

Transdisciplinarity, Environmental Criminology and the Toronto Subway Security Audit

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Previous crime prevention theories have not had a great deal of success when put into practice. Part of the reason may be due to the process of implementation itself and the way in which different disciplines are combined to examine crime problems. This case study explores a broad-based project that examined the problem of sexual assault through a security audit of the Toronto subway. The findings suggest that this group method of researching and planning crime prevention strategies represents a new transdisciplinarity, in effect a new arena into which situational prevention and environmental criminology can delve.

Keywords: Transportation security; environmental criminology; crime prevention; implementation

Introduction

Studies of crime prevention on public transit systems have typically focused on statistical vulnerability and reported crime patterns (Kabundi and Normandeau, 1987; Hann and Billingsley, 1981; Felson et al., 1990; Shellow et al., 1974). These studies have often embraced the situational approach to crime prevention or, alternatively, the field known as environmental criminology (Clarke and Mayhew, 1980; Brantingham and Brantingham, 1984, 1991). While these studies have provided analytical descriptions and recommendations to deal with specific crime problems, in only a very few cases have they examined the implementation process itself during these crime prevention efforts (Hope, 1985; Hope and Murphy, 1983).

This paper presents a case study of such a crime prevention effort on the Toronto Transit subway system in 1988. It was an experiment using group dynamics in a subway security audit. This approach involved the collaboration of three quite different organizations at two different levels

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in the research design, data collection, policy formulation, and policy implementation stages.

This paper suggests that this collaborative group process represents a new "transdisciplinarity" in the building of theory and implementation of practical intervention strategies. It represents a new arena into which situational prevention and environmental criminology can delve.

Conceptual Overview

Crime prevention that uses an "environmental" approach can most recently be traced back to the work of Jane Jacobs through her critique of city planning in *The Death and Life of Great American Cities* (1961). To Jacobs, it was the design and planning of the modern city that contributed to many of our crime problems. Although this determinism has been discounted by many criminologists and urban planners, a variety of crime prevention programs evolved from this early work, including crime prevention through environmental design (CPTED) by Jeffery (1971) and the notion of "defensible space" by Newman (1972).

Many of these programs evolved into large, government-sponsored, crime prevention experiments in city planning. Projects conducted in Hartford, Connecticut, Greenborough, North Carolina (Jeffery, 1990), and a Canadian project in the town of Tumbler Ridge, British Columbia (Bugden, 1983; Wachtel, 1982; Moffat, 1983) represent attempts to apply the theories of defensible space and CPTED into crime prevention practice. As with so many other criminological theories, these crime prevention programs did not always translate well into practice (Mayhew, 1979; Moran and Dolphin, 1986; Booth, 1981).

Two possible reasons may be cited why implementation of these theories had limited success. The first is offered by Brantingham and Brantingham (1984): Previous theories were too broad and may have suffered from making generalizations that did not apply well to specific problem situations. The Brantinghams' posit that a hybrid of disciplines, for example, the research fundamentals of architecture and urban planning combined with the analytical approach of environmental psychology, can refocus crime prevention onto a more "microspatial" scale:

The problems and questions in microspatial criminology or environmental criminology, as it is called, are similar to many current concerns in environmental psychology as well as behavioral geography. . . .

Environmental criminology draws on research and theory in both fields, as well as architecture and planning, in trying to unravel the microspatial behavior of criminals (Brantingham and Brantingham, 1984, p. 337).

Combining one field with another in a research setting has been done in the past, i.e., the multidisciplinary approach (Saville, 1988).

The second possible reason that previous crime prevention programs have had limited implementation success may be related to the process of implementation itself. As Kelling (1990) has reported on the antigraffiti subway "Car Appearance and Security Task Force," it is often the process of implementation that can lead to successful crime prevention programs. Researchers are rarely part of the decision-making and implementation process in their recommendations, as part of a broader effort in crime prevention. This suggests that a more collaborative style of research/implementation may have greater effect on the success of crime prevention initiatives.

The multidisciplinary approach to theory-building along with a collaborative process of implementation point to a different way of conducting the business of crime prevention. This is termed here as a "transdisciplinary" approach to crime prevention. While many of the Toronto subway security audit recommendations are similar to those emerging from previous applications of situational crime prevention, it is this collaborative form of research/action that reflects the values of the new transdisciplinarity.

The Toronto Subway Security Audit

The Toronto Transit subway system is the largest in Canada with 65 subway and connected rapid transit stations. Compared with many other North American subway systems, Toronto's system is generally thought to be one of the most secure. Statistics collected by Metro Toronto Police reveal a presumably low number of reported sexual assaults on the subway system, as illustrated in *Table 1*.

