Samuels, R. (1995), Defensible Design and Security – University Campuses
Final Report

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Executive Summary

University campuses are like neighbourhoods in their own right, where multiple facilities co-exist and interrelate in a socio-spatial setting. Each campus has its own characteristics, distinct from others and from the surrounding neighbourhoods - its own Gestalt. One common characteristic of campuses, however, is that they are pedestrian precincts, places where people walk. This simple but fundamental understanding emerges from the research on campus security and defensible design reported here. A complementary principle, equally fundamental, is that campuses have domains, areas with distinct micro-characteristics, both spatial and functional. The interaction between these domains determines the nature of the campus - within its neighbourhood context. The nature of the path network is the most critical element in this interaction.

Of all behaviours which might take place on a campus, the most risky, in terms of personal security, would be to walk alone at night. The potential for crime 'against the person' is highest at this time. People are more easily targeted, victimised and harassed at night.

The overriding concern in any application of Crime Prevention Through Environmental Design (or CPTED) principles to campus design should be focused on this highest risk time, *and* the highest risk users - those people who use the campus at night, thus especially those students who live on the campus and walk to and from their residential colleges after dark.

This is not to say that all 'campuses' have grounds. Some are inner-city domains hardly distinguishable from their surrounding urban neighbourhood. In these instances, it is the movement of people within the building complexes which is of greatest concern from a security point of view, again at night. Obviously, this applies to all buildings on all campuses - their interior design is also critical.

Crimes do occur during the daylight hours on campuses, theft particularly (when students and staff are around to leave property unattended or unsecured). However, since many people are around during the day (week-ends excepted) the situational opportunities inherent in the setting for a crime to be committed against a person, and for the perpetrator to get away *without being seen* or even apprehended, are at their lowest. Natural policing is a major deterrent in all crime prevention. When combined with community-oriented policing (the express aim of security managers interviewed in this research) a potent deterrent is created.

The environmental cues embedded in the building design and spatial layout are only *potential* that has been *in-built.*

Whether or not this potential is realised will depend of the users of those places. The university community, the students and staff, are the prime determinants in this equation. Where environmental design minimises opportunities for crime to be committed (by control over surveillability and accessibility) and community resolve is strong and united, territoriality is maximised. A natural defensibility becomes the spirit of the place. People thinking about acting in asocial ways will detect this feeling, as will the legitimate users, and, all things being equal, the two will cancel each other out.

Environmental Criminology understands criminal events as the co-incidence of offenders, victims and targets, guardians and communities, within a spatial-temporal environmental context - *ie* the opportunity structure of specific settings and lifestyles. Situational crime prevention, thus, is an approach which relies on reducing opportunities for crime, by manipulating the physical and community environment to increase the effort and risk, and to reduce rewards, *and* to enhance a community's sense of responsibility. Crime Prevention Through Environmental Design might be considered as the application of such principles in

the built environment, the three fundamental CPTED facets being surveillability, accessibility and territoriality. The notion of defensible space is embedded within the above paradigms.

Social-motivational overriding forces have not been addressed in this research.

The research aimed to evaluate relationships between design, management and security on five university campuses in the Sydney region, in terms of the inherent defensibility of their design, perceived safety, the incidence of personal security problems experienced, and the nature of security services provided.

The research attempts to identify the epidemiology of crime, victimisation (including harassment) and fear on campuses and in colleges of residence, and employs a dual technique: an appraisal of user experiences and an 'expert' environmental design evaluation. The objective is to identify contributing situational opportunities, non-defensible environmental cues and temporal cycles (time-place interactions).

Given the complexity of the university system - the multitude of different functions it serves - over and above the principle educational and research functions - a multi-methodological approach has been taken in the research reported here. Of the nine different methodological strategies employed, two techniques developed and tested in this research are believed to represent methodological advances in the 'people-place' and 'situational opportunity' disciplines.

A general proviso is made concerning the interpretation of any findings: given the different circumstances of each campus and the fact that only college students are surveyed, comparative analyses made at the micro-scale must not be used to rank or compare the campuses at a macro-scale, or to generalise findings to entire campus populations. Further research on individual campuses would first be necessary.

It should also be clear that the research does not rely on recorded security service data, but that the emphasis is on *user experiences*, and unreported/unrecorded personal harassment

The total sample of 380 respondents is made up of 109 students from UNSW, 97 from Sydney University, 80 from Macquarie University and 89 from the University of Western Sydney/Hawkesbury (the 5 responses from UTS are not included in the analyses in most instances).
Female respondents formed two-thirds of the sample; however male respondents were not automatically ranged on the low insecurity/high security side of scales. From the post occupancy security audit, 85% of the *fear-votes* were recorded by female respondents across all the campuses surveyed.

The circumstances contributing most to feelings of *in*security, overall, were walking to colleges and poor lighting (accounting for almost half the response).

