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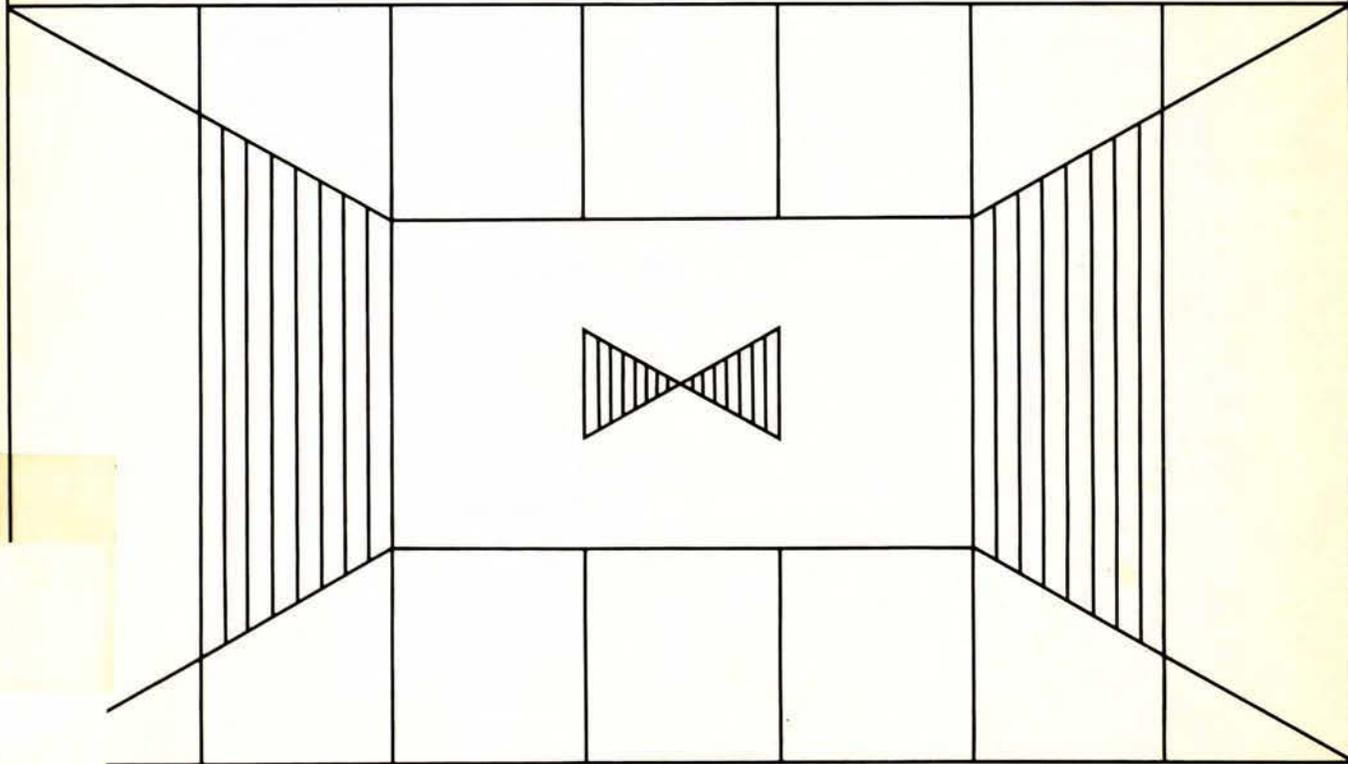
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The Utilization of Official Crime Data

by A. Oosthoek



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THE UTILIZATION OF OFFICIAL

CRIME DATA

by

A. Oosthoek

A research report prepared under contract with the Solicitor General of Canada and published under the authority of the Hon. Jean-Jacques Blais, Solicitor General of Canada.

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PREFACE

1 Purpose of This Research

This paper was prepared to provide a researched foundation for R.C.M.P. use of crime data and to provide the foundations from which any attempt of other government agencies to use such data can be soundly assessed.

The work was carried on as background research by S/Insp. Oosthoek and was prepared for evaluation by sociologically competent professionals. They were Dr. J. De Vries of Carleton University, an expert in demographic analysis and the use of regression techniques; Dr. J. Harp of Carleton University, who criticised the work from the perspective of research methodology in the social sciences, and Dr. Jayewardene of Ottawa University, who supervised the work from the point of view of the substantive discipline of criminology.

1.2 The Source of Interest

Since assuming responsibility for planning and directing evaluative research projects within the context of the R.C.M.P. Planning Branch, I became increasingly aware that although very little was known about the nature and range of influences on the Uniform Crime Report (UCR) data, both the academic community and the various policy bodies had been quite willing to resort to their use in support of theoretical and policy positions.

The difficulty lies not in the possibility of finding stable patterns and recurring relationships that have plausible post hoc explanations. It is rather a question of the scientific status of these relationships. The crucial question is: What do these patterns tell us?

Recently there has been evidence of government efforts to develop the concept of a Criminal Justice System (Cassidy, 1973). This has led to the construction of "CANJUS", an experimental simulation model of the Criminal Justice System. Understandably, official crime data will be used as a significant input to the system. At the same time, significant government pressure is being brought to bear on the agencies of the Criminal Justice System to proceed with the implementation of the planning, programming and budgeting system (PPB), by developing adequate operational performance measures of their service. Once again, it is unavoidable that this effort should naturally turn to the Uniform Crime Report (UCR) data as a source of input and index construction.

In the light of these developments it became obvious that there existed a need for a clearer understanding of the limits of these data and the methodological problems they pose for the user. In consequence I undertook the research task as a private project which resulted in this paper.

Although there has been extensive criticism of the Uniform Crime Reporting (UCR) system by social scientists and policy researchers, and despite the basic methodological objections which have been repeatedly stated, the inappropriate use of these data continues. Only recently has there been a concerted effort on the part of some researchers to face the problems in the UCR data head-on. This paper attempts to deal with these problems in detail.

This paper argues that although stable statistical regularities can be found in the UCR data, their scientific meaning is only accessible when these data are part of a well elaborated set of interrelated tendency statements or laws (factor theory). This type of tendency law does not currently exist at the level of criminal or deviant behaviour. The paper, therefore, explores the question of the extent to which the UCR data could be used as variables in a developing factor theory. It explores the adequacy of the statutory language for use in theory construction and then moves on to the consideration of how the UCR language is mapped on the statutory language. The examination concludes that up until the 1974 revision of the UCR categories, the UCR language was inadequate for any scientific research in crime and deviance.

The paper further examines the data collection system of the UCR and makes problematic a number of the more recent assumptions about UCR concepts. It demonstrates both descriptively and empirically that no assertions about crime or crime control can be based on the UCR system without first bringing under control the extensive influence of policing on the data, and the peculiarities of the police administration system. In the final chapter some initial steps are proposed for improving the rational use of the data.

SECTION 1
THE USE OF OFFICIAL CRIME DATA

INTRODUCTION

1.1 The Problem

It is an interesting paradox that until recently many of the researchers who used official crime data began by expressing a number of doubts about the accuracy of the data and then proceeded to use this data as if they were close enough to the real world to measure the concepts and reflect the conditions in which they were interested (Giffen, 1965:59).¹ Since only the most well-funded researchers can avoid the use of official data, it is useful to look in greater detail at the problems encountered in the majority of research projects which must come to terms with official data.

Official crime data consist of facts collected by officials for official purposes. Little or no regard has been given to the technicalities of conducting controlled research, and the interests of researchers. Neither pious hopes, nor arbitrary assumptions will change the character of the resulting data series. What is required for the rational use of these data is, therefore, a thorough-going familiarization with the source of the data, and a careful analysis of how these data can be used in theoretical work² (Cicourel, 1968:331).

There are suggestions that recent developments have moved away from such ambiguous use of official crime data as Giffen referred to. Walker and Bottoms (1973:1) report that indications of new departures can be found in the work on attitudes toward the law by examining the population at risk rather than using an undifferentiated population base for rates.³ We find it again in the work on crime seriousness measures (Sellin and Wolfgang, 1964) and the work on victim studies and self-reporting.

While none of these studies are free from methodological problems, they do indeed represent serious attempts to move away from the "Giffen Paradox". What these departures tend to provide is a more adequate awareness of the nature and extent of statistical problems. At the same time they do not directly address themselves to the Uniform Crime Report (UCR) series and it is still the UCR series to which a majority of less well-financed research efforts will turn as the most available data on crime.

This study will examine the Canadian crime reporting system. It is hoped that this paper will contribute materially to the rational understanding and use of the Canadian UCR series. Its potential for sociological research and its utility in policy research will be explored in detail. Specifically, consideration will be given to:

1. The methodological status of official crime data in sociological and policy research.
2. The nature and quality of the UCR collection-- attention will be given to its definitions, collection system and potential variables.
3. The technical/analytical problems peculiar to this series.
4. Exploratory analysis of a subset of the UCR data demonstrating aspects of points 1 to 3 above and,
5. Possible improvements in the UCR system and data to offset these difficulties and increase the utility for sociological and policy research.

1.2 The Background of the Problem

1.2.1 Conventional Use of Official Crime Data

An extensive literature has developed around the methodological status of official crime data. Sellin and Wolfgang in 1964 pointed out that although court records were originally favoured as the appropriate source of data on crime, a gradual tendency developed toward using police statistics as the best indicators of crime in a community. This move was based largely on the notion that these data were closer to the phenomenon and hence were less likely to be biased. As time and research continued, however, limitations in these data for studying deviance and crime became increasingly recognized. Eventually, the methodological status of crime data in the form of Uniform Crime Report (UCR) statistics became highly questionable.⁴ They nevertheless continued to be used with reservations.

It was a common characteristic of the studies cited by Sellin and Wolfgang that the authors tended to look at the official data as more or less valid substitutes for variation in crime commission in a community or an area. This viewpoint holds true both for those who criticized the data as well as for those who used the data in their studies. For want of a better label, I have called this use "conventional".

1.2.2 The Societal Reaction Reformulation

Since that publication, however, a somewhat different perspective has been asserted.⁵ A recent discussion of developments in what might be called the "societal reaction" perspective in the sociology of deviance raised the point that

...appraisals of behaviour or conditions as socially problematic reflect the social positions, value structures, and rational interests of the appraisers. In short, deviance and control are seen to be integrally connected (Schur, 1969, p. 309).

Somewhat later in the same discussion, Schur asserts that

...The societal reaction approach insists that the analysis will be most productive if it concentrates on the control side of the deviance-and-control cycle (1969:313).

Schur argues that this orientation should lead to increasing research focus on the "filtering" processes⁶ and will lead to a reassessment of a common methodological assumption on the unreliability of the official statistics. He cites Kitsuse and Cicourel (1963) with approval, on their position that "...rates must be explained in terms of deviant processing activities of organizations."

D.J. Black (1970B, p. 733-748) reacts to this point even more explicitly. In this article, as well as in an earlier one (1970A, p. 63-77) he takes the position that the point of view of Kitsuse and Cicourel simply exchanges one methodological defect for another. Instead of having a bad index of criminality, one now has a bad index of the extent of social control. Black's point is that an even more radical reformulation of crime data is necessary, one which

...makes the official record of crime an end rather than a means of study. It treats the crime rate itself as a social fact, an empirical phenomenon with its own existential integrity (1970B:734).

In that same article he follows his dictum by making problematic the situational circumstances which affect the writing of a police "report". Such reports eventually affect crime statistics and further investigation. In short, crime data are police production statistics.⁷

A somewhat similar approach is taken by Jayewardene (1962). Although he agrees with Black's position, he contends that police statistics are nonetheless an adequate measure of criminality in a society. Inasmuch as criminality is a social problem, an adequate measure of this problem, according to him, is not all the behaviour that could technically be so described, but only that fraction of the behaviour that society reacts to. That fraction of the behaviour that society does not react to makes no contribution to the existing problem but indicates the form the problem will take in the future. Eisner (1969:2) raises a similar formulation from the labelling point of view.

This "social problem" formulation has certain attractive features which are found again in Wilkins' (1965) theory of deviance. The major difference between Black and Jayewardene lies in what they make problematic. Black focuses on the impact on Uniform Crime Report (UCR) data of the complainant-police relationship at the moment of decision; Jayewardene raises the issue of why the complainant complains in the first place.

In neither case, however, is there a consideration of the probability that the reported event will be recorded at all, or treated as a peacekeeping problem rather than a law enforcement problem (Reiss, 1971:72). In other words, both these treatments still make assumptions about the data in order to get to the theoretically interesting level of argument. It is the general thesis of this paper that this cannot be done without a considerable amount of knowledge about the conditions under which such assumptions are likely to fail.

1.2.3 Continuities in the Conventional Use

Despite these developments in the conceptualization of official crime data, studies continue to be reported in which the more conventional use is made of the official crime data. I. Erlich (1973), for instance, starts from the same position as the social reaction point of view. He rejects the idea that deviant personal characteristics underlie participation rates in illegitimate activity. He proposes instead, a model in which ordinary persons are affected in their decisions by incentives of gain or risk. Individual differences in personal risk tolerance team up with subjective estimates of gain and probability of punishment to affect the participation levels. Having come this far, however, he resorts to an entirely conventional use of Uniform Crime Report (UCR) data. The UCR data are treated as substitutes of variation in law-violating behaviour (P544 & 522) and, by implication, adequate to the task of measuring the concepts involved. He justifies this procedure by attempting to demonstrate that the participation levels are functionally related to police efforts at deterrence and assuming that there are relationships between these efforts and illegitimate behaviour.⁸

In yet another field, Shoup and Mehay (1972) resort to the use of crime data to study program effectiveness within the context of program budgeting. They use standard statistical techniques for partitioning variance, and come up with significant results. Although their focus is on the effect of control activity, their argument again includes an implicit assumption that the UCR data are capable of reflecting the effect on law-violating behaviour. As long as this questionable assumption is not directly addressed, the interpretation, even of highly significant results, remains unclear at the conceptual level.

1.3 Sociological Theory and Social Indicators

1.3.1 The Need for "Causal Models"

Land (1971) and Wilcox, and Brooks (1971) have pointed out that economic indicators have success because they are part of a social systems model. Anderson (1973) suggests that:

Without theoretical models of social systems specifying the nature of the relationships among indicators of states of the system, such indicators are inadequate for policy planning.

Empey (1964:57) points at the same close relationship between action and sociological theory. He states that the status of social action, vis-à-vis theory, is very much the same as that of research. Action, however, needs, in addition, to have detailed knowledge of the pertinent factors when they affect choice behaviour. In short, Empey asserts the prior need of an explanatory theory. The empirical generalization by itself, he claims, is not enough.⁹

What this amounts to is an assertion, on the one hand, that social indicators, as observable measures of a more abstract notion, are scientifically meaningless unless they are part of a theoretical model. On the other hand we have the idea that social action, too, must be grounded in theoretical models capable of providing reliable predictions of how changes in factors that can be manipulated will affect conditions of interest.¹⁰

What is at issue in the first case is the technical meaning of the indicators. In the second case, it is the predictive validity of theories for the purpose of social control ¹¹ (see also Land (1971:323)).

The "causal" models discussed by Anderson and by Land are, of course, nothing more than path models. The use of the label "causal" is by now conventional, even though misleading. The scientific concept of cause requires more than the regularities which can be found in cross-sectional studies. When they stand alone, as they frequently do, they become phenomena requiring explanation rather than providing them. We must be able to incorporate these regularities and the results of their replications into well-formed conceptual models.

Why then should path models provide the suitable context in which to develop the theoretical structure that Anderson considers necessary?

The nature of feasible models for sociological explanation has been addressed extensively in the literature of the philosophy of science and need not be repeated here in detail. The position adopted in this paper is that in the social sciences, straightforward empirical laws are either not obtainable or trivial in their scope of predication (Gibson, 1960:124; Nagel, 1961:464; Lachenmeyer, 1971:73FF). What remains open to the social scientist is a resort to what has been variously termed "quasi-general laws" or "tendency laws".

The problem to which these scholars address themselves is the status of theories whose predictive statements are less than certainties.¹² These types of questions occur in the physical sciences, but they are particularly prevalent in the social sciences. The important point in the use of tendency statements is that where causal statements carry the implication that there are circumstances under which the predictions derivable from the laws will not be true because other influences interfered. These interfering influences would have been

relegated to a *ceteris paribus* clause in the formal statement of the tendency law. It follows that the greater and the more varied the contents of the *ceteris paribus* clause, the greater the chance that the postulated outcome will not occur. To increase the predictive validity of our tendency statements we must increase our knowledge of what we have included in the clause and how this affects our predictive statement. This holds regardless of whether we wish to predict for purely testing purposes or for crime control purposes.

Of considerable interest in this context is the observation of Gibson who states that such tendency statements are of no use when taken by themselves:

They will only begin to be of use if we are able to say something about the operation of the other factors. If we are to resort to tendency statements, then we must have a theory. We can only work by taking a number of such statements together, each of them stating the effect of some given factor in a situation, and arguing from these to what will happen in their combined presence (Gibson, 1960:144).

Gibson goes on to argue convincingly that such statements, when used together, are capable of being built up into a sub-sumptive system as long as we realise that at each step we have to correct for the influence of other factors (p. 146).

Eventually the combined tendency statements produce a "factor theory"¹³ which together with a chance statement about the probabilities of disturbances constitute a verifiable hypothesis. This is precisely what the well-conceived path model will permit, provided that its prerequisites have been satisfied.