Previous crime prevention projects have studied the Toronto subway system. In 1976, the security section of the transit system and the Metro Toronto Police conducted a security audit after which emergency telephones, passenger assistance alarms, and other such measures were installed throughout the system. In addition, a public education program on security was conducted in 1984, by a task force concerned with public violence against women (METRAC, 1989, p. 6).

Table 1. Toronto Subway Reported Sexual Assaults

	1983	1984	1985	1986	1987
Reported subway sexual assaults	29	19	36	37	27
Reported surface ^a sexual assaults	11	17	11	21	19
Total	40	36	47	58	46

Source: METRAC (1989, p. 23).

^a"Surface" refers to sites adjacent or connected to subway entrances.

The main difference in the case of the current security audit was the participation and role of the Metro Action Committee on Public Violence Against Women and Children (METRAC). This largely volunteer, government-funded group brought the experience of the "victim" to the research process. It also helped to coordinate the collaborative group approach in the security audit.

How did the requirement for a crime prevention audit originate when reported crime frequencies were so low? The 1988 security audit of this study resulted from political pressure from groups such as METRAC after a series of rapes in an adjacent suburb that the subway services. Indications were that a serial rapist had stalked women on the transit system and then followed them after they left bus stops. Since the bus and subway systems are connected to the same network in Toronto, it is possible that these women may have also been stalked on the subway prior to transferring to the busses. The victims were then dragged into secluded parks, streets, and homes and sexually assaulted; in one case, a victim was murdered. The resulting public outcry, together with the ongoing lobbying of local women's groups, brought attention to public security on the public transit system.

Largely through the efforts of METRAC, attention focused onto the subway system as a starting place for crime prevention initiatives. It was decided that by focusing on sexual assault against women and children that the resulting spinoffs from these prevention initiatives would be much greater than if the audit focused on general "crime":

It was agreed at the beginning that a gender neutral focus on security issues would not generate adequate solutions to the problems of sexual assault. A specific focus on sexual assault, on the other hand, would provide solutions that have the beneficial ripple effect of making the public transit system safer for everyone (METRAC, 1989, p. 7).

In this fashion, the security audit provided both the situational (microspatial) and the behavior-specific (sexual assaults) emphasis. These are the hallmarks of situational crime prevention, and they represent the first step toward the transdisciplinary approach suggested here. But it was the way in which the audit group approach was designed that provided the second step toward transdisciplinarity.

The Security Audit Process

The development of a broad-based, collaborative security audit team as an analytical and educative tool eventually evolved as the way to incorporate research with action. Although this particular audit process was not consciously established in the framework of what Susman and Evered (1978) have called the "client-system infrastructure"—an approach that combines researchers with their "clients" in a multidisciplinary fashion—it, nonetheless, evolved into a similar type of process. The establishment of a "client-system infrastructure" will be discussed later as a situational form of implementation. It is first necessary to deal with the formation of this particular audit team.

The security audit team was selected by senior administrators of three different organizations: the Metro Toronto Police Force, the Toronto Transit Commission, and METRAC. These senior administrators provided the necessary resources and political support needed for implementation of any crime prevention strategies. They represented the first level of collaboration.

At a second level, the actual audit team comprised representatives from each of the three organizations and they spent the summer of 1988 traveling to each station in the subway system during evening hours. The team examined potential design problems including hearing distances from attendant kiosks, sightlines in walkways and parking lots, lighting, and overall visibility in each station, as well as formal or-

ganized surveillance such as voice intercoms and closed-circuit television. All entranceways, walkways, mezzanine areas, train platforms, structures with concession booths, parking lots, and other physical aspects were included as part of the audit.

Furthermore, the audit process included some groundwork. Initial technical inquiries were made about the station designs, and METRAC also distributed a questionnaire regarding the experiences of women on the transit system. Finally, METRAC conducted a joint study with the Faculty of Environmental Studies at York University (see METRAC, 1987) which documented that, despite the low reported frequency of sexual assault on the subway, high fear levels by women using the transit system existed; these fear levels heightened with media coverage of the serial sexual assaults. The report also documented areas of specific concern including particular parking lots and adjacent streets, and these became some of the specific sites the audit team examined.