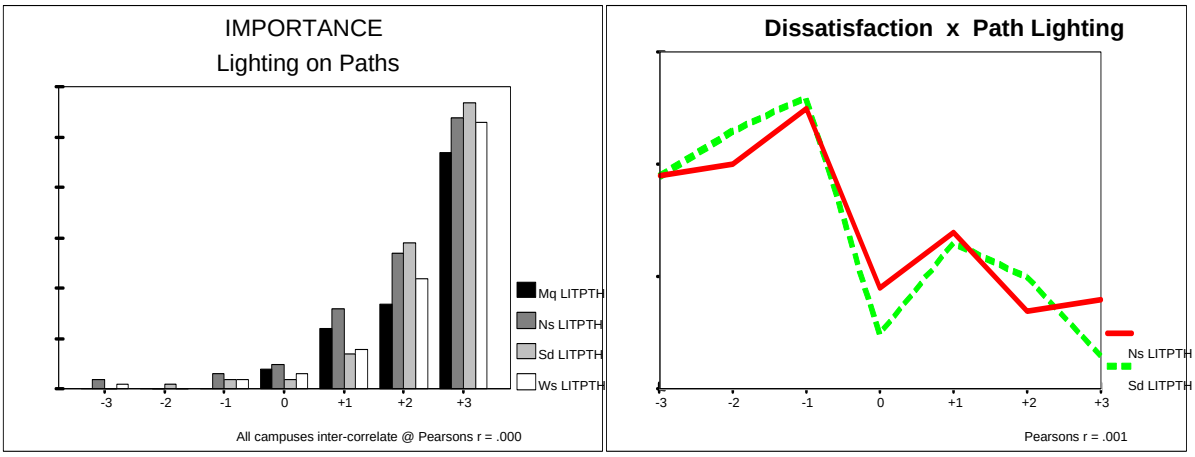
Respondents feel afraid in outside areas generally, and on paths, parking areas rear lanes near colleges (71% of total mentions). Although private interior spaces rated only 10% of mentions, this might well represent a higher *priority* to residents than outside areas *ie* the meaningfulness to them of bedrooms and bathrooms was not evaluated.

58% of insecure feelings in Colleges occur at night, with a further 21% occurring on week-ends, during holiday periods - thus 80% relate to when few people are around.

Of those respondents who report feeling fear, 70% experience this sensation on 'several occasions'.

Respondents also evaluated 15 environmental design factors relating to security in both their colleges and on the campus as a whole, including security services provisions. Respondents assess the *importance* of each item to them and, subsequently, the extent to which they are *satisfied* with the provision of each factor. An Environmental Fit category is then generated as part of the analysis, as a measure of the *congruence* between importance and satisfaction. Overall, *NB* is higher than *Sat ie* expectations are <u>not</u> being met, to whatever degree.

The miniature diagrams below indicate the relationship between importance and satisfaction with regard to lighting on paths.



'Control over access to college buildings', and 'highly illuminated access paths/roads' emerged as the most important categories.

Of interest also is the high ranking of the variable 'clear sightlines down routes to colleges' which figured prominently in evaluations on all the campuses.

Also of interest is the relatively low importance ranking of being able to see 'outdoor areas from indoors' *ie* surveillability in the classic sense. Albeit surveillability is weighted on the positive side of the *NB rating* scale, it is assumed here that the low ranking is indicative of a low proprietary sense amongst students.

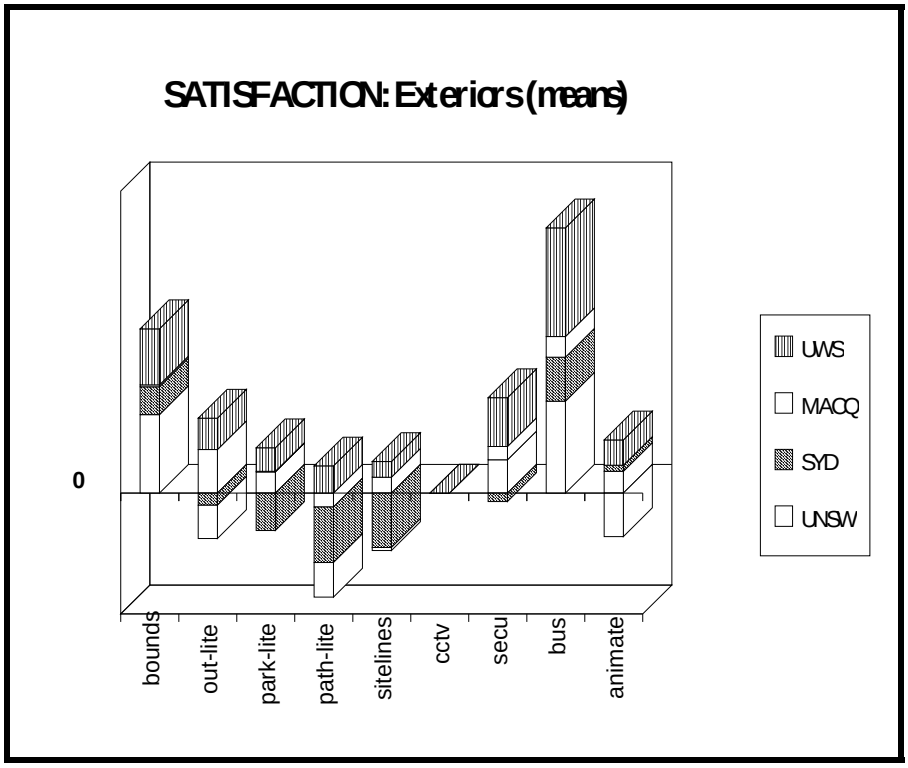
Satisfaction with surveillability is also weighted on the positive side of the *Sat rating* scale, and is high, overall. It should be noted, however, as a general rule, that where a high importance rating is not afforded an item, satisfaction with it is more readily obtained.