Despite the frequent application of path analysis techniques, and the growing familiarity of sociologists with this method, the standard caveats should not be taken lightly. The models from which social indicator data must lend their meaning are likely to be extremely complex; they are likely to violate the assumptions in many ways, frequently and extensively. The limitations of the path technique should therefore be carefully investigated in such instances.

1.3.2 Prediction, Explanation and Official Crime Data

This position makes explicit my methodological bias. The adoption of that bias has implication for the approach to official crime data. It is a fact that empirical regularity is detectable in the official crime data. The position taken here is that these regularities have no scientific meaning outside of a theoretical context of some sort. In other words, for valid explanations or predictions, resort must be had explicitly or eliptically to some "coveringlaw" structure (Empey, 1971:171; Hempel, 1963; Schrag, 1967:224).

Any insistence that we can explain regularities in official crime data or predict outcomes from the basis of a common sense understanding of the concatenation of more or less unique events or conditions will lead to a situation where genuine failures of tests or predictions have no power to cast doubts on the premises (Brodbeck, 1962:243).

At the practical level, the result will be that we can not systematically learn from our failures, or that we will engage in what can be aptly described as superstitious behaviour.¹⁴

This position, however, is not intended to suggest that the interest of the policy scientist in prediction must be set aside until we reach a capability to explain, for there is an asymmetry between these two faces of scientific work.

Specifically, under certain circumstances we may be able to predict without being able to explain, or to explain without being able to predict. For example, we were able to predict eclipses and storms well before we were able to offer an explanation for these phenomena.

Scientifically-valid predictions, however, are possible only if the following general conditions are satisfied:

1. The argument must be formulatable in either the deductive-nomological or the inductive probabilistic model of inference.
2. The particular premise must be empirically grounded and true, and the general premise must have, at least, inductive validity inferred from empirical instances.
3. The conclusions thus inferred will be pre-assertible if, and only if, either all the relevant successive states of the more or less closed system which contains the interaction can be specified.
4. The premise has referrence to a partial effect of the same cause which produces the predicted effect.¹⁵

Once again, it should be clear that any attempt to use official crime data for any predictive statement or testable hypothesis without the construction of a factor theory and the consequent introduction, explicitly, of the influences of the many other factors that can bias the results, is akin to indulging in superstitious behaviour.

1.4 Implications

The conventional use of Uniform Crime Report (UCR) data does make use of the tendency statement, but it does so largely without either a well-defined conceptual model or a theory which

incorporates other such tendency statements. There are no explicit corrections for the impact of the other influences. This, however, is not the only problem.

At the research level the ceteris paribus assumption is made operational in the assumption that variables not identified explicitly in the statistical model will be represented in a single error term, and that that error term will essentially affect the statistical model in the manner of random shocks. Another way of putting this is that the usual linear models used in research, e.g. the regression models, make the assumption that there is no correlation between the residuals and the independent variables in the model.

no, ceteris paribus (e.g. 12 100)

When this assumption is violated the resulting parameters are biased and hence not given to interpretation. This bias will, in part, result from the calculated coefficient of each variable in the equation that is correlated with the error term carrying a portion of the effect of the correlation between it and the residual. Aside from this, there may well be identification problems depending on the number of unknowns to be estimated and the number of equations available to do this. This point, of course, is made in all the standard treatments of regression techniques and path analysis,¹⁶

Where many theoretically extraneous variables are gathered into one error term, the random shock assumption is often quite acceptable. The implication behind the concept of "white collar crime" and the main themes of the "societal reactions" school, however, made the conventional approach problematic at the research model level.

More explicitly, when we use Uniform Crime Report (UCR) data as substitutes for crime commission, at least two crucial conditions must be true:

1. Official crime data must be positively correlated with the number of crimes committed.
2. Measurement error of the number of offences reported, regressed upon the number of offences committed must have weak or no correlation with other variables in the theory that reflects official response (Empey, 1971).

If, on the other hand, we conceptually distinguish between measures of crime commission and measures of official control activity, we must explicitly enter both into the research model even if our theoretical interest extends only to one of the concepts.

It must be stressed that the problem is technical, not logical. It is because the techniques available in the investigation of factor theories appear to be limited to the kinds of models which are seriously biased in their results, when the residual terms are correlated with the independent variables which reflect the theory.

The path analytical models, which make use of standardized regression coefficients as estimators of the path values, are particularly vulnerable to this problem. It is, of course, not our contention that this technical problem is insoluble. Klemmack et al. (1973), have addressed themselves directly to this problem and suggest ways of solving it.¹⁷ The solution, however, comes at the price of restricted opportunities for generalizing to a wider universe. In the case of Uniform Crime Report (UCR) data, this may not be as much of a problem as at first appears. The series is a virtual census and hence, to some extent, can be perceived as subject to the law of large numbers. On the other hand, some aspects of a census may well be more error prone than a properly drawn sample.¹⁸

1.5 Conclusions

In the light of this discussion, it can be concluded that official crime data present any researcher who wishes to make scientific use of them with a peculiar methodological challenge:

1. If we attempt to use UCR data as substitutes for crime commission, we risk making an assumption which is almost certainly false.
2. If we conceptually distinguish between actual crimes committed and crimes officially reported, we must measure both and incorporate them explicitly into our factor theories; or
3. We must find research models which will tolerate significant correlations between residuals and independent variables.

If we had an adequate measure of actual crime commission, much of the current interest in the Uniform Crime Report (UCR) data would lapse. The UCR data remain interesting primarily because of what they can say about crime commission, as well as for what they can say about crime control behaviour. This leads us to a final point:

4. We can expect Uniform Crime Report(UCR) data to give up what information they do contain about crime commission only after we have accounted for all, or nearly all, of the variance associated with other factors.

In other words, if we wish to study crime commission through the medium of UCR data, we must come to know much more about the structure and character of the data.

From the point of view of this paper, we are also faced with a problem, the existence of which is often not directly

addressed. As Kaplan (1964) puts it:

...I would say that whether we can measure something depends, not on that thing, but on how we have conceptualized it, on our knowledge of it, above all on the skill and ingenuity which we can bring to bear on measuring what our inquiry is interested in. (176)

Hence, the specific theoretical or research interest should generate the definition of the requisite measure. In this paper, however, we have to move in reverse. We will look at the collected data to try to determine what kind of propositions or hypotheses they will support. Although sociologists are quite familiar with the use of what is termed "existing data", the use of such data sets is more often a function of preformulated interests or specific hypotheses. In this paper we will examine the Uniform Crime Report (UCR) data as a point of departure (Hage, 1971:77).

We must, therefore, examine the UCR series in terms of its language, its collection problems, its peculiarities in definition, the analytical problems it presents, and its systematic biases, before we can even discuss their place in theory-building and testing.

..

1.6 Notes

1. This is a recurring feature of a host of articles. See also Kitsuse (1963:134). For examples using Uniform Crime Report (UCR) statistics in research on deterrence see Schuessler (1952), Savitz (1958), Sellin (1967), Gibbs (1968), Tittle (1969). Spergel (1962) used UCR data to determine the relationship between community organization and types of crime committed. The same situation will occur elsewhere, Schuech, quoted in Hamman (1971:5-6) suggests that while the problems of aggregation and disaggregation have been intellectually settled, research continues to commit the error unabatedly.
2. The word "work" has been used here and is derived from the use Rudner (1966:28) makes of this word. It is intended to convey that the most probable contribution will be to non-theoretical models or conceptual models.
3. Comments of Walker and Bottoms notwithstanding, I contend that although the changes in ideal are indeed discernable, the practice in the many uses of the UCR data, both inside sociology and outside, has changed very little. (See also note 1 above)
4. See also Quinney (1970:3) for comments on redirection in criminological theorizing.
5. See the extensive criticism of Biderman (Bauer, 1966:111-129).
6. "Filtering" process is Schur's term and appears to refer to the processes by which police and courts or other agencies select certain persons for certain kinds of processing. For an interesting critique of literature on this see Hindess (1973).
7. J.Q. Wilson (1968) presents essentially the same picture. He demonstrates that there is an interrelationship between the political structure of the community, its policing style and

crime data.

8. For similar economic perspectives see Evans (1973), Phillips & Votey (1972).
9. Nowak (1973) has an extremely interesting parallel in his discussion of the relationship between a theory and a simulation model of that theory. His position is essentially that of Empey (1964). Nowak states: "Dieses Kriterienbuendel ist nicht mit dem (Neo-) positivistischen Kriterium der falsifikation (Karl Popper) identisch. Es geht nicht nur darum, eine ueberstimmung mit jeweiligen vorgefundenen sozialen Wirklichkeiten im Sinne einer status-quo-analyse bei gegebenen Zielsetzungen und gegebenen Struktur der Gesellschaft zu erreichen, sondern auch moegliche potentielle Zukuenfte zu beruecksichtigen" (p75).

Unfortunately this book is only published in the German language. The essence of his argument is that the collection of criteria is not merely a compliance with the criterion of falsifiability of a postulated correlation with reality but the achievement of insight into other possible or potential futures.

10. Action oriented research and theoretical work must benefit from each other, but what mutual exposure has occurred, however, has led to relatively pedestrian results when compared to the original claims (Hoos, 1972:78). Hoos has incisively commented on the over-reaction to economic indicators and suggests that their rational use should involve a clear-eyed awareness of the limitations of the series.

Nevertheless Hoos, too, accepts the assertion of a need for social indicators to be grounded in a causal model and goes on to illustrate the problems of predictive arrogance that are characteristic of a criminal justice information system that is not solidly founded in causal theories (1972:209-217). Hoos points out that these systems have definite potentials for circularity; they may become self-realizing prophecies. (p238) (see also Bianchi 1956:ch. 3)

11. Bidermann (Bauer, 1966:145) suggests that there might usefully exist a sociological study of social indicators. This would involve the study of how particular series of indicators come to be generated. Who uses these indicators and whose interests they refer to. He argues, moreover, that there is a high degree of interaction between judgements of importance of a phenomenon and the existence of measurements of it. At the same time, the aspect which is most easily measured tends to be the one which becomes most important in the discussion of a public.

Although this is an interesting statement, it's significance, in this context is that it emphasises the extent to which social indicators in general, and crime data in particular, are much more to be analysed from a sociology-of-knowledge point of view than from an objective data-point perspective.

12. Some of the scholars are Gruenbaum, 1963; Hempel, 1963; Ryle 1957; Morgenbesser, 1963; Brodbeck, 1962 as well as the many other scholars mentioned in their references.
13. The world factor is being used here in a different sense from that implied by the idea of multiple factor theories in criminology and is not to be construed to mean an advocacy of that orientation. For a more complete exposition on how the word is actually used, see Gibson (1960:83FF). An interesting discussion on this same word is available in Toulmin (1961:83FF). It is noteworthy that developments in genetics moved that discipline from a factor theory model into quantification. The recent popularity of path models in sociology is based on work originally done by S. Wright (1935) who was a geneticist.
14. "Superstitious behaviour" here is used in the sense that B.F. Skinner used it in "'Superstition' in Pigeons". Jl. of Exp. Psych. Vol. 38:168-172, 1948.
15. This is somewhat problematic in practice. There may be real difficulties in determining whether a particular prediction

rests in any meaningful sense on criterion 4. This point is reflected in Jordan's paper (1973), where he suggests that all predictions imply a potential theory.

16. An interesting context in which this issue is raised in a different manner is suggested by Hannan (1971:52) who discusses this condition in relationship with the results of aggregation by dependent variables which are sometimes inadvertently achieved because of the existence of unanalysed conditions and influences.
17. In factor analysis oblique solutions of factor structures are also available. See Cooley and Lohnes, 1962.
18. Problems of under and over-enumeration are more fully treated in any standard text on demographic analysis.

2 The Language of the Uniform Crime Report Series

Any theory is, of course, a semantic structure. It uses language both for description and communication. A prime concern is therefore, whether the language of the Uniform Crime Report (UCR) system is such that we can validly incorporate it into a scientific theory or hypothesis.

Since the language of the UCR system is almost exclusively based on the legal definitions of crime, we need, first of all, to examine the implications of using legal definitions in social scientific theories or conceptual models.

2.1 The Adequacy of Legal Categories

The general term "crime", as well as the more specific terms denoting certain types of crimes (e.g. theft, rape, burglary, extortion, fraud), carries a heavy freight of subjective, emotive connotation. Even in the body of scholarly and classical literature, it is difficult, if not impossible, to find an exhaustive set of criteria for the definition of "crime" (Bianchi, 1956). This has presented a continuing problem for serious students of crime.¹ The difficulty stems from the fact that there is no necessary connection between active moral indignation and the letter of the law.

For the purpose of this paper, it is not necessary to choose between the schools of thought on this topic. It is important to recognise, however, that one cannot mix the two types of theorizing without explicitly addressing the discontinuity between what, at any time, is considered unacceptable conduct and illegal conduct. Where UCR data is concerned, it must be explicitly recognised that the measurement of crime is based on legally proscribed behaviour, and this measurement cannot serve theories that are cast at the level of conduct norms (Hage, 1971:Chapt 3). The exception would be if we were able to

say something about the relationship between the conduct norms and relevant legal norms.

Even if we do restrict ourselves only to theorizing about crimes as the violation of legal proscriptions, we must still face two broad questions:

1. Are the legal definitions logically adequate; that is, can they adequately control meaning?
2. Are the legal definitions functionally adequate; that is, can they be useful in social scientific theories or conceptual models?

2.1.2 The Logical Adequacy of Legal Definitions

The salient role of definitions in sociology is that of identification, communication, verification and storage of information (Timascheff, 1947:201). Lachenmeyer (1971) states this point somewhat similarly:

Any science can be conceptualized as a dual information transfer. The first information transfer is between men and the events that are the subject matter of their science. The second is between men as scientists about these events. (p. 1)

Lachenmeyer's general thesis is that sociology fails in its claims to scientific status because it has not yet developed an adequate theory language. Its language is closer to the conventional than to the scientific language required for theory construction. A major source of this failure is found in inadequately introduced or defined extra-logical terms and the resulting ambiguity, vagueness, contradiction and opacity in these terms (see also Hage, 1971).

At the theoretical level, the consequences of such

terminological and conceptual inadequacy are that spurious agreements and disagreements can arise. Moreover, cumulative development of the science is seriously hampered. The cure must necessarily be found in an effort to increase the semantic worth and the logical adequacy of the language. This same solution applies at the research level where language inadequacies result in large predictive errors.

In the Uniform Crime Report (UCR) series we base our definitions of events on the statutory definitions of the Criminal Code of Canada, and we must ask if these definitions are formally adequate. Formal adequacy refers to the term itself and its referential meaning which is quite apart from the contextual meaning it acquires from its use in an assertion or a theory.

In a logically adequate definition, the extra-logical terms must be at least formally adequate; and this is achieved by careful specification of a subset of all possible specifiable object predicates which will apply to the scientific use of the term. If the denotative referential meaning which now results also acquires acceptance in a particular conceptual scheme, and is used in essentially the same way by a set of professionally competent persons, the term acquires status in the theory language of a particular school of thought.

In criminal jurisprudence, a major objective is to achieve a clear legal language. Careful initial framing of the statute and continual sharpening of the legal distinctions in the process of case by case interpretation, at least in Canada, has kept the language of the Criminal Code somewhere near that objective. In general then, criminal law, when taken together with its body of precedent and "obiter dicta", can be expected to present a high degree of formal adequacy. This is, however, not always the case. A few examples will suffice to document the point.

The definition of "obscene" is problematic:

For the purpose of this act, any publication a dominant characteristic of which is the undue exploitation of sex, and any one or more of the following subjects, namely crime, horror, cruelty and violence, shall be deemed to be obscene(CC Sect. 150(8))

The word "undue" has been commented on judicially but unconvincingly (37CR120). Other terms such as "exploitation" and "cruelty" and "violence" have essentially the same problem of vagueness. This type of situation tends to recur in many of the offences against public morality.

By contrast, Section 290 states:

Everyone who stops a mail conveyance with intent to rob or search it is guilty of an indictable offence and is liable....

This is an explicitly defined offence and many of the apparent primitives are defined elsewhere in the Code.

Some of the claims that the statutory language is inadequate stem from the difficulty of obtaining convictions on the charges. Section 60(4) states in part:

Everyone shall be presumed to have a seditious intent who:

- (a) teaches or advocates, or
- (b) publishes or circulates any writing that advocates the use, without the authority of law, of force as a means of accomplishing a governmental change within Canada.

This is very precise language. Nevertheless, it is extremely difficult to succeed in a prosecution for seditious libel. In this case, particularly, the problem lies not with the definition as such, but that human beings can use language and can react to the essential wording of the statute in such a

manner as to reduce the probabilities of an arrest and charge. What has happened here is that the spirit of the law, but not the letter, has been violated. Although in such cases categorization is possible, conviction may not be. It would be incorrect in such cases to hold that there is an inadequacy in the statutory language, but there is a clear research problem in determining whether an offence was committed. In such cases a methodological choice needs to be made as to when the intuition of the researcher *is* to be preferred over that of the court. The definitions, however, are at least formally adequate.

In most cases in the criminal law, if not all, it is possible to perform complete substitution of the *definiendum* by the *definiens*. The words in definitive sentences which are either not sufficiently clear or which are not primitives are usually stipulated or explained in other definitions. Hence, in many cases, a set of definitions can be chained to arrive at a precise understanding of what we are talking about.