From this preliminary work, a useful research tool was identified in the microspatial research of Francis Stoks (1982) regarding rape in urban public spaces in Seattle. This tool was an audit checklist that was then used for data collection during the Toronto station audits. Final results of this research and the proposed recommendations are included in both the W.I.S.E. Report (METRAC, 1987) and the final security audit report (METRAC, 1989). It is not the intent of this case study to discuss their specific findings; yet, it should be noted that among these recommendations are a variety of suggestions that reach far beyond typical CPTED and situational prevention issues. These suggestions appear to reflect the transdisciplinarity that was evident in this process since they deal with physical design, the perceptions of subway riders ("clients"), policy, and operational issues in like fashion.

The final recommendations include physical factors such as:

- the simplicity of station "coherence" (the simpler the layout, the better);
- surrounding land uses and the observability of parking lot areas;
- the importance of maintenance levels throughout the system, "failure to adequately maintain the subway and rapid transit system also encourages socially unacceptable behavior," (METRAC, 1989).

In addition, the audit team dealt with a wide variety of other policy and operational issues including:

- transit staff and police sensitivity training in recognizing and responding to transit sexual assault;

- improving subway user's input into subway station planning and design;
- improved public awareness programs;
- the hiring of a designated planner for CPTED review on public transit (METRAC, 1989).

This holistic style of crime prevention research and planning provided a combination of physical design modifications (CPTED and situational analysis) with victimization perceptions (environmental psychology) and operational and policy recommendations (social development and organizational systems design). The audit team was able to evaluate not only site-specific problems with station design, but also administrative problems in providing transit services and some of the later implementation hurdles the prevention recommendations might face.

For example, in one suburban subway terminal, large surface parking lots were suited to daytime users. However, the surrounding land uses included industries that were vacant in the evening. For women returning to their vehicles during later nighttime hours, these parking lots were dark and completely isolated once they left the subway station exit. Perceptions of vulnerability and the opportunity for personal victimization were especially high in such places.

One audit team suggestion was to schedule such isolated parking as "daytime use only" lots with a specially monitored area (by closed-circuit television and enhanced lighting) in a clearly visible area of the parking lot for the odd nighttime commuters. For those commuters who must return late in the evening to this daytime-only lot, special parking passes could be issued for this secure monitored area. This seemed to be a good solution to the problem since it was a suggestion that took account of the perception of potential victims, the target-hardening approach of some situational measures, and the administrative control of transit officials.

However, this particular suggestion was impractical to implement in that particular situation due to operating schedules, among other factors, and it was later discarded by the audit team in a trial-and-error style of problem solving (an impracticality that might not have been evident to independent researchers). It was a problem-solving style that evolved with the small-group dynamics of the audit team. In fact, suggestions such as this were frequently developed, amended, adopted, or discarded, reflecting a process of crime prevention research that incorporated action from a variety of different perspectives. It is this variety, through the development of group dynamics, that was created in this group approach to crime pre-

vention. Elsewhere it has been called the "client-system infrastructure."

The Client-System Infrastructure for Situational Implementation

In 1978, Susman and Evered argued that both those "inside" and "outside" a specific problem situation should have a role to play in the design, analysis, and implementation of solutions. They spent much of their research describing how to include key personnel in each situation; in a sense, it was a situational form of implementation. For this reason, research on a particular problem (such as crime and how to prevent it) could not be divorced from those being researched (such as victims and offenders) or from the action to be taken (such as prevention strategies).

Therefore, the process of research in the Toronto subway security audit is more significant to this case study than are the findings of the audit itself. The research documented in this case study focused around the group dynamics in the audit team. Although they were not consciously designed in this fashion, these group dynamics can be described in similar fashion to the "insider-outsider" model of organizational change presented by Morley (1989). In this model, a domain, or a group of insiders and outsiders, are brought together to collaborate on issues of mutual concern. In the case of the subway security audit, the domain created included the collaboration of three

representative organizations that can be understood in terms of the model described below.

Consider a model with two theoretical axes. On the first axis lie substantive issues. In this case, the issue involves sexual assaults on the subway system. At one end of this axis are those who are "inside" the substantive issues—those specifically affected by sexual assault on the subway, such as the victims. At the other end of this first axis are those who are "outside" the substantive issues—those interested in, but not directly affected by, public security on city transit such as criminological researchers or crime prevention specialists. The first part of the model would appear as in *Table 2*.

On the second axis lie responders to the first set of substantive issues. At one end of the second axis are those who are "inside" responders, for example, immediate responders to sexual assault such as the police. At the other end of the second axis are those who are "outside" responders but still involved in an informal response capacity after the fact, such as transit designers and urban planners who may have to make design modifications as a result of increasing crime problems. This axis would appear as in *Table 3*.