Satisfaction in colleges relate primarily to 'bedroom privacy' and 'interior corridor lighting'.

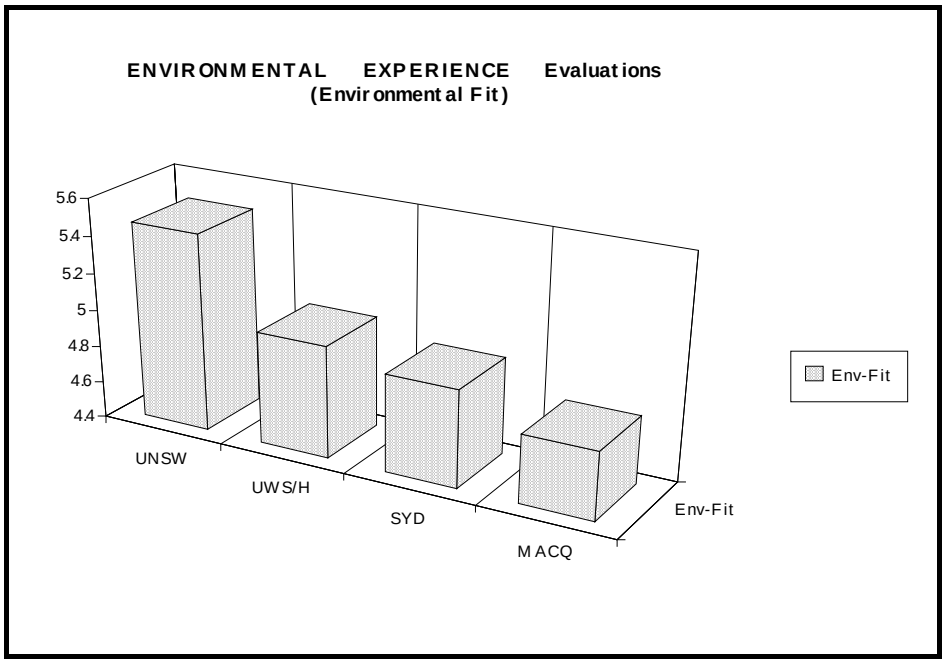
Generally, the shuttle bus and escort services ranked in fourth place in terms of satisfaction.

The items ranked *lowest* on the overall satisfaction scale were: 'lighting on college access paths/roads and 'sightlines down routes to colleges' (both with negative scores): and 'lighting in parking areas around colleges', and 'external lighting around colleges'.

The miniature diagram below shows these relationships



The variability in satisfaction experienced by the respondents on the different campuses is responsible for the Environmental Fit differentials (see in the miniature diagram below). It is important to note that the range is small, and there is a only a 10% difference between the highest and lowest *EF* ratings for the individual universities -despite the visual impression.



Environmental Fit Congruency Ratios

sightlines/interior	83%
corridor lighting	82%
see out from in	80%
shuttle bus/escorts	78%
boundaries around college	77%
access control/college	74%
security/pvcy. bathrooms	73%
night animation nr. colleges	71%
security services	69%
lighting/outside	68%
lighting/parking	64%
sightlines/outside	60%
lighting/paths	57%

UNSW	78%
UWS/HAWKESBURY	72%
SYDNEY	70%
MACQUARIE	68%
Composite: 4 campuses	72%

The Congruency Ratio represents the relationship of the EF score to 7, which is the maximum fit rating score on the scales used. The midpoint score of 4 represents a 57% congruency rate (or a 43% incongruence).

Results from the +3/-3 survey best indicated that 64% of 'the best aspects about campuses' are security services related.

In the 'worst' categories, lighting related issues made up 43% of responses.

If the categories 'buildings and campus domains' and 'college access/room safety' are added to the lighting category, to form a composite ' environmental design' category, it represents 66% of the responses. These are issues which could be remedied by CPTED and management/policy strategies.

Interviews with security managers concerning security systems at each campus can be accessed in section 5.4.

No students responded to the 'Unreported personal harassment experiences on campus' Write-In technique attempted in the research. It is assumed to be a reluctance to recall victimisation experiences that can explain this phenomenon.

The expert experience data presented in section 5.5, relating to women survivors of sexual assaults in the general population, indicates a 6.8% reporting rate, which is unique and empirical confirmation of the extremely low reporting rates for sexual offences discussed in the Literature Review section. 'Acquaintances' were responsible for some 66% of these sexual assaults.