2.1.3 The Functional Adequacy of Legal Definitions

Although we can determine a logical adequacy for most statutory definitions, we must still address ourselves to the functional or performative adequacy of these definitions. A number of sociologists have suggested that statutory definitions of crime do not perform any useful work in sociological theories.

Merton (1957:147FF) suggests that the legal definitions contain too wide a diversity of events and seriousness. These definitions are, therefore, not only sociologically inappropriate, but the error variance owing to the category differences is so great as to make these data nearly useless for most practical purposes. (He does use them, however.) (see also Gibbons, 1965:24FF)

Cressey (1951:546-551) has addressed himself to this point in a different fashion. Although he accepts that semantic

imprecision will result from using a wider definition of "crime", he agrees that for some purposes the specific categories will not give sufficient aetiological or sociological homogeneity. He suggests, however, that one can achieve homogenous categories by grouping the essential elements of various criminal offences to define a new type of behaviour which, though not a crime, is nevertheless a set of criminal violations, (e.g. the criminal violation of trust).³

Sellin (Wolfgang et al., 1962:3-6) has emphasized the variability of what is defined as crime as differences between countries or over time. On this ground, he objects that legal categories restrict the formulation of universals (Roebuck, 1967:19-20; Lemert, 1958).

Sellin's alternative, unfortunately, does not solve the problem because conduct norms, too, are relative to the cultural or temporal context in which they occur. Hence, either his alternative is not adequate, or legal definitions are not deficient. Both problems, of course, can be met by accepting certain restricted levels of universality (Gibbs, 1966:10).

Kitsuse and Cicourel (1963:134) on the other hand, suggest that these problems can be overcome if we transform our interest in crime data from an interest in forms of behaviour to an interest in the question of how rates of deviance are produced. If the focus is on the latter, the categories used by the organizations must also be accepted as data, in their legal form. Our concern then switches to a consideration of the relationships between social conduct that produce units of behaviour and organizational conduct which produce units in the rates of deviant behaviour. In both cases, the criterion is the legal category and the theorizing is about the behaviour systems which produce the categories, the units of behaviour that have been defined as a crime and the activity of the agencies that are involved in the application of these categories to produce crime statistics.⁴

It should be clear that we are dealing here not with an inherent property of a definiendum that would force us eventually to accept one or the other of the arguments. Rather, what we see is that definability and fruitfulness are relative to the context in which they are used (Hirschi, 1967B:184).

In other words, if one needs to know whether a specific set of legal definitions are adequate to their task in a theory or a conceptual model, one obviously must look at the content of such a model. There is, however, no a priori reason why legal categories by themselves, cannot be used in a well-formulated theoretical statement or conceptual model. It is more often the epistemic correlations between the terms at the theoretical level and the measures at the observational level that are at fault. This is a fault in theorizing and not a deficiency in the language of the empirical measure (Hindess, 1973:45 & 47).

This problem was recently addressed by Hage (1972). He recommends that anyone engaged in the process of theory construction or testing is really in a better position to become aware of a lack of agreement between his theoretical and operational definitions if he specifies them both. In retrospect, we can look at the changing approaches to the Uniform Crime Report (UCR) data as a gradual interaction between an operational definition and a theoretical definition at the level of a discipline. It is contended that this interaction should really have been available at the level of the research project or the school of thought.

Hage's assertions can be looked at as a compromise of the positions held by the proponents of a real distinction between theoretical and operational definitions and those who insist that it is merely an academic distinction.

My interpretation of the Lachenmeyer (1971) and Mills (1959) position is that any scientist who is at work in his discipline must necessarily accept the task of working out all the connections between his theoretical-level assertions and his

operation measures. In introductory texts on methodology in the social sciences we touch on this point in many ways. Yet, in at least the use of the Uniform Crime Report (UCR) we appear, time and again, to have left this task implicit. We skimmed over it and hence, remained unaware of the flaws in the assumptive structure we embraced.

Lachenmayer's idea of chained definitions is somewhat more workable in the UCR data because we have here a progression of definitions. The actual concept that is adopted is immaterial when the idea is grasped that no rigid demarcation can exist between these two types of definitions.

If the problem is attacked in this fashion, we see that the concentration of attention on the statutory definition of crime is, in a sense, a foreshortened perspective. Operational definitions based on statutory definitions are only useful to those parts of a theory that refer to, or include, law violation. Hence, if that is all a theory addresses, then nothing else is needed. If the theory extends beyond this confine, then the UCR can address itself only to that portion concerned with law violation and cannot stand alone in support of the theory.

Once this much is resolved, there are remaining questions of validating the operational measure. That is, whether it actually measures what we want it to measure. This raises the question of the adequacy of the language of the UCR series.

2.2 The Adequacy of the Uniform Crime Report Language

Although the legal definitions in the Criminal Code usually provide acceptable descriptions of proscribed behaviour, the UCR system has a language of its own which describes how its categories are to be mapped on the legal definitions. In Chapter 1 we suggested that official data were collected for official purposes and that these purposes might well affect the data

in significant ways. It becomes necessary, then, to examine the objectives of the Uniform Crime Report (UCR) system and the effect of the resulting language on the suitability of these data for research and policy purposes.

2.2.1 The Objectives of the Uniform Crime Report

The statutory foundation of the system does nothing more than authorize Statistics Canada to collect the data, make rules, and publish a collection of police statistics for all Canada. No official objectives are stated for the series. It is clear, however, in the preamble of the 1966 manual, that the intent is not to measure the extent of crime. It was first identified and intended as a management tool and a measurement of effectiveness for the police; that the series has not primarily been used as such by either the police or the social scientist is quite another matter.

By contrast, the 1974 manual has updated its language and appears to suggest that crime trend analysis with these data is possible and useful. Official objectives are still not spelled out.

2.2.2 The Uniform Crime Report Offence Categories

The Uniform Crime Report (UCR) offence categories are described by the Criminal Code categories but they are not identical to them. There are basically two forms of departure. The first involves a subdivision of the same offence category by a second variable. This involves counting, for instance, breaking, entering and thefts from residences or from business premises. It will also occur when we stratify murders by victim (policemen, prison guards, others).

The second form of departure involves aggregation in one category of several legally similar offences. It also occurs

when we define residual categories like "other Criminal Code offences".

Under the 1966 manual there were 18 non-traffic crimes and eight major types of traffic offence categories. Additionally, we had four drug offence categories.

The 1974 revision preserves these old categories but expands on them extensively. We now have 73 criminal offence categories, four drug categories, six other provincial statutes and three municipal offence categories. The traffic categories have been expanded to 11 major offences.

The serious problem inherent in aggregation of legally similar offences is greatly reduced without destroying continuity with data collected prior to 1 January 1974. It must be stated categorically, however, that such continuity, though useful in some ways, does not remove the fact that the earlier data are so highly aggregated that they present next to no opportunity to conduct multivariate research.

2.2.3 The Uniform Crime Report Variables

There are two dimensions to the Uniform Crime Report (UCR) categories. The first consists of offence categories such as described in 2.2.2. The second dimension consists of the variables within each of those main categories. There are 10 such variables:

1. Total offences reported or known to the police.
2. Total unfounded offences.
3. Total actual offences reported.
4. Total offences cleared by charge.
5. Total offences cleared "otherwise".
6. Total adult males charged.
7. Total adult females charged.
8. Total juvenile males charged.
9. Total juvenile females charged.

10. Total juveniles informally dealt with (new in 1974).

The definitions of these variables present few formal problems as they stand. Unfortunately, the need to relate the same terms to differences in provincial practices gives them a different content from place to place. The age differences are an example of this. The difference in the statutory age of a juvenile may be as great as two years between two provinces. Certain policy differences will also impinge on these categories. Certain provinces adopt different ways of handling offences. Hence, in some provinces the offence may be cleared "otherwise", while in others it will be cleared by charge even when the same conditions of evidence and seriousness exist.

Aside from this, there is a variety of reasons why an offence might be cleared otherwise. The significance of these differences is hidden by the aggregation and hence variations in the clearance "otherwise" category will be next to impossible to interpret.

2.2.4 Uniform Crime Report Areas

The basic reporting unit is a "detachment" or a specialized unit. This distinction is of considerable importance, particularly where there are overlapping jurisdictions.

In the simple case, a detachment is a jurisdictional unit policed by one police unit. Hence, all the statistical data for that area are reported by that one police unit. Fortunately, the uncomplicated case is the most likely.

In the more complex case, we have clearly delineated legal boundaries based on legal jurisdiction but covering the same geographic area. This problem is addressed only at the level of the police forces which are submitting data. The general solution is that the location having primary jurisdiction

reports the data even if the work was done outside of the area of primary jurisdiction. Primary jurisdiction is legally associated with the location where the offence took place. However, while a person is charged in one area for an offence committed in a jurisdiction, it is entirely likely that these new offences will be registered again in the jurisdiction where he/she appears in court.

When we add the existence of the special units which cover a number of separate detachments or reporting areas (e.g. an entire division) we have problems of ensuring that all the offences committed in one area are retrieved from the separate reporting sources. Although this may represent no difficulty for some purposes, it presents significant problems for social scientific analysis because all those items that refer to one observation unit cannot be brought together.

Some police forces have instructed that offences dealt with by special squads be reported in the returns of the area where they occurred. That this has been done must be established in each research case. In such a case, however, the police resource expenditure related to the offence count in one area may not be identifiable.

The geographic limits of a reporting jurisdiction may be amended, or new areas constructed from several others. Since no description of the area need to be filed with the Uniform Crime Report data manager, there is no way of coming to terms with changes, or of adjusting the data unless one knows what was actually done.

2.2.5 Problems with Uniform Crime Report Counts

The overwhelming number of categories used are scored on the basis of one offence for each distinct operation. Some, however, are scored on the basis of one offence for each victim.

One category--auto theft--is counted on the basis of the number of items stolen. If the scoring is carried out perfectly, this represents little difficulty if one remains inside the specific offence categories, unless there is a valid rationale for mixing them.

This, however, is not the only scoring problem. Not all offences are scored, and not all offences considered a series of connected offences will be scored to maintain that connection. Multiple offences committed in the same operation (same place, same time) are scored only by the most serious offence. If five people are killed during the course of a bank robbery, we are supposed to score only the five murders. The rest is lost from the data.⁵

We can visualize a series of offences--not all committed at the same time, and committed in different operations--which may be linked in that they are part of the same set of offences carried out to accomplish an illegal purpose. If these offences are committed in different jurisdictions and reported in those locations, they will all be present in the data but their connections will be lost because they appear in different returns.

Basically then, we preserve connections of offences only if they are committed in different places and times and also inside the one jurisdictional area. Given offender mobility, we can expect that the smaller the reporting area, the higher the likelihood that the second bias will occur. Small reporting areas typically have high population density and are likely to be in a municipal policing context.

This problem has clear implications for the analysis of Uniform Crime Report (UCR) data aimed at discovering relationships among offences. It is possible to illustrate some aspects of this argument by factor analysis of some selected UCR categories. There is a well known relationship between thefts of motor vehicles and robberies or burglaries. Since the theft of a motor vehicle is usually committed in a different place and time than the robbery, we should find both offences in the data.

The 1971 Uniform Crime Report (UCR) data for British Columbia were analysed in two different factor structures. The first was a provincial contract and the second was a municipal contract (rural urban approximation).

The complete factor structure is documented more fully in Chapter five. Only the prime factors involving theft of motor vehicles were extracted for illustrative purposes here.

Table 2.1. Selected Factors from Rural and Urban Factor Structures of 1971 Uniform Crime Report Data for British Columbia

Municipal (Urban)		Provincial (Rural)	
Factor 1		Factor 1	
Theft m.v.	.874	Theft over \$100.	.834
Theft over \$100.	.809	Theft under \$100.	.827
Fail remain at accident	.789	B.E. & theft	.748
Gaming and betting	.764	Theft m.v.	.519
Robbery	.735	Rape	.438
Theft under \$100.	.685	Fail remain at accident	.451
Have stolen goods	.605	Fraud	.323
Rape	.500		
Drive while disqual.	.449		
		Factor 4	
		Offensive weapons	-.685
		Wounding	-.648
		Robbery	-.637
		Theft m.v.	-.389

Source: 1971 Uniform Crime Report data for offences actual in British Columbia R.C.M.P. man-hour data.

Theft of motor vehicle appears once more in a minor relationship in the provincial (rural) factor in association with criminal negligence in the operation of a motor vehicle.

The rural structure is obviously more complex than the municipal structure. The full impact of this can be assessed by an inspection of the cosines for the relationships between theft of motor vehicle and a number of other variables in the respective factor structures. (See note 2 Chapt. 5)

In the municipal structure there are cosines close to one between theft of motor vehicle and;

1. Gaming and betting .95
2. Theft over \$100. 1.00
3. Fail to remain at acc. .94
4. Robbery 1.3
5. Break & enter .94
6. Theft under \$100. 1.00

The rural structure has no such form. There is only a high cosine between theft of motor vehicle and theft over \$100. (.92). The remaining relationships are close to .707, which is the point of greatest mélange. That is, there are clearly different relationships between motor vehicle theft and the other variables in the structures. Another way of stating this is that if we consider the relationship between theft of motor vehicle and any one other offence with which it is most associated, and then control some of the remaining third variables in the structure, the correlation coefficient between the earlier two variables will be substantially affected.

From the available data we cannot tell how to explain these differences. We can postulate a plausible differential reporting effect at the descriptive level, but we do not know how to interpret the factor structure. This is so despite the acceptable post facto explanations about the functional relationship between offences which can be extracted from the structure. This is perhaps the most pernicious aspect of the factored

Uniform Crime Report (UCR) data. Many ideas surface at the theoretical level in a plausible fashion. None of them, however, can be accepted until we have adequately addressed the other biases.

More detailed consideration of how the police function would be required before we could determine whether conditions simplified the relationships between the two offences in the UCR data as opposed to the real world.

In interpreting the UCR data, care must also be taken to note that although reported offences accurately reflect the situation in the month in which they were reported, the remaining statistics--such as offences cleared or unfounded--necessarily refer either to the offences which occurred during that month, or the the work done in that month. Clearance of a case or an "unfounded" may very well refer to a case reported last month or the month before, creating an error variance if interpreted to indicate the proportion of offences cleared for that month; that error problem can be reduced by using yearly aggregates. However, this kind of aggregation will, of course, cause unwelcome loss of definition in the data.

Instructions for counting persons charged presents an interesting problem. Clearly, there is a desire to avoid counting twice persons charged under two sets of offences. To avoid influencing the marginal totals the persons-charged data are registered once against the most serious offence of a multiple offence set. The other charges are registered without the person data, and as a result, any attempt to relate persons to charges is distorted.

Should we attempt to estimate the demographic influences on the offence categories by an examination of the age distribution of the persons charged we would be affected by this bias (Sagi & Wellford, 1968).

2.3 The Uniform Crime Report System as a Measuring System

It is necessary now to assess the Uniform Crime Report (UCR) system as a measuring tool. It is here that the absence of a clearly articulated objective for the series poses problems. It would appear that we have paid more attention to the question of how to measure than we have to the question of why measure.

What we have largely achieved is a workable set of definitions with which we can arrive at counts in the nominal categories. For each category we have measured its relative importance and that is all. It has no counterpart in a theoretical definition.

This importance extends only to the limited set of characteristics which make it a member of the set of offences described in the UCR categories. Nothing is known about the relative severity of seriousness of the offences registered in the same category.

One has the unmistakable feeling that certain elements are left out of the defining characteristics which are, nevertheless, important for the conceptual framework which we will often wish to apply to our study of crime. This can best be illustrated in terms of the notion of offence seriousness.

If it should be the case that official processing is a function of the seriousness of the offences, and if we can assume that seriousness is a comparative, rather than an absolute, concept (Blumstein, 1973), we would have a qualitatively different kind of theft to compare in various social-political climates. The possible relationships between structural effects and kinds of theft, however, can not be brought out by relationships between structural effects and numbers of thefts. This is essentially the problem to which Sellen and Wolfgang addressed themselves. Their solution, however, required more information than the UCR series can supply.

Basically, then, the effects of measuring only at cardinal level restricts the series from saying things about those aspects of behaviour which would be more appropriate to a thoroughgoing analysis of crime and crime control.

2.4 Conclusion

It has been suggested in this chapter that the statutory basis of the Uniform Crime Report (UCR) series does not constitute a logical impediment to the series use in theory construction on crime and deviance. That some conceptual models have ignored problems in epistemic correlations between the theoretical levels and the measurement levels is not a weakness in the UCR series. It is a correctable fault in methodology.

The particular mapping of the UCR series on the legal language is clearly inadequate if we wish to use the series for multivariate analysis leading to tendency statements about crime or crime control. It may be adequate if we have other uses in mind. The original objectives, as these are inferred from the 1966 manual, never included considerations of scientific analysis, and hence social scientists and policy scientists have used the series at their own peril.

We achieved an operational definition for which we had no theoretical definitions. It is not surprising then, that the available data series has influenced theorizing often in entirely illegitimate ways. While it is clear that the pre-specification of theoretical definitions to guide the specification of operational definitions has advantages, we already implied at the end of Chapter one that this paper took the existing operational measure as its point of departure.

We therefore implied that it is possible to move from operation definitions in search of theoretical definitions. Hage (1972:77-88) suggested that this is a much more complex procedure. It requires that we pay considerable attention, not only to the language of the measure, but also to its collection system and the influences at work on that collection system. This kind of detailed attention simply is not evident in the work of a majority of researchers who have used the UCR. We must now turn to this task and examine how the categories created in the UCR language are actually filled with counts.

