiple regression analysis is now possible and indeed desirable. Multiple regression will enable the user to predict a single dependent variable from any number of independent variables (Blalock 1979:451). From the regression equation, the regression coefficients of each individual independent variable can be determined. These regression coefficients represent the amount of change that will occur in the dependent variable when there is a one unit change in one independent variable controlling for the other independent variables (Nie et al. 1975:330). These regression coefficients are sometimes called partial coefficients. From these coefficients the relative

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[1]For an excellent discussion on dummy variables see Nie et al., 1975:373-399

"effects" of the respective independent variables can be assessed, that is the higher the variable's partial coefficient the greater effect of that variable on the independent variable.

XIV. Policy Implications

An interesting finding relevant to the policy sphere, is the large number of multiple variable cases processed through the Vancouver Provincial Court. The implication of this finding is that cases can vary in their component parts. Cases in complexity categories 1 to 7 comprise nearly 40% of the total caseload. Thus, it is not possible to assume that all cases are alike.

The variance in the component of the cases are interesting if the aim is to determine the number of accused (as opposed to cases) that the court processes. If it is assumed that multiple accused cases have no more than two accused, then the number of people processed is 18.1% more than the number of cases.[1] In the event that multiple accused cases have more than two accused this percentage would be even higher.

The variability in the unit of analysis 'case' discredits the appropriateness of using that unit of analysis. For this reason, a supplementary approach for measuring the activity of the courts would include a measure of case complexity. One variable that could be used to reflect case complexity is the

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[1] This figure is calculated by summing the percentages of cases where there are multiple accused (complex 1, 4, 5 and 7).

number of accused. This technique would provide the user of court statistics with a two dimensional unit of analysis. By taking account of case complexity this method would increase the credibility of the unit of analysis. Thus, a comprehensive picture of court activity would be provided.

Using the 'person' (accused) as a unit of analysis is congruent with other parts of the criminal justice process. The Corrections branch of the Ministry of the Attorney-General in British Columbia reports average sentence length for offender (British Columbia. Ministry of Attorney-General. Corrections Branch 1980) The reporting of the unit 'accused' in addition to cases would enable the comparison of activity between courts and corrections systems. The present practice of reporting cases only, makes this impossible.

A finding that appears to have some policy relevance is the distribution of case processing time. It has been shown that the mean processing time for all cases approximately is 53 days. Also from Table 3, it can be seen that more than 31.7% of the total caseload are above the average processing time but below 180 days[2]. Court Services produces a '180 report' for Crown Counsel that cites each individual active case with an age of over 180 days.(British Columbia. Ministry of Attorney-General Court Services 1977:25-39). Apparently Court Services believe

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[2]Pertinent data elements cited in this report include existence of a bench warrant, major offence, bail or custody status, reason for next appearance, and number of appearances.

that those cases aged over 180 days require attention to expedite their processing. Cases over the mean processing time (53 days) and under 180 days are not considered to be aberrant therefore requiring attention. Perhaps if these cases were examined they might provide some insights into their protracted processing time. More importantly the ongoing scrutiny of these cases might prevent them from becoming severely protracted ie; over 180 days.

XV. Appendix A: The Project

The general idea for the undertaking of a court related study partially grew out of a readings course that the author completed in the summer semester of 1978. The readings course focused on the structure and operations of Candian courts in general and British Columbia courts in particular. It was noted at that time that there was very little research dealing primarily with delay in the Canadian context.

The concern for delay in the courts was prominent in the press some 8 months before the readings course was completed. The Ministry of the Attorney-General of British Coloumbia ordered the staying of summary charges that were over 6 months old. The furor that resulted from this action sensitized the author to the problem. It was in this context that the substantive topic of delay in the Canadian courts was chosen.

In viewing the different strategies for research it was decided that the technique used must satisfy the following criteria. First, the method must be practicable. One is always thinking of the really interesting research questions rather than the ones that are feasible. Second, the method must be feasible given time, space and energy constraints. Third, the project should be of some interest to the 'field' of criminal

justice. The author hoped the project would not only be interesting to personnel of the criminal justice but also help to strenghen research ties between the 'system' and the academic world. Finally, a requirement of the master's thesis was to learn and apply new research skills. The mechanics of doing research ie; running large data sets, are as important as the substantive part of the project.

For these reasons it was decided to use an available data source. The use of an available data source has the advantage of eliminating the time-consuming process of data collection. Available data is already collected and hopefully accurate. In this case the data base covers a great many cases. Using available data will also be of some interest to the criminal justice personnel. The fact that it is collected by the 'field' ensures its (the data) relevancy. The structure of the available data made it necessary for the author to learn the basics of management information systems and data manipulation.

After the data base was obtained (see section on the data below) the remaining task was to use the data in a constructive manner. It was discovered that the data did not contain a great deal of defendant information. In fact the data elements were limited to 'name', 'sex', 'address' and 'date of birth'. Thus, many interesting research questions were unanswerable. The variables comprising the index of complexity were chosen because they had heretofore never been examined in this manner.

Concurrently, while developing an index of complexity the author was involved with the sizeable task of the literature search. The task of the literature search was unusually long as a good deal of the material was in the American context, often in unavailable journals and reports. Thus, the search required the author to correspond with many different agencies and clearing houses in an effort to obtain information. Also many libraries were accessed through inter-library loan.

In any research project 'nuts and bolts' problems invariably crop up before one can accomplish the substantive part of the project. Problems such as theoretical and real access to the data source happen invariably. Other problems such as the manipulation of the actual data are specific to the actual project and require discussion.

If one is attempting to use an existing data base for research purposes, official and real access will be required. In attempting to secure access to the Provincial Court Case Processing System one must petition the Chief Provincial Court Judge, in this case Judge Lawrence Goulet, for his cooperation in releasing the data. Subsequent to that stage, official permission must be obtained from Court Services of the Ministry of Attorney-General for access to the actual data. The next stage involves real access when British Columbia Systems Corporation, upon request of Court Services, releases the desired data and documentation. This process spanned

approximately 14 weeks.

Problems with the actual data revolve around the way in which the information is stored. As a management information system, the data is stored in variable length format on computer tape to increase storage capacity. Variable length format requires that when one record ends the subsequent record begins in the space immediately thereafter. This is incompatible with 'canned' or statistical packages such as the Statistical Package for the Social Sciences (Nie et al. 1975). S.P.S.S. requires fixed length format (specificity of the area where the data is stored). To make the data base useful for statistical purposes a program was written by Lee G. Herberts of Simon Fraser University's Computing Centre. This program is an information retrieval system which selects user-identified variables from the master file and writes them out in fixed format. Once relevant variables are selected, the retrieval can be completed and the statistical programs written.

One last technical problem should be noted. Approximately 2100 records on the original data file (17911 records) have missing data. Missing data is a result of an information being sworn, ie; a record being produced, but for some reason the subsequent data elements are not recorded. To include cases with incomplete data would bias the results. The biasing of the

results is an artifact of the missing values card and the compute card of S.P.S.S. Therefore, any cases with missing data elements were excluded from the analyses.

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