Situational experience mapping shows that respondent's own colleges of residence, lighted pathways, the library, central teaching domains and student domains are generally highlighted on the Safety/Security maps.

Paths, open spaces, car parking areas (and sometimes surrounding neighbourhood streets) are highlighted on both Fear and Victimisation maps. User experiences of victimisation frequently overlap the Fear maps (which is not surprising), and in many cases recorded crime/place profiles also overlap these maps

A CPTED walkthrough evaluation was carried out *after* the completion of the environmental evaluation rating analyses, and the situational experience mapping evaluation. This procedural tactic allows for user experiences to guide the expert assessment, which is both rational and efficient.

Time constraints did not allow each campus to be subjected to a full CPTED analysis. One domain was selected from each of the 4 campuses (UNSW, Sydney, Macquarie and UWS/H) for deeper analysis - *the pathways between the residential college and other facilities on campus.* A photographic record, designed to give the impression of walking through each of these areas, is presented (as sketches).

Each evaluation and potential resolution is different given that each situation is unique. What is constant, in every case, is the importance of lighting.

The hypothesis that accessibility to campuses from surrounding neighbourhoods can influence the events on those campus seems to be validated in the figures presented in section 5.8, although they are not proportional to population. The Macquarie neighbourhood has the lowest average number and percentage personal crime, the UNSW neighbourhood ranks second, and Sydney University is in the least enviable position. It also has the highest reported crime rates (of the universities surveyed here).

With regard to data for recorded campus crime, information for only UNSW, Sydney and Macquarie was obtained. This data is also incomplete, and different ways of categorising crime data on different campuses further complicates comparative analyses.

Nonetheless, certain places seem to be repeated in the recorded crime data for the three campuses:

- carparks;
- libraries;
- student buildings/domains;
- gatehouses and boundary locations (edges); and
- colleges.

The final section of the report begins to develop design - management recommendations based on the research findings and an expert evaluation. The importance of the relationship between *walking to/from colleges after dark and lighting* has been highlighted and it is suggested that remedial attention should concentrate on developing campuses as 24hr *pedestrian precincts* - Strategies to enliven campuses in off-peak periods and animate and populate them at night would also appear to be an important aspect of a safer-by-design framework.

The bike escort system is highly recommended, and extending shuttle bus services is also important. It is further suggested that on-campus colleges should be designed as courtyard-clusters, and that the colleges should be clustered to form a *neighbourhood or domain,* thus helping impart to residents a sense of being part of a residential *community.* Soft architecture is also proposed as a means of involving campus users to take responsibility for space.

Finally, an educational video is suggested as a means of impacting on male stereotype attitudes towards women *and* on women's attitudes to themselves.

Each campus is a distinct entity, with multiple interacting functions and facilities, and a unique character. Each has strong and weak points. Before any remedial action could be warranted, it is suggested that an in-depth, representative study would be required to elaborate on any *tendencies* unearthed in this research.

Introduction

Aims, Objectives and Scope

The **aim** of the proposed research is to evaluate relationships between design, management and security on five university campuses in the Sydney region, in terms of the inherent defensibility of their design, perceived safety, the incidence of personal security problems experienced, and the nature of security services provided.

The research is intended to assess the extent of personal harassment and the perception of insecurity on university campuses, in terms of user experiences, rather than to rely on recorded events - the inadequacy of which is legion.

This research involves the identification of crime prone and feared areas on campus employing a dual technique: an evaluation of college [1] students experiences and an 'expert' defensibility & environmental design evaluation.

Students living-on-campus were identified as potentially the highest risk group, and the empirical component of the research focused on their experiences and feelings. Included in the range of user experiences evaluated are also those of the security personnel themselves. Ideally, the expectations, experiences and evaluations of all campus users should be researched, but this is beyond the scope of this project. A great challenge in educational settings is to have security personnel, staff and students accept responsibility for personal safety on campus. One way to progress towards this goal is to allow everyone to participate as much as possible in design and management decisions, and to regularly canvass their opinions by way of survey.

The objective is to identify situational opportunities, non-defensible environmental cues and temporal cycles (time-place interactions) in both colleges and on campus domains, which contribute to crime, harassment and a sense of insecurity.

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[1] The term 'college' is used throughout this report to indicate on-campus halls of residence

The purpose of investigating several university campuses is to attempt to highlight common situations, and thereby begin to derive a model which could ultimately be applicable to campuses generally. The intention is not to compare the universities evaluated, in order to judge them in relation to each other, but to widen the scope as much as possible in order to have a larger sample from which generalisations and guideline recommendations might be extracted.

Inevitably, however, the data appears to be comparative. Given the different circumstances of each campus and the fact that only college students (in varying proportions) are surveyed, these comparative analyses must not be used to rank the campuses at a macro-scale. This would be spurious, and 'media-type' sensationalising must be avoided at all costs given the sensitive nature of the information derived - from security audits of any nature.