By overlaying the two axes, the substantive crime prevention issues and the insider and outsider responders to those issues, the result is a model with four quadrants of community representatives. Ideally, representatives from each quadrant should have a role to play in the research, analysis, and implementation of recommendations in a crime prevention

Table 2. Axis of Issues—Community Representatives Affected by Substantive Issues about the Specific Site Examined

"Insiders"	"Outsiders"
Those affected personally by sexual assault on subways, e.g., victims (METRAC)	Those concerned about or interested in public safety on city transit, e.g., researchers or prevention specialists

Table 3. Axis of Responders—Community Representatives Who Respond to Issues in the Specific Site Examined

"Insiders"	"Outsiders"
Formal responders to sexual assault on subway, e.g., police	Informal responders to public security on city transit, e.g., planners/designers

Table 4. A Crime Prevention Client-System Infrastructure Based on Community Representation from the Axes Identified in Tables 2 and 3

AXES OF ISSUES		
<i>Insiders</i>		
A X E S O F R E S P O N D E R S	QUADRANT 1 (Insiders-Insiders)	QUADRANT 2 (Insiders-Outsiders)
	<ul style="list-style-type: none"> • Metro Toronto Police • Toronto Transit security 	<ul style="list-style-type: none"> • METRAC representative ("victims")
	<i>Insiders</i>	<i>Outsiders</i>
	QUADRANT 3 (Outsiders-Insiders)	QUADRANT 4 (Outsiders-Outsiders)
	<ul style="list-style-type: none"> • Designers or planners (not included in audit) 	<ul style="list-style-type: none"> • Researchers or crime prevention specialists
<i>Outsiders</i>		

project. This is one way to ensure that all relevant issues and interest groups are involved. It is, in essence, the creation of a transdisciplinary crime prevention domain. In the case of the Toronto subway security audit, it would appear as in *Table 4*.

Such a diagram can help to clarify the transdisciplinary approach for crime prevention projects. It shows how the four quadrants in the client-system infrastructure combine both responder and issue-oriented representatives of this crime prevention project into the audit. It also shows how those groups "inside" issues (and formally responding to issues) can be combined with groups "outside" issues (and informally responding to issues). Projects such as this can be said to create a transdisciplinary domain of crime prevention practitioners.

For example, in Quadrant 1, the police and the transit security represent both formal responders to sexual assault issues and also those who are directly affected by such issues (Insiders-Insiders). Conversely, while the victims of sexual assault (represented here by METRAC) are obviously inside the issue since they are greatly affected, groups such as METRAC generally represent informal responders to the issues after the fact (Insiders-Outsiders). They therefore represent groups of Quadrant 2.

Transit designers and urban planners within the municipal government and the Toronto Transit Com-

mission represent formal groups that might respond to these issues by making design modifications, but they are not directly affected by the immediate concern of sexual assault that places them outside the issues (Outsiders-Insiders). They represent Quadrant 3. Finally, researchers and crime prevention specialists are not directly inside the issue of sexual assault on subways although they do have an academic interest and knowledge about the subject; they are not formal responders to the issues (Outsiders-Outsiders). They do, however, constitute a necessary resource for crime prevention planning in situational implementation, represented by Quadrant 4. The implications of the model are that representatives from all four quadrants are required for the transdisciplinarity inherent in situational implementation.

The model of the Toronto subway audit is incomplete. It did not include the expertise of formal responders from Quadrant 3—either transit designers or urban planners—as regular participants in the audit team during the station audits. This is because the team's membership was not specifically established within the theoretical framework of a client-system infrastructure as discussed here. Whether this will have a deleterious effect in later stages of implementation is yet to be seen. The current model is offered in consideration for future research/action projects in crime prevention on transit systems and elsewhere.

Conclusions

The transdisciplinarity that is inherent in the client-system infrastructure approach can provide fertile ground for developing theories and practical methods of crime prevention. The group approach demonstrated during the Toronto subway security audit provides a first look at an alternative method to conduct the business of crime prevention.

This security audit focused on a distinct situational problem and microspatial site. It included the perspectives of the victim, the police, the transit authorities, and the community at various levels of the research and planning process, thereby enhancing acceptance of proposed prevention initiatives. Finally, the audit process examined implementation hurdles at the earliest stages of the project.

This process, therefore, can be seen as a collaborative form of research/action—a transdisciplinarity that can enhance the likelihood a crime prevention theory will be successfully implemented. Detailed evaluations of such projects must then be incorporated into the process in order to continually evaluate the effectiveness of such innovative schemes.

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