2.5 Notes

1. There has been long-standing argument in criminology between those who favour legal descriptions of behaviour as the subject matter of the discipline and those who do not accept this restriction.

In strict definition, the term "crime" is only acceptable when it is used in respect of behaviour explicitly proscribed in the criminal law.

In some nations, however, the word "crime" is not used and we find instead terms like "penal code". The defining characteristics, however, are that it be proscribed by law and the acceptance of the term "law" is that of Max Weber and H.L.A. Hart (A. Oosthoek, 1970).

In sociology, the term "crime" is sometimes extended beyond the statute meaning, to include any violation of a conduct norm. Such extensions can cause whole sections of social action interest to be cut off from the benefit of theory. Moreover, in some instances it imparts implicit assumptions about the ontological status of crime which should be more explicitly treated. An extensive discussion of various meanings of the term "crime" can be found in Bianchi, 1956.

On the other hand, confinement to the legal definitions tends to restrict the universality of the propositions in which these terms are used and may saddle a scientific discipline with a definitional structure which is not generated from its own universe of discourse or formulated in terms of its conceptual structure (Tappan (1947), McIver, in Wolfgang et al. (1962:73), Sellin (ibid:3FF)).

The strictest argument on the legalistic side is that no one is a criminal and therefore no crime has been committed until a court of law has so held (P. Lejins (1966), Michael & Adler (1933)). This argument avoids the fact that a trial is not a procedure

through which the commission of a crime is established but rather a means of assessing the weight of evidence and the fitness of the accused the stand trial. It is in a sense a one-tailed test of an hypothesis (Morton, 1962).³

Bianchi (1956) reacts to the Michael & Adler position by calling it "pernicious" confusion of real and nominal definitions. He suggests that they are guilty of the sophism of *petitio principii* by arguing that since crime is something mentioned in a criminal code, there is no crime without a criminal code. One can agree with Bianchi if we are discussing the possible definitions of crime, as he does extensively and scholarly. He is interested only, however, in the definition of subject matter and not in whether any of his definitions are or are not suitable for entering a theory language.

The weaker formulation simply insists that we should not use the word "crime" or "criminal" in such a manner as to broaden its meaning beyond the legal sense.

The opposed point of view asserts that legal categories group together forms of behaviour or circumstance that do not belong together from the point of view of the particular scientific interest. Moreover, it points to the volatility of what is included in the legislation either over time or across cultures.

2. Timascheff also suggests that definitions must refer directly or indirectly to inter-subjectively observable attributes or events so that the major roles of definitions can be fulfilled. This is the requirement of empirical adequacy. Finally, the theoretically relevant definitions must be part of a commonly accepted conceptual scheme. The last requirement is not under the researcher's control but the first two are.
3. Davies (1969) tried this out but came to the conclusion that for treatment purposes this technique did not produce any useful results. Nevertheless, it is a logical and acceptable approach.

4. Quinney (1970:Ch 1 & 4) addressed himself to this point as well and opines that the criminal law itself ought to be the object of the criminologist's attention. This is not in exclusion of, but in interaction with, the offender and his behavioural characteristics.

5. Erickson and Empey (1963) assert that evidence of this "most serious case" recording can be clearly detected in their data.

3. Production and Reporting of Uniform Crime Report Data

3.1 The "Filtering Process" for Uniform Crime Report Data Production

In Chapter one we raised briefly the theme, associated with the societal reactions school, that labelling perspectives provide an opportunity for the methodological rehabilitation of the official crime data. The justification for this is reviewed by Schur in a summary article (1969) where he suggests that the critical variable in arriving at deviant levels is the audience. The audience is, in a general sense, society at large but in a more particular sense:

...The more specific agents of control are the critical audience, for they implement these definitions in ongoing social action and through institutionalized procedures. They are among the most significant of the direct actors and labellers. Their actions constitute an important part of what Erikson calls the "community screen..."(Schur, 1969:313)

Schur goes on to draw the conclusion that:

...we should continue to see research increasingly focussed on the filtering process. This focus may also lead to a reassessment of certain common methodological assumptions, such as that of the unreliability of official statistics." (p.314)

This emphasis on police activity is by no means restricted to Schur. It permeates the work of all the labelling theorists to some degree. It is, for instance, available in Kitsuse and Cicourel who argue that "rates must be explained in terms of the deviant-processing activities or organizations" (1963:136-137). Black looks at this process in a micro-sociological perspective by observing what motivates a policeman

to "write a report". Although this line of perception is useful, it must be recognized that a focus on the processing organization is a necessary but not a sufficient condition of adequate rehabilitation.

The position adopted in Chapter one forces us to recognize that we can in no way look at the official enforcement agency as a quasi-closed system affected from outside only by random shocks (See Chambliss, 1966:315). As Black points out, there is a strong tendency for the wishes of the complainant to be complied with by the attending policeman. Black's interest extended only to the complaint-service relationship but it is also a significant question to ask what made this complainant a complainant in the first place. Why did this person resort to the machinery of the law and law enforcement rather than some other technique of social control? The question is even more urgent when we accept the evidence that suggests that the incidence of technically criminal acts is vastly more widespread than the crime data would tend to suggest (Reiss, 1971).

Clearly, the filtering process consists of both a public, a police agency and their interaction over time. The system idiom is perhaps the most useful here for structuring the discussion and for demonstrating the effect on the Uniform Crime Report (UCR) data. We will consider first the network of decisions that intervene between an event and its entry in the UCR series. We will then look somewhat more closely at the major aspects of the system and their implications for the UCR data and their use. Only then can we re-examine the question of a methodological rehabilitation of the UCR data.¹

3.1.1 The Reporting System

The reporting system set out in Figs. 3.1. a & b (p 50 & 51) represent the two major subsystems which "filter" the events before they enter the UCR series as counts. The flow chart has been kept relatively simple. Nevertheless, it illustrates

that any attempt to express a probability that an event will become recorded as a crime is indeed a very complex probability statement.

Although this flow chart provides for the fact that the police can and do gain direct knowledge of crimes, the modal situation is that an event is reported by a member of the public (e.g. Reiss, 1971:11). This requires at least two decisions: First, that this is an event about which the police should do something and, second, to report that event.

When the police accept jurisdiction there are a number of further decisions which can serve to deflect a reported event from the record. A prime decision involves the question of whether a complaint will be treated as a criminal case.

This point is of importance. At almost any police post there is a significant number of events reported for which it is not all that clear that the events are crimes, even at the time of initial reporting or investigating. At other times, the reported "complaint" contains the elements of a crime only in such a purely technical sense that it is not treated as a crime but rather as maintaining order or a service.

There is then no necessary connection between accepting jurisdiction and recording a crime (Reiss, 1972:72).

It is a fact that attending to non-criminal complaints will consume considerable man-hours, but a complaint will not be entered in the Uniform Crime Report (UCR) system until it becomes formally defined as a "case". From this perspective, the cutting point as to what borderline complaints will be included in the UCR system can be seen as a function not only of the fact that the public reported it as a crime or that objectively it is a crime, but of the sensitivity to statistical records needed for work-volume indications. This might in turn be linked with the provision of manpower increases, upgradings in rank structure

or increases in funds. In this context the essentially ambiguous nature of crime data should be clearly recognized. High crime rates can be used in arguments to demonstrate the need for additional police resources, but at the same time, they can also be marshalled to demonstrate the failure of the police to control crime effectively.

It will be clear that such cutting points can also be affected by differences in administrative styles or by such matters as the manpower levels at the detachment. Division of labour, for instance, is more elaborate at large detachments. This alone can force the issue of recording complaints for communication and supervision which would not be nearly as necessary at a small detachment.

In other words, police practices can materially shift the demarcation point at which complaints will be recorded as crimes in the Uniform Crime Report (UCR) system. Moreover, how the cases are dealt with by the police will determine the likelihood of future reports by the public or the willingness to help clear the case.²

The remainder of the flow chart is straightforward, except for the often-ignored event at Box 19. During the process of clearing an offence, that is of identifying an offender, it frequently happens that the investigation or application of forensic science will identify other offences perpetrated by the same offender. This happens particularly in the case where fingerprint evidence is involved. At that time, a new offence is recorded and the case is shown as cleared. There is also a considerable effect at this point because there is a tendency for offenders to take advantage of concurrent sentencing to clear previously undetected offences. This is intended to reduce the probability of re-arrest after serving for just one offence. This is an entirely rational decision and is somewhat more likely to be taken by the professional or the recidivist. The results will lead to statistical artifacts of correlation between certain offences which have a high probability of being linked in the

statistics. Typically, these are the theft offences. The only author who has been aware of this feature and has used it constructively in a different context is Willmer (1970).

3.1.2 The Minimum Conceptualization of the Uniform Crime Report Data

From the foregoing it is clear that official data are counts not of behavioural events but of decisions about behavioural events. They tabulate for a particular detachment the number of times a reported or observed event is classified in a specific manner and then recorded. Formulated in this manner we emphasize that the resulting frequency distributions depend largely on the decisions of the police and the public.

At the purely descriptive level then, we will refer to Uniform Crime Report (UCR) data only as:

Monthly area aggregates of the frequency of categorization decisions about behavioural events observed or reported in the area.

This minimum conceptualization has certain advantages. First, it draws attention to the fact that if one wants to upgrade the meaning of the data, certain assumptions must be explicitly dealt with. If we choose reported offences as our index of the level of public recognition of offences, that is, as behaviour about which the police ought to do something, we must know whether the police will accept that they have jurisdiction in this matter. Given a significant disjunction between law and moral indignation, the record will tend to look very different from what would happen if there were no such disjunction. Under some circumstances the total reported offences will be a much more accurate prediction of what the police will do and accept than what the public feel they should do. Additionally, we need to know what the situation is at Block 12 as to whether they will record the report at all and where.

Figure 3.1.(a) Flow Chart of Decision Making in Uniform Crime Reporting

Figure 3.1 (a)

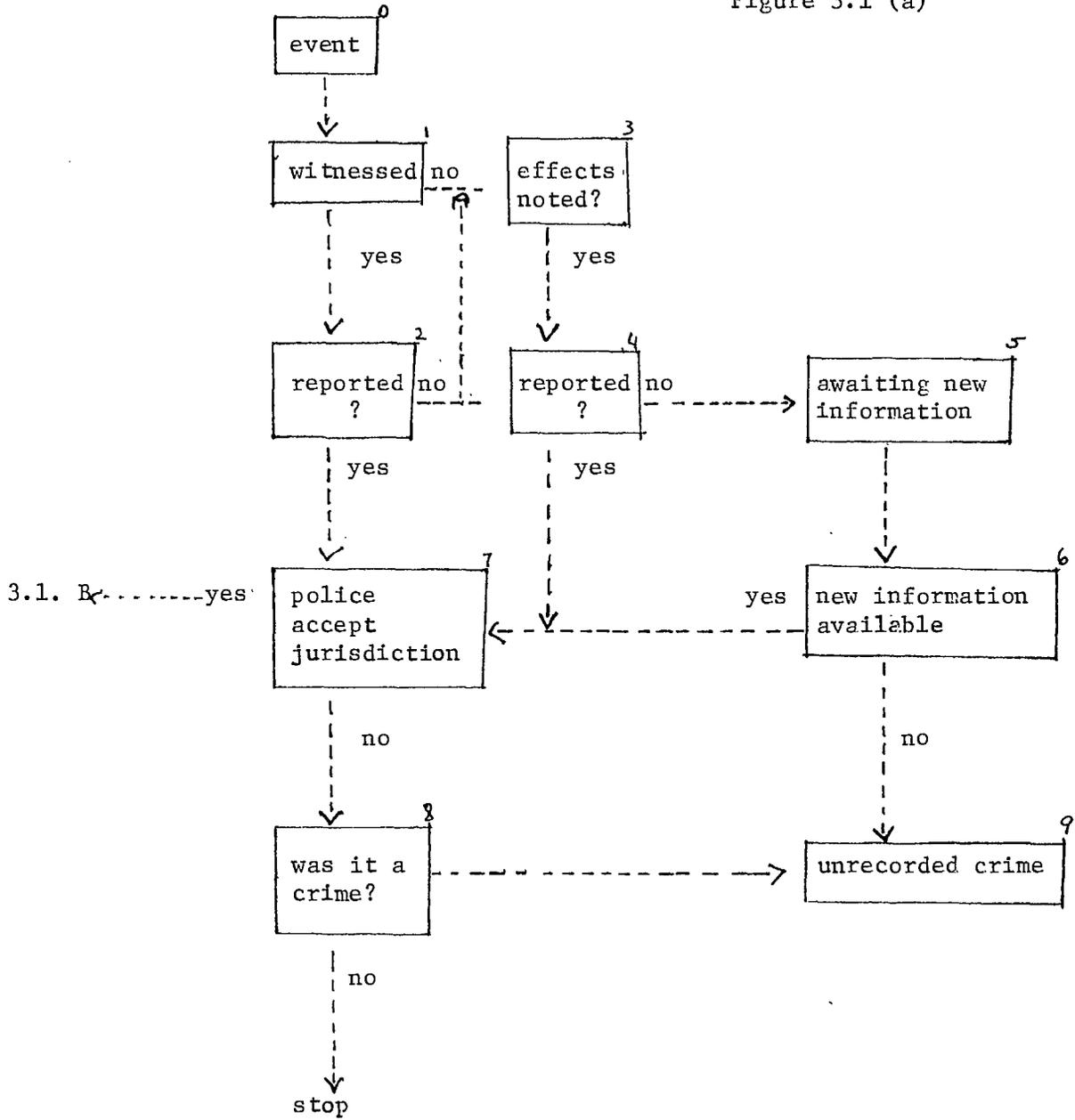
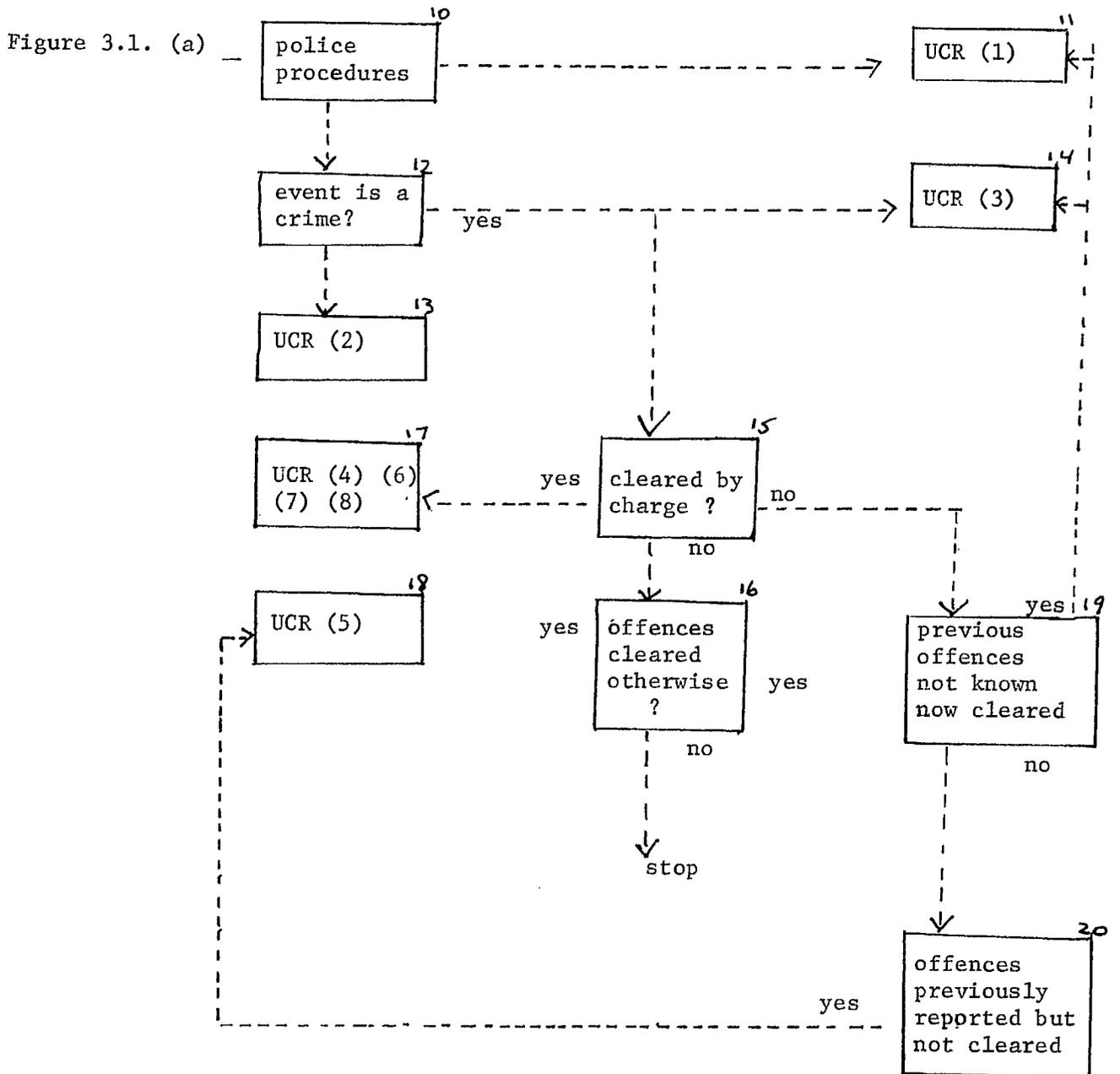


Figure 3.1. (b) Flow Chart of Decision Making in the Uniform Crime Reporting



3.2 Invocation of Formal Social Control

The first major source of influence on the Uniform Crime Report (UCR) data is the decision to invoke a formal control system rather than an informal one. In itself this is already a very complex decision. Since the majority of offences are recorded in the UCR system because of public reports, the decision matrix of the public is a strong influence.