Comparisons at the micro-scale are, nonetheless, relevant and valid. Each campus will have strengths and weaknesses. The generation of recommendations and guidelines for defensible campus design and management/security policies is related to the micro-analyses of campuses evaluated, given that each generates its own unique situation - but general principles can also be derived. Where a campus has developed a particularly salient system or design solution, it is absorbed into the general guidelines, with the aim of evolving a dynamic set of principles which might be an aid to university designers and administrators generally.

Ultimately, the goal is to *build-in* preventative potential and to develop a culture of responsibility in campus communities that together will diminish the need for reactive security services. The 'blue-light safety zones' now evident on many American campuses should be a last resort solution. They are a prosthetic device symbolic of the failure of environmental design and community appropriation approaches.

It is anticipated that university administrations will accept the data presented in this research as objective assessments - with the enhancement of campus life quality as the only motivation. In the main, the assessments were made by students who have experience of the

campus, and the consequent evaluations of highlighted problem areas (by the researcher) and any ameliorations suggested in the recommendation section are value-free.

The research reported here employs a wide range of techniques derived from a unique combination of environmental psychology, environmental criminology and post occupancy evaluation paradigms and strategies.

Synopsis of Research Paradigm and Background

The theoretical paradigm underlying this research derives from an understanding that physical determinism is an inadequate explanation for spatial behaviour. The alternative model proposed here recognises that spatial cues and design can *limit or encourage* the acting out of certain behaviours perceived as being appropriate in certain places *ie* that an opportunity potential (situational inducements) can be created by design. However, whether or not an individual decides to act on these perceived potentials will depend on their personal proclivities and history.

If their socio-cultural environment, past experiences and/or genetic inheritance have created a certain vulnerability or tendency to act in anti-social or criminal ways, **and** the appropriate situational opportunity exists, the likelihood of a crime being committed is increased.

Alternatively, where situational settings have a strong community or territorial base, and the opportunities built-into the environment enhance surveillability potentials and control over accessibility, the likelihood of local residents (or dedicated users) acting to preserve and protect their 'space' or 'place' is increased.

Defensibility as an issue in urban and housing design and management has been evaluated in many countries over many years (from Jane Jacobs in the 1960's to Karen Franck in the 1990's) but the issue of safety/security on university campuses has scarcely been addressed. Universities, however, occupy vast tracts of land in all major cities, have tens-of-thousands of

people using their campuses daily, and also house large numbers of students on-campus. It is imperative that they are designed and planned to be 'safe-places'.

Research evaluating campus security has been carried out in the USA during the 70's and 80's (Molumby, 1976; Lott et al, 1982; Brandenburg, 1982; Kirk, 1988); and in Australia the best known evaluation is the University of Queensland's review of security and implementation of an educational/information programme (called Unisafe) on its St. Lucia campus in 1991 (Kelly, 1994). Other campuses have surveyed their students concerning harassment and security issues, including: women's experiences of sexual encounters (Melbourne and La Trobe), personal safety surveys and forums (UWS/Hawkesbury), personal safety in colleges (UNSW), and a campus crime experience survey (Sydney), *inter alia.*

A cross-campus comparative evaluation employing inter-disciplinary research techniques such as reported here has not been previously undertaken.

Empirical Issues Investigated

The research question relates to the nature and extent of the socio-spatial interaction between in-built potentials in campus settings (defensible opportunity-potentials and environmental cues) and situational opportunities for harassment (circumstantial or contextual potentials, attitudes, environmental roles, setting behaviours, time/place activity patterns, organisational policies and space-management strategies).

The major aspects of defensibility and crime prevention through environmental design and management (surveillability, accessibility, territoriality) are assessed in terms of their potential impact on student populations on university campuses - particularly on those people who also live on campus.

Empirical issues evaluated include: the incidence of crimes committed and reported on campus; the geography of fear or perceptions of safe-places, place-avoidance behavioural responses and victimisation experiences; residential college and campus design; criminal

profiles of university neighbourhoods; grievance management procedures; and on-site security supervision and services.

Methodology

Given the multi-dimensional nature of the interaction between people and places, a multi-methodological approach has been taken in this research. Using multiple and convergent methods is a means whereby a greater degree of validity *ie* 'phenomenological validity' can be obtained, in the sense that it more closely represents people's experiences of places, on a day-to day basis and their evaluations of their activities in those places. In other words, overlapping methods and methods which focus on an issue from different perspectives are employed.

The research does not rely on recorded security service data, which, besides having shortcomings characteristic of all recorded criminal data (under-reporting of crimes against the person, and non-reporting of harassment which is not *legally* defined as criminal, in particular), is not yet in an electronic form which allows cross-referencing by place and type of occurrence (unlike police data which is now accessible on Mapinfo). A new computer system is currently being installed at UTS, for instance, called InCase, which will allow for such cross-referencing in the future. Other complications relate to the fact that recorded criminal events on campuses might be proportional to overall numbers of students, or not, given their varying characteristics, and given the varying nature of the neighbourhoods in which different campuses are located.

The emphasis in this research is, thus, on *user experiences*, on unreported personal harassment and sense of fear, and includes issues such as avoidance behaviours, non-legally defined impacts on life quality, & sexual harassment by acquaintances.

The nine different methodological strategies employed are the following:
a Post Occupancy Evaluation Safety Audit; Environmental Experience Evaluation Ratings (Importance, Satisfaction and Environmental Fit); Plus 3 - Minus 3 Survey; Interviews (with

Security Service Managers); Recorded Offences, by campus (Security Service Records); Unreported Harassment Experiences (Student Write-In & Expert Report); Situational Experience Mapping (Sense of Fear, Sense of Safety & Victimisation Experiences); CPTED Safety Audit (Expert Checklist Walkthrough & Photographic Record); and Neighbourhood Profile (NSW Bureau of Crime Statistics data).

Two methodologies employed in this inter-disciplinary research approach, termed here: 'Environmental Experience Evaluation' and 'Situational Experience Mapping' have been developed or initiated and tested in this research, and are believed to represent methodological advances in the 'people-place' and 'situational opportunity' disciplines.

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The image of 'universities' underlying this research is of huge corporations with multi-million dollar budgets, entire socio-economic, political and multi-cultural systems in their own right. Education and research are the central core, or epicentre, of this conglomerate, but circling this centre, like planets around a sun, are the epicyclic support facilities which transform the ivory tower into a system not unlike that of a contemporary urban neighbourhood. Parks and sports fields, parking garages and public transportation nodes are intermingled with industrial, chemical, energy, and agricultural research laboratories; computer laboratories and a multitude of specialist libraries co-exist alongside a spectrum of other 'land-uses' ranging from hospitals to pharmacies, theatres, film studios and radio stations, restaurants, cafes and canteens, post offices and banks; and last, but not least, medium to high density residential 'neighbourhoods'.

The university campus is the very epitome of a mixed-use domain, with a temporal profile to match. Day and night, weekdays and weekends, the campus functions.

The resultant situational opportunity structure is complex in the extreme, and this research examines but one element - security, and then not in its entirety. Nevertheless, the research perspective acknowledges the interactivity of all the integral parts forming the Gestalt or

sense of place of the campus; and recommendations are made in the belief that the broad interactivity and wide mix of land uses, so particular to universities, are their unique and invaluable legacy and destiny.

Literature Review

Environmental Criminology

Defensibility as an issue in urban and housing design and management has been evaluated in many countries over many years but the issue of safety/security on university campuses has scarcely been addressed. Universities, however, occupy vast tracts of land in all major cities, have tens-of-thousands of people using their campuses daily, and also house large numbers of students on-campus, who are on campus after dark. It is imperative that they are designed and planned to be 'safe-places'.

Environmental Criminology is a development within preventative criminology that understands criminal events as the co-incidence of offenders, victims and targets, guardians and communities, within a spatial-temporal environmental context. Moreover, these localised dimensions are embedded within a global situational-opportunity context, which consists of cultural, social, economic, historical, genetic and personal precursors. Within this general model are two contemporary paradigms that help explain and locate criminal events - rational choice theory (Clarke and Cornish, 1985) and routine activity theory (Cohen and Felson, 1979).

Rational Choice theory sees criminal events as premeditated calculations made within the opportunity structure of specific settings *ie* as non-random, goal-oriented, planned behaviours. For instance, interpretations of environmental cues will suggest some places as good locations for criminal behaviour - dark alleys, good escape routes, soft targets, minimal presence of guardians/gatekeepers. Routine Activity theory sees criminal events as the confluence of suitable targets/victims and motivated offenders in an appropriate time-space setting as a consequence of their lifestyles and patterns of behaviour. Paths of movement of both potential victims and offenders will tend to influence occurrences - being out late on a Saturday night, in the vicinity of a pub, for instance, increases the likelihood of being victimised. Similarly,

unattended residences or cars represent a routine behavioural pattern that is 'criminogenic' *ie* can be capitalised upon by motivated offenders.

Situational crime prevention, thus, is an approach which relies on reducing opportunities for crime, by manipulating the physical and community environment to increase the effort required and the risks (real and perceived) and to reduce rewards, *and* to enhance a community's sense of responsibility.

Crime Prevention Through Environmental Design might be considered as the application of such principles in the built environment, the three fundamental CPTED facets being surveillability, accessibility and territoriality. Surveillability is the ability to see and be seen - and thus implicates orientation of buildings, windows and entrances, street design, night-animation, and lighting (or visibility). The possibility of being observed while committing a crime increases the risks associated with committing a crime, and should logically reduce incentives accordingly. Accessibility is the control of access and egress, and includes issues such as use of security hardware for target hardening, manipulation of the occupancy factor (signs of the presence of people or of vacancy), and management of entrances and exits as deterrents *ie* accessibility control increases the effort required to commit a crime. Territoriality includes community and neighbourhood management to enhance the appropriation of places, images/labelling/decoration of places to suggest ownership of or responsibility for place, use of symbolic boundaries, urban legibility and so on.