If decisions to invoke formal social controls are at least partially "purpose rational", there must be some notion of the likely response of the police agency and its suitability for what the reporting public seeks to achieve. Without becoming mired in possible relationships, it is plausible to say that these decisions are clearly a function of direct and vicarious experience of earlier police responses to a citizen's request and the consequences of such a response; loss of wages, long waits in court, and badgering in the witness stand.

There is, of course, no necessary connection between the police definition of the situation and that of the public. Where sets of definitions intersect, we must ask about the relative salience of each and about their overlap. What is more, we must provide some rationale for explaining variations in the relative salience of one set or the other. Although aspects of this point have been explored (Black, 1970B). No concept has been provided in terms of which we might explain this variation at a more general level.

Hasenfeld (1972) has speculated on a framework in terms of which the classification used by the police in their work might be systematically looked at from an exchange point of view. He asserts that:

The more a processing organization depends on a given market unit for accepting its product, the more its classification-disposition system will respond to the constraints and the contingencies of that market unit. (258).

The conditions which lead to market dependency are:

1. Enforced dependency.
2. High discretion exercised by the market unit.
3. High need for the client service provided.
4. Scarcity of knowledge about alternative markets.

3.2.1 Variability in the Saliency of the Law: The Police

These conditions clearly describe the relationship of the courts to the police, as being intermediary markets for police agencies. This system would suggest a high degree of adherence to market unit (court) definitions for police forces which have a "law-enforcement" image and a low adherence for "watchman" style forces which tend to solve their problems without resorting to the courts (J.Q. Wilson, 1968). Biles and Mulligan (1973), for instance, point out that in Australia some police forces clearly see mental institutions as alternative markets for some of their services. They concluded that:

...The data are consistent with the view...that the relative use of mental hospitals or prisons for the segregation of deviants reflects different styles of administration. (p279)

What this suggests is that there will be systematic differences between police forces in terms of how they view legal categories. A force which has an essentially "law-enforcement" image or ideal will tend to see law violation as a core problem and resort to formal charges as a redress. A "watchman" style of policing will tend to see preservation of peace and order as its objective and will tend to regard the legal process as one of its tools; as a means to an end (Wilson, 1968:140ff). (See also Chambliss, 1966:315, Aromaa, 1973.) The actual charge brought will matter little (p145).

Wilson suggests that:

The quality of law enforcement depends not simply on how the police make judgements, but also on the socio-economic composition of the community, the law-enforcement standards set...by the political system and the special interests and concerns of the police chief (p143).

Although Wilson's conclusions and typologies are admittedly tentative, they are sufficiently well supported to constitute a prima facie case for expecting an influence on the Uniform Crime Report (UCR) data through policing style. This style is in turn affected by the social, political, cultural and demographic context of policing. (See also Goldman, 1969; Klein, 1970; Wilson, 1970; Empey, 1971:175.)

Specifically, we see that there is a good case for an assumption that the same theoretical variables which are postulated to affect crime commission will also affect crime control.

3.2.2 The Variable Salience of the Law: The Public

While the argument of a variable salience of the law is familiar about the police force and its tendency to enforce or not to enforce at high levels, it is not usually encountered about the public. Nevertheless, the public in a very real sense invoke the law when they report an event as a crime (Reiss, 1971:65).

The literature on the effectiveness of informal social control is extensive enough to make the invocation of legal norms by the public problematic. There is little supported work to deal with the conditions under which members of the public define an event or a phenomenon as something the police ought to do something about.

L.T. Wilkins addressed himself to this point in his general theory of deviance (1965:56ff). He suggests, in a

statistical analogy, that the reaction point beyond which something needs to be done is defined by a functional relationship between the variability in the range of experiences of that class and the personal tolerance of deviation from some central tendency. Wilkins uses the symbol σ for the standard deviation and defines the personal tolerance of deviations as the acceptable number of standard deviations from the central tendency. The reaction point simply becomes $x \cdot \sigma$. Of course, the tolerance parameter will in turn be functionally related to the σ value.

This last point was not considered by Wilkins. There are, of course, well known probability distributions for which the variance is functionally related to the mean. We can cite the Poisson, the gamma, the hyper-geometric and the negative binomial, the geometric and the exponential, the beta and the Weibull functions. Chi-square similarly has such a relationship.

Wilkins draws the conclusion that:

The definitions of crime will change to accommodate proportions of events ($x \cdot \sigma$ values) rather than proportions change to accommodate constant definitions (p82).

As Taylor, et al. (1973:12) point out, the argument, when applied to how criminal law or enforcement is generated, must assume extensive normative consensus.³ If, however, we assume extensive cognitive consistency at the individual level, we can still use this notion as a heuristic device without committing ourselves to a large scale consensus. We can postulate a limited consensus or a degree of shared motivational vocabulary, along which a patterned recurrence of reaction to events will occur for what Cain defines as the homogeneous community.

Some interesting support for the Wilkins formulation is to be found in Blumstein (1973). He provides empirical evidence for the relationship between moral evaluation and the individual

subjective probability estimates of the likelihood of a combination of events.

Aside from the impact on the Uniform Crime Report (UCR) data in response to different definitions of the situation, one can transpose the Hansenfeld argument to the public's situation. One can look at the individual as standing in an exchange context and ask about his market dependency on the police for achieving his aims.

The degree of dependency on a formal control agency like the police will differ as a function of the community attributes, its social articulation and its arsenal of informal sanctions (Chambliss, 1971:320-322; Banton, 1964:210).

If this idea were to be elaborated further we might find support for a characteristic difference in over-all UCR profiles for communities which are characterized by a high degree of consensus on the appropriate location of the reaction points and those for which there is no such consensus. I have argued elsewhere (Oosthoek, 1968) that this consensus on where the reaction points will be placed might not be directly a function of community homogeneity. It may in fact be better explained as a function of the communication matrix in which images and stereotypes of crime are generated. Wilkins implies that this is much more a matter of community integration than of community homogeneity. Banton raises this same issue in the context of the images which inform the exercise of police discretion.

Lemert (in Clinard, 1964:86) coined the word "normalization" and this term is useful here to suggest that communities which are characterized by communications (experiences) barriers between segments of the public or between those segments and agencies of criminal justice will be expected to have characteristically different UCR profiles.

3.2.3 A Note on the Criminal Justice System and Uniform Crime Report

This paper directs its attention almost exclusively at the two major components in a reporting system: The police and the public. The rationale for this is that the Uniform Crime Report (UCR) system does not take into account subsequent actions of the Canadian Criminal Justice System. The original classification at police level is final, regardless of how the offence is eventually charged or whether a conviction is rendered.

There is no intention to add to an already highly complex set of interrelated factors by adding the influence of the courts and custodial agencies. It should be realized that the behaviour of the adjudicative and custodial levels of the system feeds back on police behaviour and, hence, on the UCR data. The discussion to this point will lead us to expect that relatively small changes in police policy can put qualitatively different mixes of accused before the courts and there is no guarantee that the courts will react to this in the same manner. Similarly, if a court should respond differently in its punishment policies one can expect this to reflect on police behaviour and hence on the UCR (Reiss, 1971).

This was already implied in the discussion of Hasenfeld's ideas but is raised here separately in order to highlight an important fact. Any attempt to create a Canadian Criminal Justice System simulation model based on the UCR data must take account of this point or face the need of constantly monitoring the actual data for changes. In other words, the transition probabilities are not likely to be stationary and the simulation model will rapidly lead to invalid predictive results.

3.2.4 The Variable Saliency of "Visible" Cues

Although the legal classification scheme provides the

framework within which potential or suspected offenders are identified and processed, it is clear that the police also use other predictive categories that help them process or detect offenders. These categories may be grounded in individual or vicarious experience but they are nearly always eminently empirical (Weiner & Willie, 1971:199; Wilson, 1968:27). These categories are usually extra-legal in the sense that their consideration, if brought forward in a trial, would likely have no effect on the disposition from a purely jurisprudential point of view.

A considerable amount has been written about the external cues to which policemen are sensitive and the effect of these cues on the probabilities of formal processing, such as arrest. It should be pointed out, however, that for any such cue to be salient, it must be recognized as a cue by the police (Eisner, 1969:25).

One can once again postulate contextual differences in the use of these cues. Role theory distinguishes between interactions on the basis of imputed social roles and interaction based on personal roles. The salient differences lie in the extent to which one is familiar with the specific person who constitutes the "other" in the interaction. In police work, the extent to which the context permits personal knowledge of the persons with whom one comes in contact will have an influence on the extent to which the more generalized external visible cues will be used (age, sex, ethnic group, etc.).⁴

The practical significance in this is that one might expect to find different correlations between these external cues and the variance in Uniform Crime Report (UCR) data. Here too, the socio-cultural context will be a systematic factor to be investigated before other inferences are drawn along the line mentioned above (Cain, 1973:18-20).

3.3 Implications

This discussion raises again the notion of the inter-correlation of the variables considered in a theory and the variables in a *ceteris paribus* clause of such a theory. In the earlier discussion the focus was on police practice as a pro-active force of social control. In this perspective, we find the same potential available in the manner in which Uniform Crime Report (UCR) data are generated. A community that has certain kinds of people, will lead to a certain reporting pattern and the same community's characteristics can affect and do affect the manner in which police assume jurisdiction and classify and deal with offences. Once again, the idea that police behaviour and policy can be relegated to the residual term is a rebuttable presumption, as is the assumption that we can focus only on the official agencies.

Nevertheless, we now also have clear indicators that police procedures can create patterns in the data which are entirely spurious from the point of view of a theory of crime causation and interrelation. Particularly, typological approaches basing themselves on offender history would be seriously affected by the degree of forensic sophistication of a given police force in a given jurisdiction. In a sense then, even the most radical reformulations of official crime data remain in the same situation which they have criticized in that the source of error now is located in the police organization rather than in the public. Many authors have shown a clear awareness of this problem but they have simply not dealt with the practical implications of their assertions.

Finally, the complexity of potential interrelationships in the reporting system raises a question of the adequacy of path analysis techniques as a means of analysing and partitioning variance in the UCR data.

3.4 Conclusions

The influences which affect what data go into the Uniform Crime Report (UCR) are many and varied. Moreover, their interaction is likely to be complex, both cross-sectionally and over time. Since we do not, at the moment, possess well elaborated factor theories, the necessary collateral data links with the UCR must be extensive before we can proceed with the multivariate analysis required for the inductive task of model construction and testing.

Because of the extensive inter-correlation which can be expected to exist in these variables, we need, moreover, an extensive arsenal of technical means of validating the power and effectiveness of the analytical techniques and results they provide.

Finally, because of the anticipated complexity in the interrelationships depicted in the tendency statements, we need suitable methodological structures in which we can bring the statements together for testing in the real world.

3.5 Notes

1. The omission of criminal justice agencies other than the police is intentional (see section 3.2.3).
2. The analogy between unrecorded crime and the so-called "dark figure" or unreported crime should be obvious here.
3. Simmons, 1965, reports that there is considerable "within group" variance on judgements of what is deviant but there also is evidence that for several major types of crime there exists a remarkably stable stereotype.
4. This is essentially the obverse of the argument by Banton (1964:210) that different perceptions of the police in the community will lead to different demands for their services. Cain comments on this point as well except she uses the notion of community homogeneity as the underlying cause.

4. Analytical Problems with Uniform Crime Report Data

Aside from the problems of language and the complexity of the filtering processes which intervene between an event and its entry into the Uniform Crime Report (UCR) data, there are other matters which merit brief separate treatment because of their peculiar impact on the usefulness of an improved system of UCR collection and definition.

The first problem concerns the two dimensional aggregation of the UCR data. We currently collect the data by detachment and by month. There are no clearly elaborated reasons for this level of aggregation except administrative or intuitive convenience. The acceptance of this level of aggregation, however, has consequences that need further examination in this chapter.

A second major problem in the analysis of the UCR data is found in that their variance, like that of other demographically based rates, is subject to differences in age and sex structure of the population. Since large components of the crime data never result in information on the perpetrators, it is difficult to adjust the data for age composition differences, or sex differences in the base population (Sagi & Wellford, 1968).

The discussion of these problems is somewhat eclectic because it is intended only to provide enough background for the demonstration of the problem and the foundation of recommendations in Chapter six.

4.1 Problems of Aggregation

4.1.1 Cross-Level Aggregation Bias

The UCR data are aggregated predominantly by detachment area or enforcement unit and by calendar month. This raises the

question of whether this level of aggregation introduces any specific forms of bias.

Hannan (1971) discusses extensively the general problems of aggregation and disaggregation in sociology. The details of his argument need not be repeated here. Only some of the points which refer to the Uniform Crime Report (UCR) data will be elaborated on here. Hannan focusses on what he terms the aggregation relationship of the functional relationship which holds between micro-level variables and macro-level variables. He points out that unless these are linear and the cases are homogeneous in categories, aggregation bias will occur.

Generally speaking, he states:

(In) multivariate recursive models, we see the possibility of a great number of complications. As we have already stressed, we are convinced that resolution of any specific aggregation problem is likely to require the specification of the operative variables "hidden" in the aggregation criterion and the connection of these factors with other variables in the model. (p58)

The discussion in Chapter three demonstrated that there can be little doubt about the multivariate complexity of relationships in UCR data.

Aggregation problems present themselves for solution whenever we wish to make inferences from one level of aggregation to another, whether this be in time or space. Hannan suggests a number of solutions and recent literature contains ways of coming to terms with the problem (Iverson, 1973; Hammond, 1973). At the same time, we must face the fact that, even when we work only at one level of aggregation, we still need to be aware that the aggregation procedure will have produced certain effects that have influences on the parameters of one's equations.

Kmenta (1971) has argued, for instance, that aggregation based on unequal numbers of micro-units will introduce heteroscedasticity. In the Uniform Crime Report (UCR) data most of the returns are not only based on different spatial areas with different total populations at risk, they are also generated in detachments with different manpower levels. Early regression analyses of UCR data clearly supported Kmenta's point.¹ The question of aggregation effects, therefore, must be met; it cannot be avoided.

Following Hannan and others (Moul, 1973; Przeworski & Teune, 1970), we maintain that aggregation and disaggregation problems are not insurmountable barriers to analysis or inference. The explicit analysis of aggregation bias may well give insight into important causal relationships. What does constitute a problem to the use of UCR data is that it is fixed at an aggregation level which is not based on an analytical rationale. We cannot provide a statement of the interacting variables and their aggregation relationship, hence, we cannot with confidence infer across levels of aggregation. Because we cannot connect collateral socio-economic-political data with the existing crime series we can say very little about what our present level of aggregation has done to our data.

In the area of temporal aggregation, of course, the situation is not fundamentally different. Here we have screened or averaged all causal relationships which have a stable auto-correlation lag less than or different from a calendar month. Particularly, in the analysis of panel data or time series, the correct choice of lag is important for obtaining unbiased estimates of the relationships (Heise, 1972) but we are bound in our current system to integral multiples of the month.

4.1.2 Impact of Offence Aggregation

It will be obvious that extensive groupings in the pre-1974 UCR categories seriously attenuated meaningful analysis

of the data. Although considerable pain has been taken to group legally similar offences, such groupings introduced considerable non-homogeneity, and in a non-random manner. The effect of such departures in regression models is well documented to be serious.² The groupings are made on intuitive grounds or legal similarity and this presents a potential problem for comparison across jurisdictions in which one wishes to link collateral data to variance in the Uniform Crime Report (UCR). For instance, under "fraud" we group 13 offence categories, which can be systematically different in mix, as a function of some socio-economic characteristic of the area or person. Yet the variance in the total frauds aggregate may have little or no correlation with such factors. Once again, as we have pointed out in Chapter two, the problem lies in the way the UCR system maps its categories on the legal definitions.

High levels of aggregation in various categories will tend to reduce the potential for comparative analysis at the international level. Very often, translation of one offence to a parallel offence in another code can be carried out under levels of no aggregation, although this is impossible under high levels of aggregation of offences.

To reject outright some of the summarized categories, simply because they are aggregated, would be premature. As in the case of the pre-1974 "wounding" category, it is unlikely that this grouping will be seriously affected by highjackings because they are such low probability events in most rural policing areas.

It is entirely possible that only one type of offence will tend to dominate the category, and hence contribute disproportionately to the variance in that category. Nevertheless, in comparative analysis this fact still leaves us with no information as to which of the possible offences might dominate such a category.

4.1.3 Implications

We are faced with three distinct aggregation problems in the Uniform Crime Report (UCR) data. We must adjust the data for different observational units and we cannot validly infer from the macro-level data to micro-level data or hypotheses unless we deal adequately with the influence of our aggregation relationships, both on the data of interest and the collateral data. Finally, we introduce intolerable error into the data if we aggregate offence categories without considering the error potentials which are thus generated in the data.

4.2 Problems of Demographic Composition

4.2.1 Direct Standardization and Components Analysis

A number of researchers have attempted to estimate the extent to which variations in crime rates may be owing to pattern differences in the demographic composition of the population. The results have been less than inspiring but there is no doubt that their work addresses a real problem in the analysis of UCR data. To effectively analyse the UCR variations we must be able to break them down into rate differences that are purely attributable to differences in population composition and those that are owing to variance in other factors.

E.M. Kitagawa (1955), in a classic paper, demonstrated the extent to which this decomposition of effects on differences in rates can be carried. There would appear to be no need to summarize her argument. Her technique can be generalized to more than two composition variables and can easily handle nominal data. The practical difficulty of applying her technique to the UCR data lies in that we do not now collect age-sex specific data for crime statistics by offence. Moreover, our "persons charged" data are confined to charges laid in four age-sex categories. The age boundary of juvenile-adult, of course, varies by province and introduces an additional problem.

Kitagawa points out that we cannot make assumptions that population components and component-specific rates are independent. It is easily imaginable that the numbers or proportions in a particular age-sex category will influence the offence specific crime rate for that category. This phenomenon is recognized in Kitagawa's decomposition procedures through an "interaction" term which represents that portion of the difference in a rate which is owing to joint or inter-dependent change in a component and its specific rate (1955:1179).

This interaction term is a residual and collects the amount of the difference between two rates which is not accounted for after compositional and rate differences have been calculated. As Keifitz and Flieger put it:

If we add the difference between the standard and the given age-specific rates, by weighting each such difference by the proportion of the individuals in the proper age group in the standard population, we get one total; if we add up the same differences with weights taken from the given population, we get another total; the difference between those totals is interaction. The choice of weights is unavoidably arbitrary, and interaction is the ambiguousness in the main comparison, the uncertainty is the difference we are trying to measure. It is related to the correlation between weight-differences... (:249-250).

With increasing availability of computer facilities, the necessary calculations can be carried out accurately and rapidly with the use of such programmes as "direct", provided by Keifitz & Flieger.

The existence of this "interaction" would, of course, be a good indicator that more complex relationships exist in the crime rate data, but the interaction term itself is hard to interpret as it stands and would need further examination in order to satisfy the criteria of what constitutes an explanation.

The logic of direct standardization is very attractive in that it does not alter specific rates but simply weighs their effect on an aggregate rate for a total jurisdiction. It is possible, however, to apply this technique only to Uniform Crime Report (UCR) data on persons charged, and then only if we collect these data in suitable age categories. The clearance rates on offences known to the police, however, vary by offence and are often quite low. There is evidence that the unidentified offender has different characteristics than the identified one. Hence, we cannot legitimately assume that the rates for identified offenders can be used as estimated for correcting the total offence rate.

Since we cannot collect the age specific rates for unsolved offences, direct standardization has limited use in UCR analysis of offence rates.

4.2.2 Direct Standardization and Multi-Variate Analysis

There is, however, another problem. If age composition could be estimated reasonably accurately for all offences, direct standardization would still be difficult to apply in any analysis which proceeded beyond the gross-rates components. Age-sex standardization applied to the variables of interest would equally have to be applied to the other factors, which would serve as further explanatory factors of the crime data. This fact would require either a vast amount of prior experimenting and data collection or a well-formed and verified theory from which the necessary relationships can be deduced.

4.2.3 Regression Techniques and Standardization

Consider a comparison of crime rates between two provinces. A regression approach, using least square solutions in each province from the parameters of the regression equation and from the instances of crime rates which occur within one or the other of the two provinces, would arrive at two equations. Each equation would have a regression coefficient associated with a variable "x", which is the proportion of people in a specific age category between the ages 10 years and 50 years. Additionally, each equation has a value for the "y" intercept. If one now evaluates these equations by substituting the averaged proportions for each age in the respective x(I), the following equation will result:

$$\begin{aligned} (1) \quad Y(BC) &= A(BC) + B(BC.I) * x(I)_{I=1,40} \\ (2) \quad Y(ALTA) &= A(ALTA) + B(ALTA.I) * x(I)_{I=1,40} \end{aligned}$$

By subtracting these two equations and performing algebraic manipulations of expansion and regrouping, it is possible to derive the perfectly generalized results below:

$$(3) \quad (A(BC.I) - A(ALTA.I) + \text{Sum } (x(BC.I) * (B(BC.I) - B(ALTA.I)) + \text{Sum } (B(ALTA.I) - X(ALTA.I)) \text{ for } I = 1, 40$$

The derivation of this is given in Althauser (1971: 98-135). In addition to the regression approach by Althauser, other approaches associated with the work of O.D. Duncan and the work of Coleman, et al., are available, but differ slightly from the Althauser formulation.

It is possible to develop reasons in specific instances for preferring one or the other of these approaches. The difficulty, however, lies in the problem of our particular data. It is clear that a finely-divided age structure, such as the ages from 10 to 50, by sex and single year of age, may have high

degrees of multicollinearity associated with them. The major problem with multicollinearity is that it increases error associated with the partial regression coefficients. The "T" value associated with the coefficients will therefore not be reliable as an estimate of the statistical significance of the specific age influence.³

There are a number of possible solutions at the logical and empirical level. We may simply accept the regression coefficients as adequate averaged descriptions of what is happening in the total population or we can transform the age distribution through various techniques to increase their orthogonality. The third possible solution lies in conducting a factor analysis, which allows us to determine the age groups which should be grouped together to reduce the 40 single-year intervals to a smaller number of variable intervals containing reasonable orthogonal age groupings. The adoption of any of these solutions is largely a matter of empirical results. The severity of multicollinearity can, of course, be measured by inspection of the determinant (Bartlett, 1935).

This problem need not arise when attempting to standardize for a number of other background variables and, indeed the generalized equation (3) indicates that in some limited cases a useful approach to standardization across two jurisdictions might be available in the regression solution.

4.2.4 Regression Standardization and its Practical Utility

The main advantage to a regression approach to standardization is that it permits one to use background characteristics even when these background characteristics have not been collected in exact connection with the dependent variable. In the sex standardization, a sex ratio can be conveniently used as a single variable in the equation. The logic of regression analysis then allows the addition of other terms with the knowledge that when the assumptions of regression analysis are satisfied, the

remaining regression coefficients are controlled for the sex ratio differences. Where it concerns the age factor, we are faced with entering a set of variables to represent the age categories and the proportion of people in them. The first practical problem involves the question of degree of freedom. Clearly, age intervals must be chosen to allow enough degrees of freedom to estimate error and yet provide additional degrees of freedom to accommodate other independent variables which are to be analysed. This means that some attempt must be made to find a "best" grouping. Since detailed age-sex breakdowns for very small units of the population are available, and can be matched for somewhat larger areas with relevant crime data, some experimentation either through regression analysis or using factor analytical approaches may have to be resorted to in order to determine these groupings.

If separate equations were then calculated for each jurisdiction under comparison, the regression standardization (more properly decomposition) can be applied. The limitations, however, must be recognized. It does not facilitate comparison of small units because this would require longitudinal data with sufficient observations to allow reliable use of the technique. Usually the independent variable or the age-sex data are not available in adequate form. The cross-sectional approach is more likely to succeed at any one point in time.

4.2.5 Mis-specification Problems

In the previous paragraphs we have touched on some of the standard problems involving departures from homoscedasticity, orthogonality and adequacy of the degrees of freedom. Another major problem, however, lies in the mis-specification of the model.

When one uses the regression techniques to estimate the influence of compositional factors only, the model will almost certainly be inadequately specified unless additional factors are entered to complete the model. Moreover, the age-sex distribution

of the community is almost certainly correlated with some of the omitted factors.

This is, of course, the problem of multicollinearity. It has, however, an additional quirk for these under-specified models. If we were to enter only the age-sex factors in the x matrix of a regression model, the coefficients associated with each x(1) would certainly contain not only age-sex components but also a portion of the correlated effect between the factors in the residual term and those explicitly in the equation.

It has been argued that when we assume a large number of variables to have been collected in the residual term, that term will be close to orthogonal with the specific elements in the model. This of course, remains to be rebutted as a presumption in each case, but it must always lead us to suspect that we cannot interpret the coefficients of the age-sex structure with any greater reliability than we can the crude rates themselves. With regression techniques of standardization then, one must develop a properly specified model containing all the significant terms before the actual age-sex component can be properly estimated and removed or be controlled. Alternatively, the adjustment techniques of Klemmack et al. (1973), must be resorted to. This is, of course, much more inconvenient than the familiar direct standardization which does not go further than removal of the compositional influences.

4.2.6 Problems of Offender Mobility

An additional problem which must be attended to in the regression approach involves the interpretation of the results. Using this technique requires the assumption that the offences and the compositional variables refer to the same populations. It denies the empirical fact of offender mobility. The smaller the unit of analysis (spatially), the greater is the probability that this assumption is not supportable. The larger the unit of

analysis, the less likely this problem is to make an impact. Large units, however, will rapidly exhaust degrees of freedom necessary for the other standardization considerations.

The interpretation problem arises in that we do not know if significant results in the regression equation refer to the offender population, the victim population, or both. Of course, additional exploratory analysis will allow us to clear that problem, but we must admit that standard and routine methods of adjusting data for compositional effects on offender rates are simply not available to the traditional analysis of Uniform Crime Report (UCR) data.

4.2.7 Implications - Population at Risk

It would appear that standardization based on compositional differences in the population is not a feasible approach. Another basis of standardization might be the supply of opportunities for victimization. The number of private residences might form the basis for the opportunities of burglary. The number of females between a certain age range might form the population at risk of certain kinds of assaults. Automobiles in an area can comprise the population at risk of theft. Licensed drivers could approximate the population of potential drunken drivers. Giffen (1956) attempted precisely this approach and pointed out a clear compositional effect between the provinces of Ontario and Quebec.

4.3 Conclusions

Given the poor state of development of theory and the general lack of solidly-based data on the influence of sociological variables on the Uniform Crime Report (UCR) data, we cannot validly accept attempts of inference from UCR data to individual criminal behaviour or individual reactions to criminal behaviour.

Because there is no adequate way to routinely adjust the UCR data for differences in demographic composition as a basis for the potential number of offenders, we must find a better system. One such system might be to control or express rates for differential opportunity contexts.

4.4 Notes

1. Residuals displayed the characteristic distributions around the expected zero mean. In these analyses we were able to successfully standardize on the expended man-years of police resources.
2. For a more technical discussion on this point in mathematical terms see Hannan's discussion of the consistency criterion for grouping variables. (1971)
3. For a more detailed discussion see methodological appendix.

5. Search for Primary Bias: A Redirection

The question must now be raised as to whether we can show any evidence of the effects discussed in this paper. We have argued, among other things:

1. that the data contain complex interrelationships;
2. that normal police procedures will bias these data in such a manner as to introduce relationships that cannot be interpreted as true inter-offence relations;
3. that organizational parameters will introduce recording bias, and
4. that present methods may be so strongly affected by these biases as to render their analytical power ineffective.

As a first approach to demonstrating evidence for these points we attempted a factor analysis of the 1971 Uniform Crime Report (UCR) data for British Columbia. The objective was to explore the pattern of inter-offence relationships present in the UCR and to ransack this for clues of police influence and complexity. This was followed by a path analysis of a specific offence type and its relationship with police clearance activity. We then resorted to various multivariate techniques to relate organizational parameters to the variance in the UCR data. Finally, we constructed a computer simulation program to explore the analytical power of the standard techniques when the data are subject to bias because of feedback loops.

5.1 The Uniform Crime Report Factor Structure

We have argued that factor analytical approaches to the data would produce misleading impressions of causes. Nevertheless, a factor structure of considerable strength can be obtained and analysed from the point of view that UCR data are organizational production data.

A subset of 23 Uniform Crime Report (UCR) categories was subjected to factor analysis.² The basis of standardization was the expended man-year of police resources.³ Hence, the data points represent the average offences per man-year in each category.

Separate factor structures were constructed for detachments functioning under municipal contract and under provincial contract (rural-urban approximation). The municipal factor structure extracted eight factors for 23 offences and accounted for 73% of the variance. The rural structure produced nine factors and removed 66% of the variance.

The first and most striking feature of this structure is that nearly all factors contain some reference to offences involving motor vehicles (six out of eight in the municipal structure, six out of nine in the other). To interpret this as a naturally occurring inter-offence relationship appears extravagant. Although this is a possibility, it should not be entertained until we have dismissed the possibility that the relationships are owing much to artifacts of policing.

The entirely plausible (but admittedly post hoc) explanation of this is that the criminal offence becomes known because the police were alerted initially to a driving offence. Alternatively, previously committed offences might cause behaviour in traffic which attracts police attention. While such an hypothesis would require further analysis, its obvious potential adds support to our contention.

In Chapter Two we discussed the utility of examining the cosines of variables in a factor structure. This exercise brings home the point made that the factor structure cannot lead to a simple interpretation. When we make more detailed examination of the variables and their grouping on factors, we see that in some cases loadings on factors occur not because of

Table 5.1.1 Factor Structure for Municipal Policing in B.C.
 Involving Selected 1971 Uniform Crime Report Offences
 Actual

Factor 1	
Theft of motor vehicle	.873
Theft over \$100.	.809
Failure to remain at accident	.789
Gaming and betting	.764
Robbery	.735
Breaking entering and theft	.630
Theft under \$100.	.685
Have stolen goods	.605
Rape	.500
Driving while disqualified	.449
Factor 2	
Fail to take breathalyzer test	.896
Drunken driving	.758
Offensive weapons	-.434
Rape	-.321
Factor 3	
Criminal negligence in operating an m.v.	.836
Attempted murder	.620
Dangerous driving	.334
Factor 4	
Prostitution	.827
Offensive weapons	.666
Breaking entering and theft	-.310
Rape	-.363
Factor 5	
Manslaughter	.904
Dangerous driving	-.302
Attempted murder	.421
Factor 6	
Criminal negligence causing death (traffic)	.847
Dangerous driving	.721
Factor 7	
Criminal negligence causing bodily harm (traffic)	.741
Murder	.730
Have stolen goods	.426
Driving while disqualified	.462
Factor 8	
Wounding	.767
Fraud	.447
Theft under \$100.	.375

Table 5.1.2 Factor Structure for Provincial Policing Involving
1971 Uniform Crime Report Offences Actual in B.C.

Factor 1

Theft over \$100.	.834
Theft under \$100.	.827
Breaking entering and theft	.748
Theft of motor vehicle	.519
Rape	.438
Failure to remain at accident	.451
Fraud	.323

Factor 2

Failure to take breathalyzer test	-.807
Drunken driving	-.736
Fraud	-.626
Have stolen goods	-.444

Factor 3

Criminal negligence causing death (traffic)	.822
Attempted murder	.771
Failure to remain at accident	.555

Factor 4

Offensive weapons	-.685
Wounding	-.648
Robbery	-.637
Theft of motor vehicle	-.389

Factor 5

Prostitution	.850
Gaming and betting	.673

Factor 6

Criminal negligence causing bodily harm (traffic)	.769
Have stolen goods	.525
Rape	-.408

Factor 7

Criminal negligence in operating m.v.	-.802
Driving while disqualified	-.566
Theft of motor vehicle	-.385
Failure to remain at accident	-.321

Factor 8

Murder	-.862
Robbery	-.483
Wounding	.325

Factor 9

Dangerous driving	.665
Fraud	-.305
Manslaughter	-.574

any relationship to some underlying variable but because of a strong relationship to only one other variable in the same factor. In these conditions the cosine analysis would tend to point more clearly to the appropriateness of a path model rather than some underlying dimension or factor. The implication of this is that one should avoid postulating theoretical dimensions or constructs like "atavism" or "acquisitiveness" or "recklessness" as behavioural explanations underlying offences with substantial common factor loadings.

In many of the rural relationships the cosines are predominantly characterized by values near .707, the point of greatest *mélange*. This tends to indicate that there are multiple different relationships between various sets of data so that we have strong indications of highly complex relationships.

The different levels of complexity in the data as between the municipal and rural structures must be resolved at some time because the majority of findings marshalled in support of criminological or sociological hypotheses are based on municipal data. If police procedures in these jurisdictions simplified the actual relationships, a considerable bias has entered the literature.

5.2 Cross-Offence Effect (rural policing)

We have suggested that the clearance of cases in one offence category can affect the variance in the number of actual offences reported in that month by means of confessions to previously undetected offences. It becomes necessary to determine if such a bias can be detected at the year-total level of aggregation.

To deal with this question we selected the offences in what might be called the "theft group"; namely, breaking, entering and theft, theft of motor vehicle, theft under, theft over, and possession of stolen goods. These are by far the most numerous offences in any jurisdiction. They also appear together in the same

factor structures. The regression approach was to construct a set of five regression equations with one of the offences (actual) regressed upon the offences reported in the same offence category and the offences cleared in the remaining four other offence categories. In this manner we control for the stable influence between the reported offences and the actual offences and test whether the additional consideration of the clearances in the other offences make any difference to the dependent variable.

All equations failed to show statistically or substantively significant influences from cleared offences.⁴

Available data configurations did not allow us to pursue this point further. There is evidence, however, that even at the year-total level a cross-offence link can be established by means of taking into account police procedures and the resulting operational data. A path model was constructed including the following variables:

1. Number of actual break, enter and thefts;
2. Distance in 30-mile intervals between detachments and field ident. sections;
5. Number of ident. branch attendances at breaking, entering and theft offences;
6. Number of positive identifications made in breaking, entering and theft cases;
7. Number of negative findings in breaking, entering and theft cases (no evidence found).
8. Hours expended at the calling detachment on criminal code property offences;
9. Number of unfounded break, enter and thefts;
10. Total break, enter and thefts cleared;
12. Number of reported break, enter and thefts;
16. 17. & 18. Dummy variables for high, medium and low per man caseloads;
36. Number of positive idents. in theft over \$100.