The notion of defensible space (Newman, 1972) is embedded within CPTED, as is the issue of urban design and management for community interaction and natural surveillance (Jacobs, 1961).

Attention to details of areas at a micro-level, *without* recognition of the <u>whole</u> picture of areas which forms in people's minds (in a Gestalt sense, the whole being more than the sum of the parts) will severely limit the effectiveness of any design changes on crime and fear of crime (Carter & Hill, 1977). At the same time crime is not uniform, and preventative approaches have to address the diversity of criminal behaviour, and understand the *specific* places where

they occur, the specific times at which they occur, who might be committing the offences, and what socio-spatial elements are contributing (Brantingham & Brantingham, 1990). Crimes against property (burglary, vandalism, arson) and violent crimes against persons (robbery, assault, rape) are similar, nonetheless, in the sense that offenders (disproportionately of the male gender) do not want to be caught, and will therefore seek to perpetrate such crimes where the chance of them being seen is minimal, and where the odds are generally in their favour - hence where their offensive strategy is deemed superior to whatever defensive mechanisms exist. Understanding territorial judgments in a criminal's mind is of great importance to environmental criminologists, campus designers and security administrators, and to police. How, for instance, do potential offenders 'weight' various defensible space features? What is the combination of factors that denotes a 'susceptible or immune' site? Do they read but override territorial demarcations? Do they assign importance to decoration - as a sign of occupancy and proprietary attitudes?

People-Place Model

Architectural and Urban Form *do not cause behaviour* (in a deterministic sense), but can increase or decrease the likelihood of behaviours occurring. It is not enough to examine design features alone. We must understand how people perceive or interpret the meanings embodied in such places.

Social ecological analyses of crime have consistently indicated higher rates of crime in inner city/low socio-economic status/high social disorganisation urban areas/ and public housing areas, which are taken to be indicators of ecological pressures on behaviour. However, such pressures do not produce the same effect on all individuals; *and* ecological analyses do not provide predictors of which individuals are most likely to become criminals, or where criminals live, or where precisely they commit their offences.

High crime rates in CBD areas, for instance, are not reflections of the social characteristics of the residents in those areas but of the differentials in opportunities for certain types of crimes in such areas. Similarly, not all 'badly designed blocks of flats' suffer from environmental

crime - although such a situation 'increases the odds against which people have to struggle to preserve civilised standards' (Coleman, 1985).

Ascertaining the viewpoint of individual criminals is vital to understanding the spatial patterning of urban crime. It is their motivations, decision-making trade-offs, evaluations of risks and rewards, familiarity with areas *ie* their individual socio-spatial perceptions which are meaningful, not socio-ecological statistics, or general epidemiological crime rates (frequencies of recorded crime occurrence by spatial distribution).

Interactional Model of Situational Contingencies

The fundamental relationships in the *interactional model of situational contingencies* (underlying the research reported here) are outlined below:

i) S*ituational opportunities* and *environmental cues are interpreted:-*
Included are: in-built defensible design features, territorial markers, and target and victim identification by potential offenders. Here, environmental cues *and* stakeholder expectations, experiences and evaluations together determine the 'ambience' of a place and 'suggest' what behaviours might be appropriate there *ie* appropriate for either legitimate or illegitimate activities.

ii) *Individual susceptibilities and proclivities intervene:-*
Socio-economic opportunity, psycho-social experiences, role-models, somatic and genetic tendencies, extroversion personality-typing, psychological stressor thresholds, 'get even' desires, thrill seeking, peer pressures, and gang membership...encourage individuals considering a delinquent, anti-social or criminal activity to take action (or not). Similarly, genetic inheritance, personality and experience (or nurture) can enhance or diminish the likelihood that individuals will display 'victimisation' traits or susceptibilities, thus influencing their chances of being targeted.

Reporting Rates (under-reporting)

Different crimes have different reporting rates. Vehicle thefts, for example, are reported about 86% of the time (a requirement for lodging an insurance claim), while reporting rates of only 5-7 % are common for rape in many developed countries. Australian Institute of Criminology research in 1987 indicated that for every 1,000 crimes committed, only 400 are reported to the police and 320 are officially recorded as offences. 43 people are convicted *ie* about 4% (SMH, Jan 21, 1992)

In the USA, for instance, the Lott, Reilly & Howard study (1982) of students and staff on three Rhode Island University campuses indicated that only 7% of serious sexual assaults were reported to the police; and the *Ms.* magazine study (Warshaw, 1988) found that date and acquaintance rape victims were reluctant to report these incidents (5% reported the event, 42% told no-one at all about it). Ms. Daley, of Suzanne Daley's Self-Defence for Women, Melbourne, has confirmed that only about *7%* of the thousands of post-trauma sexual-assault women she has counselled over many years have reported the event to the police.