The identification sections are specialist units which are deployed to serve a group of detachments in their forensic science needs. In this analysis disaggregated 1971 data for each detachment served were obtained and were used to carry out the calculations. Standard least squares analyses were carried out with the aid of a computer program.

The resulting path model is depicted in figure 5.4.

A large number of relationships emerge in this model. Most of these are of interest only to the police agency. The most significant impact within the context of this paper, however, is that the additional information of police practices has allowed us to demonstrate that cross-offence influences do exist even at the aggregated levels and are functionally related to the police practices rather than the offence patterning. In this case there is a significant influence from positive ident. in thefts over \$100. to positive ident. in breaking, entering and thefts. Through this device there would be at least an indirect effect on clearances of these offences which in turn will affect the recording of previously unreported offences. Unfortunately, the next link in the analysis is currently not possible.

Nevertheless, the path model can take us some distance in that direction. In line with standard instruction, the field ident. units which make positive identifications of a suspect as being the person who perpetrated a given offence, will count one positive ident. per case so solved. In other words, there should never be any more positive ident. in the break and enter and theft cases than were reported when the clearance depended exclusively on field ident. effort. The concrete path from six to ten is equal to 4.1, hence, substantially more cases tend to be cleared up than just those cases for which the unit made an identification.

This surplus of cases may consist of cases for which the police had a report but for which no ident.-oriented evidence was developed. It is likely to include also some

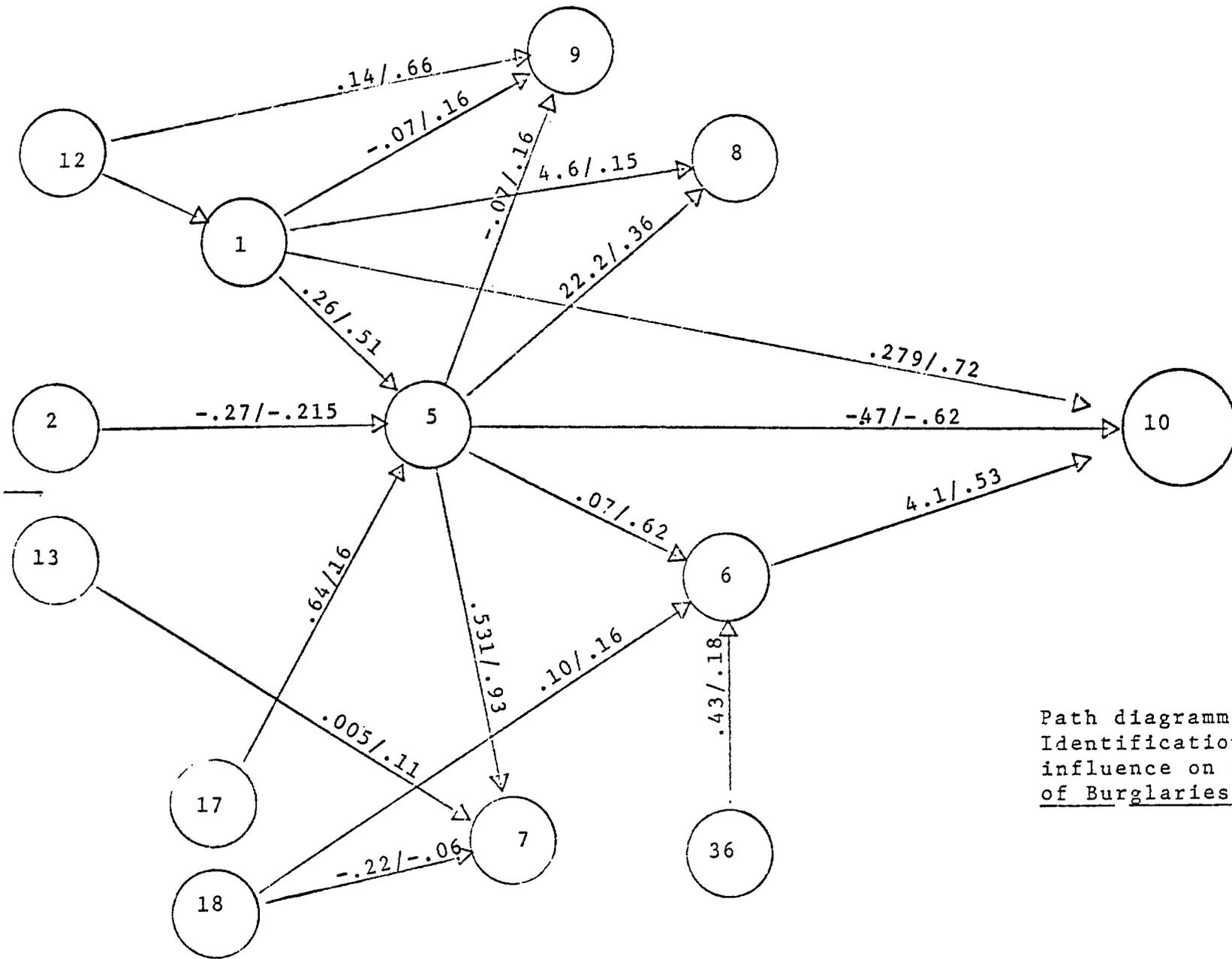
previously unknown offences (unreported) which are now brought to light by the investigator. These offences would then enter the record of offences in conjunction with other data but out of time context. The path model therefore, does seem to supply indirect support for the idea.

5.3 Differential Sensitivity to Crime Data Recording

Most police forces have clear-cut rules governing the rank structure of police posts. Usually this is firmly tied to the total manpower complement of the detachment. Within one police force there are several firm points of reference which are well known by the personnel. An eight-man detachment is a sergeant's detachment. An 11-man detachment adds one corporal. It would seem reasonable that a detachment with a complement of seven men or ten men should be particularly sensitive to the implications of crime data which might justify an additional man and hence, an upgrading of the rank structure.

Exact measurement of manpower was not conveniently possible, but we have used the substitute of expended policemen-years. From this we constructed a matrix of dummy variables for the manpower level from one to ten men. These dummy variables were then regressed with actual offences in the five theft group offences and against the unfounded offences in the same grouping.

It was assumed that, strictly speaking, two conditions had to be true to support the "establishment bias". There had to be a significant positive coefficient for a category of manpower just before a rank change. Moreover, the unfoundings should not have the same pattern. Table 5.3 reports the results. (Equations read by row)



Path diagramme for
 Identification Section
 influence on Clearance
 of Burglaries in B.C.,

Table 5.3 Relationships between Establishment Levels and Uniform Crime Report Data in terms of Selected Variables

Y Variable		X Variable					
Reported Offences	Y Intercept	7 men	8 men	9 men	10 men	Reported Offence	
Brk. enter & theft	8.2	4.24**	-3.0	-3.4	2.5*		
Theft M.V.	1.98	1.42**	.1	.2	1.28**		
Theft over	7.08	1.98	4.3*	-1.42	2.50**		
Theft under	10.90	2.05	-1.1	-1.15	3.04*		
Have stolen Goods	.07	-.30	-0.05	0.18	0.1		
<hr/>							
Unfounded Offences							
<hr/>							
Brk. enter & theft	0.06	0.03	-0.41	0.62	0.37	0.11***	
Theft M.V.	0.08	0.22	-0.12	0.24	0.01	0.30***	
Theft over	0.68	0.03	-0.31	0.42	-0.46**	0.05***	
Theft under	0.42	-0.19	-0.27	0.66	0.72***	0.06***	
Have stolen Goods	-0.02	0.003	-0.01	0.10	-0.02	0.16***	

Source: 1971 Uniform Crime Report (UCR) data for B.C. and R.C.M.P
Man-hour data

5.4 Local Policy Influence

To determine if evidence of localized policy influence could be found in the data, it was assumed that such an influence could be indicated if a group of offences, reasonably orthogonal in their variance, were investigated. These offences might be used to classify detachments into groupings with similar profiles.

Use was made of hierarchical grouping analysis to determine the optimal level of groupings, and which detachment belonged to what group. The plot of error potentials generated by the method showed a clear acceleration at about 20 groups constructed from 116 observations (Veldman, 1967).

The resulting data about grouped detachments with essentially similar crime profiles were used to construct a contingency table in which the grouping was tabulated against the subdivisional breakdown. Since the major first seat of policy power and control is at the subdivisional headquarters, it was expected that it might be possible to demonstrate a policy influence on the Uniform Crime Report (UCR) data. That is, we would expect a greater profile similarity within a policy area than across them. A Chi. square analysis of the contingency table failed to reach significant levels.

It might be pointed out in passing that this in itself is interesting because the subdivisions are also roughly regional in their distribution. The absence of regional policy might therefore argue for the investigation of a higher level policy influence which tends to override the regional differences. This needs much more work.

5.5 The Influence of High Caseloads per Man

The third variable in the UCR data, "actual crimes", is often used in research projects as the measure of crime

rather than the reported crimes. The question of whether this figure is to any extent influenced by high caseloads must be raised. Is there a detectable tendency for cases to be classed as "unfounded" simply to reduce the caseload to manageable proportions?

If such an influence existed, we would find that its result on Uniform Crime Report (UCR) data is to systematically understate the actual crimes in areas which have high caseloads. Ways of detecting this influence, and possibly correcting for it, are of prime interest to the analyst.

As a first approach to the data, we regressed "unfounding" per man-year on the cases per man-year for each of the five theft group offences. All equations were highly significant, but the residuals were non-linearly distributed.

This result is significant in the sense that it indicates a non-linear relationship between caseloads and "unfoundings". The suitable curve appears to be a logarithmic curve in that the accelerations of "unfoundings" only begins to take a significant hold at quite high caseloads. The absence of a linear relationship argues for our position.

We next expanded the equation to consider the effect of "unfoundings" per man-year as a function of the simultaneous caseloads of all five theft offences. The regression coefficients were normalized and are tabulated in table 5.5.1 and 5.5.2. Each column represents one equation. In these tables, one would expect highly significant positive relationships on the diagonal and none off the diagonal. The matrix of beta weights clearly indicates a more complex relationship and the residuals of the equation are still non-linearly displaced.

The implications are clear that different caseloads do not stand in the required simple relationship to "unfoundings". We cannot, therefore, reject the hypothesis of caseload bias in either context.

Table 5.5.1 Tabulation of Normalized Regression Coefficients
Illustrating the "Unfounding Effect" for Provincial
Contract

Offence Rep.	Unfounded				
	1	2	3	4	5
Break and enter	.47***	.0	.03	-.08	.03
Motor vehicle theft	.20**	.76***	.11	.19	-.12
Theft over	-.23*	-.01	.02	-.39***	.0
Theft under	.19	.09	.14	.66***	.0
Have stolen goods	.05	.04	.26***	.27***	.60***

Note: *** means significant beyond .001
** means significant beyond .01

Table 5.2 Tabulation of the Normalized Regression Coefficients
for the "Unfounding Effect" in Municipal Contexts

Offence Rep.	Unfounded				
	1	2	3	4	5
Break enter and theft	.56	-.13	-.10	-.02	.13
Motor Vehicle theft	-.31	.63**	-.25	-.48**	-.33**
Theft over	.07	.02	.28	.03	.02
Theft under	.02	.01	.00	.44**	-.17
Have stolen goods	.37*	.22	.34	.42**	.77**

A second point of interest here, it should be noted, is that the offence of "possession of stolen goods" seems to enjoy a considerable influence on the "unfounding" of other offences. It must be realized that this offence is a residual offence that will often be charged when the higher offence of committing theft or burglary cannot be proved in court. The data may therefore be telling us that there is evidence of improper recording of the data.

What may be involved here is the following: A break, enter and theft offence is reported and recorded but not solved in the reporting period or for some time after. At some later time the property involved in this theft is found in the possession of some person under circumstances which lead to the charge of "possession of stolen goods". This offence is then charged and recorded but nothing is changed in the original entry of break, enter and theft. That entry may then be changed only in so far as its disposition, and it may be "unfounded" or just left uncleared. There are now two offences in the data. They are indeed both different offences and legitimately entered, but since it is not likely that a major offence will continue to be shown as uncleared when the property has been recovered, the easiest manner of completing the book-keeping is to "unfound" that one and let the other stand.

This is purely speculative for British Columbia. It has been possible in other police jurisdictions to observe this process of accounting for one's cases. In a high percentage of such cases it was clear that some such bias was, in effect, being introduced by perfectly normal accounting procedures from which the eventual monthly Uniform Crime Report (UCR) data are made up. In other words, perfectly routine administrative procedures in a police force will lead to a seriously biased UCR data set.

A third method of illustrating the bias is by means of the canonical correlation analysis. In this case we have something similar to a regression analysis with more than one

dependent variable. The results of the analysis on the theft group are shown in Table 5.5.3. It will be obvious that only four equations are required to describe the canonical relationship. That the data actually consist of five right-hand variables and five left-hand variables would have led to the expectation of five equations if there were no complications of interrelationship.

Table 5.5.3 Results of Canonical Correlation Analysis for Crimes Reported and Crimes "Unfounded"

Can. correlation	.82	.64	.48	.45	.08
Chi. square	248	120	58	27	.81
degrees of freedom	25	16	9	4	1
Left hand side					
Break enter and theft	.115	.022	-.648	-.723	-.245
m.v. theft	.945	-.372	.112	.237	-.641
theft over	-.027	-.349	.564	-.413	1.05
theft under	.092	.574	-.546	.841	.129
have stolen goods	.014	.946	.420	-.080	-.088
Right hand side					
Break enter and theft	.187	.055	-.754	-.537	-.102
m.v. theft	.978	-.362	.379	.088	-.203
theft over	.013	.102	.118	-.224	.108
theft under	-.084	.562	-.261	.765	-.113
have stolen goods	-.041	.734	.446	-.261	-.332

number of observations: 122

Source: Uniform Crime Report data

5.7 Simulating the Uniform Crime Report System

It is of course, quite easy to identify potential problems in the Uniform Crime Report (UCR). It is quite another matter to say something meaningful about the level of bias which

tends to be introduced into the data if the postulated influences are actually functioning as they are assumed to be functioning.

The problem is something of a dilemma. If we accept that such biases, functioning simultaneously, would make their individual effects non-recoverable and their joint effects a priori unpredicatable, we cannot use analytical exploration efforts to serve the purpose of detecting the underlying model. On the other hand, we cannot estimate the effects and magnitude of bias without a knowledge of what the data should have looked like without this bias.

While we do not have adequate control of experimental variables in the real world, we can manipulate a simulated world. In such a world we can selectively create the effects of our assumptions and estimate their impact on the parameters of our equations.

This approach has recently been introduced in the analysis of parameter bias in regression studies which are subject to failure of assumptions (Heise, 1970; Pelz & Law, 1970; Blalock, Wells & Carter, 1970).

The utility of simulation techniques in that context is therefore more methodological than substantive. Simulation models can be built to explicitly incorporate the sources of bias on which we have speculated here. If such a model is built and allowed to operate and to produce a suitable sample of data for analysis with our standard techniques, we can at least make valid statements about the ability of these techniques to either resist the bias or to detect it and provide an unbiased estimate.

The substantive benefit of simulation modelling in this context comes from its ability to dynamically interrelate the various tendency laws which fit together to constitute the

developing factor theory. The recent introduction of path analysis has popularized the representation of a theory by means of a set of recursive equations. A simulation model can serve in the same way but has the advantage that it can incorporate relationships of time as well as complex mathematical interrelationships which become intractable in analytical equations. Moreover, any relationship on which numbers can be validly mapped can, in principle, be simulated.

5.8 Implications and Conclusions

Throughout this paper we have stressed that Uniform Crime Report (UCR) data are the outcomes of complex forms of interaction and decision making by both a public and a police agency. We have rejected the suggestion that a shift of attention to the primary control agencies or a reconceptualization of what the UCR data "really" mean could by itself constitute a basis for methodological rehabilitation of the series. Nevertheless, the ideas of Schur and Black, as well as such other as Kitsuse and Cicourel, contain the basis from which we can start reconstruction.

We agree that it is indeed with the police agency that the effort must begin. We disagree that we can achieve the goal by simply altering the operational definition.

The approach most likely to prove useful is very close to that of Black's, which states that the data should be treated as a dependent variable. At least initially, the UCR should be an end of study rather than a means of study. This approach would begin by treating the UCR as police production statistics, asking questions about how variations in the parameters of police work will affect the data. That is, we treat the police as any other organization and we ask how its size, division of labour, policy directives, training and administrative procedures will affect the data it collects about its work.

Black correctly noted that from such a point of view the data cease to be talked about as error prone. Users assume an "existential integrity" in that the data will accurately reflect their compounded influence. The problem then becomes one of partitioning the variance accurately rather than of determining the question of bias, which can only arise when we begin to use the UCR as a "means" of study of something else. Our sole quarrel with Black is that he did not quite live

up to his own insight. He was still willing to assume that the organizational parameters would introduce random error. He still wanted to study something other than the Uniform Crime Report (UCR) data themselves.

5.10 Notes

1. The calculations were carried out with a computer program adapted from the IBM SSP manual. This program performs a principal components analysis and uses a varimax rotation. To simple structure an oblique solution might have been more suitable in the light of our discussion in this paper. However, no convenient program was available within the time frame required.

The program is set up to extract all Eigen values equal to, or greater than one. In reporting the data we have used an arbitrary cut off point of loadings at .30. The rationale here is that the squared loading explains less than 10% of the variance for that variable and this will be of little substantive interest.

2. To interpret the results of the factor structures we are resorting from time to time to a device suggested by Stinchcombe (1971), to examine the relationship between two variables on a factor through an estimate of the cosine of the angle between them.

If the angle is zero (cosine theta = 1) then there are no other variables in the factor structure that have any different relationships to these variables. If the angle is 90 (cosine theta = 0.), then there is no relationship and they measure completely different things in respect of the structure. At an angle of 45 (cosine theta = .707) these variables are most confusing with respect to each other and hence significant portions of their variance are influenced or influence variance in or by other variables in the structure.

The following equation can serve to carry out the estimate of the cosine;

$$\text{Cos. Theta (I,J)} = \frac{R(I,J)}{H(I) * H(J)}$$

3. An expanded man-year in this paper is used as a substitute for the manpower at a detachment. It consists of all reported man-hours including leave, sickness and overtime, compensatory time, all divided by 2920, the total number of hours worked in a year at 8 hours per day. The result is not an unbiased estimator but it is the best that can be done. The basis for using this standardization is to remove the heteroscedasticity which results from the considerations of units of unequal size. (see Kmenta, 1971)
4. Actually fifteen equations were explored in all. The first five used clearance by charge; the second five clearance "otherwise" and finally total clearance. All equations indicated relatively high levels of multicollinearity. The use of the "T" statistic to indicate statistical significance is therefore not reliable. As it turns out, however, we can interpret the standardized regression coefficients. The square of these coefficients gives the proportional direct effect on the dependent variable. No single value exceeded .005. Hence, the substantive direct effect through the cross-offence effect is negligible, even if sometimes statistically significant.

6 The Limits of Rational Use

In this discussion of the Uniform Crime Report (UCR) series we have attempted to follow an approach of ever-narrowing focus. We started with a consideration of problems at the level of theory formulation. We then moved to a consideration of the problems which occur in the links between the higher levels of theoretical abstraction and the observational or operational language. From this point we moved into a consideration of the flow of data into the UCR system. We directed attention to the question of systematic departures from, or biases in the counts. Finally, some special problems were examined to illustrate the effects of some information which is lost in the collection process or which it is impossible to extract.

6.1.1 Summary of the Argument

In Chapter one we noted that the labelling theorists held out a potential for rehabilitating the UCR data. This was to be accomplished by means of a reconceptualization of what these data actually measured instead of what they have been taken to measure. This position was examined in the light of discussions carried on in the philosophy of science on the feasible models or styles of theory in the social sciences.

It was concluded that the UCR data would only acquire scientific meaning and predictive validity when they become well defined parts of a set of interrelated tendency statements.

Path analysis appears to have made a significant impact on the possibility of constructing formally acceptable models or factor theories in that this technique permits the simultaneous consideration of several such tendency statements in a set of structural equations. It was recognized, however, that the technique has certain limitations dictated by its analytical assumptions.

In the case of the Uniform Crime Report (UCR) data there is a good prima facie case for believing that the prerequisites of the path analysis are violated extensively. We therefore argued that path techniques cannot be uncritically adopted in this case. We need to examine the extent of damage done by the failure of the assumptions and either develop new techniques which are resistant to the problem or develop additional collateral data to allow the reduction of the problem by expanding the model to include the previously unanalysed factors in the theory.

Chapter Two examines the language of the UCR system and argues that while the UCR data are based on statutory definitions of behaviour they are not on that account useless for theory construction in the social sciences. The real problem is rather to be found in two other areas, both of which are correctable. First of all, the UCR language (up to Jan. 1974) has been poorly mapped on the statutory definitions of criminal behaviour. Secondly, the uncritical use of UCR categories has led to very questionable epistemic correlations between the conceptual structures and the observational levels. The argument can be summarized by the observation that we have created an operationally defined measure for which we have no theoretical level definition.

Chapter three examines the social system that leads to the production of the UCR data. It is argued that there are logical and empirical grounds for believing that police procedures lead to the creation of spurious patterns of offence relationships; that the same structural effects influence both the police and the reporting public as well as the offenders in ways that make their combined influence on the UCR data a priori unpredictable; that contextual differences in the social political and demographic make up of the community and the links with policing styles will produce regional differences in correlation between traditional sociological variables and the UCR data. We concluded, therefore, that even the operational

definition has low validity in that it does not actually measure very well the phenomenon it purports to measure.

Chapter four addresses itself to some residual problems of the Uniform Crime Report (UCR) analysis and use. It examines aspects of the problem of aggregation bias and the compositional effects. The aggregation bias is traditionally seen in terms of problems in making micro level inferences from macro level data. It is indicated, however, that the problem is much more general. Moreover, the complexity of the multivariate relationships and the paucity of sound results impose a severe restriction on how current data can and should be used. The compositional problem presents equally problematic outlooks leading to the conclusion that the series as it stands is next to useless in that it cannot be corrected for a significant source of variation, and no alternative bases of standardization are currently available.

6.1.2 Summary Comments on the Uniform Crime Report Series

To sum up, the UCR series is a basic accounting approach to data collection. It has not been designed with an eye to the interrelationships between its subject matter and that of other series. The focus is entirely on the offender and records nothing about the victim or the circumstances of the offence incidence. Its categories are not designed to allow us to locate the offence in a social structure of any kind. Age structure of identified offenders is not provided except for the division of the persons in adult or juvenile groupings. No arrest data are provided while the more general category of "numbers of persons charged" does not give any indication of the severity of the control activity. Invocation of arrest powers as against summoning is of significance especially in the "labelling" context and would undoubtedly provide additional valuable information about the nature of the social control process.

Aggregation is not based on any explicit rationale and auditing is minimal and will tend to suppress large fluctuations. Only the number and name of the contributor is audited but there is no convenient way of becoming aware of differences in the data series owing to redrawing of boundaries or variations in resources applied during the month in question. Similarly, the splitting of one area into two new ones will result in three changes which will not permit the interrelation of the data. Hence, continuity of the data over time is extremely dubious and departures very difficult to assess without extensive knowledge of what has happened.

To circumvent these problems, higher levels of aggregation must be resorted to but with this strategy comes the result of loss of degrees of freedom.

Basically this data series consists of the very minimum of usable information and is largely incapable of supporting known forms of multivariate analysis. It is not likely to improve beyond its methodological limits in the near future and certainly not until such time as the series is subjected to a more sophisticated demand from the research community and the police agencies themselves.

6.1.3 Limits of Minimum Use of the Uniform Crime Report Data

In a restricted sense the data in the Uniform Crime Report (UCR) series constitute a universe of formally recorded work load. These were the events that the police took formal notice of and classified. Moreover, these are the events in which man-hours were expended in some way. In a sense then, these are police work units of various kinds. For these work units we have an indication of the measure of success they produced in terms of identifying the offender.

Barring recording and classification errors, we have a partial indicator of police efficiency if this is interpreted only as economy of effort for a given result in identified criminals. It does not refer to efficiency in crime detection or control.

Previous work in this area, performed in the line of duty, has indicated that this approach can give interesting perspectives on the recording accuracy of the Uniform Crime Report (UCR) data. This point of departure then has definite auditing potentials for the UCR series.

Moreover, to the extent that we look at recorded crime as the input data into the Criminal Justice System, we can calculate cost and capital consequences in so far as these have stationary relationships beyond the police input stage. This stationary relationship, however, is an undemonstrated fact. Hence, we may well find that UCR data have only the most marginal utility in a continuing Canadian Criminal Justice simulation model. The major reason for this position is that if the police should shift the cutting points of what they will bring before the courts there may very well be a change in the behaviour of the courts and hence the predicted probabilities incorporated in the model will be wrong unless adjusted at each run of the model.

6.2 General Conclusions

Sociologists and policy scientists have misused the UCR data. The major problem appears to be in that they have not explicitly developed factor theories or models in which the UCR occupied a well defined place as an operational measure or indicator of a higher level theoretical concept. This failure has allowed only the most gradual spread of the conviction that something was radically wrong with the use that was being made of the UCR data.

Secondly, the orphan existence of the Uniform Crime Report (UCR) data has had an inimical effect on the data series itself. We have subscribed to the notion that the theoretical and operational definition of concepts ought properly to be developed together at the level of the research project, at the very least it should be defined at the level of the research school. We maintain that the resulting interaction between the definitions at the theoretical and operational levels are a necessary condition for healthy development both in theory and method.

The UCR series has not been developed in this manner. It has stood apart from the development of theorizing in criminology and sociology. It has, therefore, been able to remain completely insulated from most of the change in theory level requirements. This situation is the exact inverse of the theory with no empirical content or import.

The third and last general conclusion is the most wide-ranging one. We have raised the practical problem of correlation between residuals and the independent terms of an equation. We suggested that one solution was the expansion of the model to bring the correlation explicitly into the analysis. We also raised the idea that exploration and prediction could only be sharpened in a well elaborated factor model. We, moreover, raised the idea that aggregation bias in the complex set of multivariate relationships could be seriously problematic as a general bias.

These ideas all tend to point in the direction already suggested in that a segmented interest in one element of influence on crime cannot be sustained without an explicit consideration (even if only in a covariance role) of the other factors. It is suggested that this moves us naturally to the recommendation that we combine specific fields of interest,

It is contended, on the basis of the argument, that it may be impossible to theorize about crime and crime control without a theory at the level of social control in which such a fragment of the relationships could be entertained as special cases. In other words, in our attempt to develop a theory of crime commission we may have dismembered the system of human relationships too far to allow us to develop an explanatory or predictive model.

6.3 Improving the Rational Use of the Uniform Crime Report Data

In Chapter five we attempted to demonstrate some of the points raised in the earlier work; more important, we began the attempt to set out a methodological orientation from which a fresh start can be made for the improvement and rational use of the Uniform Crime Report (UCR) data. The point of departure is close to the position suggested by Black and simply urges that the series should be approached as an end of study before we start using it as a means of study. It was concluded that the effort should properly start with a thorough examination of the successive layers of bias in the data beginning with the impact of the organizational, administrative and operational practices of policing. Once these most proximate influences are more properly understood, we can gradually proceed through the series to more distant or theoretically interesting levels.

6.3.1 The Idea of Rational Use

Biderman (1966:101) suggests that it is difficult indeed to determine what constitutes rational employment of social and economic statistics. His difficulty lies in obtaining a complete list of uses and evidence how those uses were linked to the decision processes. In this final chapter we will attempt to look at this question slightly differently.

Assessment of the degree of rationality in any use of Uniform Crime Report (UCR) data is dependent upon particular pieces of information.

1. The objectives to be achieved;
2. The availability of alternative means of achieving these objectives; and,
3. The amount of evidence considered.

6.3.2 The Need for a Clear Purpose

It will be obvious that the substantive contents of the objectives in a judgement of rational use is a matter of arbitrary choice by the subject. What is material is the number of objectives to be achieved and their relationships with each other. If the purposes are conflicting or contradictory, rational use may eventually become impossible. Such a condition now exists for the scientific use of the UCR data in respect of crime and crime control. This is so, simply because the objectives of such research have not been explicitly considered in the design of the system.

We have suggested that:

1. These data will not currently support multivariate analytical techniques;
2. That they are not connected with other social data; and,
3. That 1 and 2 make it impossible to begin the development of the models that could move us to the elaboration of the necessary factor theory.

The series is therefore of no importance to theories of crime and deviance. Any objectives that are achievable with these data are objectives of apology or persuasion based on other than empirical validity. But:

What knowledge requires of experience, and what experience provides, is independence of our mere think-so....The word "object" it has been said, can be understood as referring to that which objects. That is objective which insists on its own right regardless of our wishes....(Kaplan, 1964)

To continue in the idiom of Kaplan, the Uniform Crime Report (UCR) data when applied to the study of crime and deviance or even the effectiveness of crime control effort, will leave us in a fool's paradise, which is good only as long as it lasts. "When our wishes urge us on from subjective fantasies to the objective world" we need empirically grounded knowledge.

If our objectives are restricted to saying something reliable about crime, delinquency and their social control, we have not yet created the data series for it.

If we do wish to make scientific use of these data for purposes of crime and crime control research we will have to extend the objectives for this series to explicitly include the interests of the academic researcher. Such extension of the objectives could then lead to more adequate representation of those interests in the developmental review of the UCR data and a more convenient distribution of the data in machine-readable form to private researchers.

6.3.3 Extending the Range of Evidence Considered

Evidence contributing to the rational use of UCR data would stem not from the increased detail of data collection but from an increased use of these data in appropriate models;

simply put, it stems from replication of studies designed to increase the scope of our insights into the data series.

The more often we can support or clarify the occurrence of certain patterns of effect, the greater is our range of evidence that a particular use is valid and that it will bring useful results. Only in this manner can we make more rational use of the Uniform Crime Report (UCR) data.

This does not usually get done simply because there is a need. Consequently it is suggested that the process should be primed:

It is recommended that the agencies of the Criminal Justice System, but particularly the police and the office of the Solicitor General, should separately or in concert urge and financially support the conduct of research into the development of a theoretical model of social control in which crime commission and crime control can take a well formulated role.

This should be a prime consideration for the developing work in the Canadian Criminal Justice System currently being planned by the Research and Systems Development Branch of the Ministry of the Solicitor General.

It is realized that the advisability of sponsoring research in social control rather than the control of crime is politically precarious. Yet, if the argument developed here has any validity it would appear that the one cannot be adequately accomplished without doing the other.

6.3.4 Extending the Alternatives

The simple extension of the UCR objectives to include the interests of scientific researchers will not automatically

achieve noticeable improvements. The import of my argument has been that we do not really know very much about the meaning of variance in the Uniform Crime Report (UCR) data and we have no suitable models from which we can deduce testable hypotheses about it. As Biderman puts it:

How can one assess the adequacy of our measures of state when we do not have prior knowledge to guide us in determining what should be measured (p71).

In essence then, the scientific researcher will initially be no better off for having been considered in the UCR objectives. The first step in serious pursuit of the objective is to create some of the conditions which will facilitate a more sophisticated analysis of the UCR data. Specifically:

Statistics Canada should take steps to link the UCR data with other socio-economic reporting series at the lowest possible level of aggregation.

This can be achieved in part by maintaining and updating digitized maps of police reporting areas. These can then be linked through the geo-coding system to standard reporting areas for other data.¹

The creation of extensive collateral data links will go a long way to providing the basis for scientific research only after this has been achieved, can we engage in the research that will lead us to a better UCR series and thence to a better quality of models for the interpretation and examination of this social indicator (Sheldon & Freeman, 1970).

6.4 Concluding Remarks

It will be noted that I have not advocated a planned and organised approach to the establishment of the appropriate factor theories on crime and crime control. There has been no suggestion that the Uniform Crime Report (UCR) is or must ultimately become the social indicator on this social problem.

I feel that any such attempt would be foredoomed, if for no other reason than that it would be almost impossible to foresee how the police and the policy framers would react to such an "improved" social indicator. Planning the social indicator is not likely to be helpful to the objectives of a better understanding and insight into the problem.

What is more likely to be useful is to plan for the possibility of an improved social indicator series. I mean here the establishment of sound links between various data series. Such effort would, I think, provide the data base potential. It would facilitate the conduct of research from more than one value perspective and hence, provide not only the rational basis for policy framing and testing, but also for policy critique from non-governmental sources.

It would be fundamentally improper to assume that the construction and publication of crime data does not have political and social dimension. A failure to take this into account in the review of our UCR data will condemn us to relive our history with a new series. For those reasons I am not so much urging a wholesale review or a fundamental redrafting of the system as I am advocating:

1. A fine tuning of the existing UCR series by examining its language;
2. A greater degree of disaggregation in both time and space;

3. An extended potential for inter-connecting with other series through the use of record-linking techniques now in existence both at Statistics Canada and the R.C.M.P

If, under those conditions, social scientists and policy scientists do not do the rest of the work then let there be a plague on both their houses.

6.5 Notes

1. It has been one of the perennial problems of Uniform Crime Report (UCR) series use that the reporting areas for that series were not the same as any of the other available socio-economic series. It has been extremely difficult, therefore, to obtain reasonably reliable collateral data for many large areas of policing effort. Much of the research has paid attention only to municipal policing because only there can we find reasonably reliable census data for recognized political boundaries. These difficulties are not solved yet but automated processing has helped noticeably to cut down the required work of getting the data together.

The recent implementation of the geo-coding capability (Statistics Canada, 1972) and the related production of the user summary tapes for census short and long-form data have provided a significant step forward to the possibility of good census data links. The remaining problem is to gain access to reasonably accurate maps of police jurisdictions at a sufficiently large scale to allow either the digitizing of the map by Statistics Canada or the less expensive use of the geographic tapefiles produced by Statistics Canada (1972).

The solution put forth in this paper consists of the latter method of fitting the census enumeration areas (EAs) inside the known detachment boundaries. Although a perfect fit is not obtained, a reasonable approximation is achieved which is much more accurate than any other procedure considered. For this paper the R.C.M.P. detachment boundaries were obtained on a map of the province of B.C. With the help of a gazetteer, it was possible to resolve the exact boundaries when they were in doubt. A computer program was used to create a keytape which contained both the census geographic codes and the R.C.M.P. unit financial code number. Subsequent programs linked these data to the user summary tapes available from Statistics Canada.

Additionally, the codes contained on the census geographic key tape allowed separate tabulations for each detachment area in terms of the proportion of the population which lived in specified types of community.

SECTION 1
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