University authorities are aware that criminal activities are perpetrated on their campuses and are attempting to ameliorate the problem, for instance, by increasing security patrols and providing on-campus security buses.[2] However, their major concern [3] seems to be occupational health and fire safety. Millions of dollars are spent each year upgrading and refurbishing for workplace safety and health (Focus/UNSW, 13 December, 1991).

Based on evidence from American research, it is likely that the extent of the personal security problem on Australian campuses has been underestimated, due to the reluctance of victims to report assaults and sexual harassment (Lott et al, 1982; Brandenburg, 1982; Everywoman's Center, 1979).

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[2] The University of Queensland introduced a Unisafe project on their campus in March, 1992, after a number of rapes and attacks occurred on the campus. One technique employed is the use of student volunteers, who accompany people to/from on-campus locations from nightfall to midnight.

[3] Other than the protection of property and equipment (eg. via security card entry to buildings, etc).

Brandenburg (1982: 324): "A low number of official complaints at a university may reflect a relatively rare incidence of sexual harassment - or students' anxiety about voicing charges, particularly in the absence of an established grievance procedure...The seriousness of the issue cannot be measured by numbers of complaints".

The Lott, Reilly & Howard study (1982) of students and staff on the three Rhode Island University campuses indicated that 55 cases of serious sexual assault were experienced by respondents, but that only 7% of cases were reported to the police. "This figure suggests that allegations of assault known to the police or university administration should be multiplied by *fourteen* in order to get a true estimate of the incidence of sexual assault at the University within the past few years". According to the Rape Crisis Center in Urbana, Illinois as many as 70% of rapes may go unreported (Kirk, 1988).

The *Ms.* magazine study (Warshaw, 1988) found that date and acquaintance rape victims were reluctant to report these incidents (5% reported the event, 42% told no-one at all about it). This was partially because of their reluctance to become involved with the police (and/or University Judicial Boards), or to submit to medical scrutiny, which is required as evidence, and partially because of the confusions surrounding male and female dating expectations and experiences (see: Attitudes and Perceptions, below).

The results of a recent study of Australian campuses, undertaken at the University of New England-Armidale, and released in June 1993 (Campus Review, 1993) suggests that of the 2,482 crimes reported on a range of campuses nationwide during 1992, 7% were offences against persons. This figure includes: homicides, sexual assaults and rapes, physical assaults, homophobic and racial violence, and robbery. The operative issue, and obvious constraint on relying on the UNE results, is that they relate to *reported* crimes. Of these person-directed crimes, only one was a reported rape, 30 were sexual assaults, and 64 were physical assaults. This is interesting in the light of the information reported in Melbourne University's *UniNEWS* (Campus Review, ibid), where 52 *complaints* of sexual harassment were brought by students, staff and even three outsiders, in 1992. This figure alone is higher than the

recorded rates quoted in the UNE study. Only 8 of these events went to formal complaint (and presumably were reported?), a further 10 resulted in conciliation, and the rest sought some form of therapeutic help *ie* two thirds chose to deal with the matter themselves.

Clearly, reported or recorded rates give a distorted picture of the real situation, on the ground.

Minorities are also less likely to report rape, particularly to the police (Feldman-Summers and Ashworth, 1981). This could have important implications for reporting on Australian university campuses, given the percentage of foreign students enrolled. At UNSW, for instance, about 12% of the student body is made up of international students, of which a very large proportion are from Asia.

A range of reasons why victims *fail to report* has been suggested (Kidd & Chayet, 1984). Victims tend to view reporting as ineffective/futile (perceive the police/authorities as powerless) and inconvenient (time and money will be lost as a result of following through a report). A fear of recrimination/retaliation (where the offender is known - very relevant in situations of acquaintance rape and domestic violence) is of course very real; and added to this is a fear of indirect and further victimisation by the authorities themselves (depersonalisation and embarrassment at the hands of hostile defence attorneys/prosecutors, unsympathetic judges, incredulous police, or even embarrassed and hesitant university administrations rightly concerned about their university's image). Most importantly, a victimisation experience represents a situation where personal control was ceded/lost and a victim's understandable psychological reaction is to avoid feeling pain and anxiety or fearful and vulnerable again. In order to regain/preserve their self-esteem they would want to forget and rationalise the experience, not reinforce it by reporting it and thus re-live the situation again and again by explaining, describing, and recounting it, and/or having contact with any persons or organisations that might treat them as victims. It is also interesting that Burgess and Holstrom (1975) found that the majority of women in their rape study who had contacted the police had done so only because someone else made the decision for them.

Since often the victim's fear is not reduced by reporting crime to authorities, an alternative available to a victim is to report the incident to friends, other residents in a college of

residence, and family. This 'in-community' reporting, in turn, generates a kind of secondary victimisation, a 'vicarious experience with crime' (Lavrakas, 1981), where the social networks of victims experience emotional reactions similar to those of the victim (Friedman et al, 1982).

It must also be remembered that where informal action (neighbourly intervention) is taken regarding acts of delinquency, and parents are contacted, the likelihood of such behaviour being reported to police is diminished, thus artificially reducing the rate of such offences in more neighbourly, cohesive and homogeneous neighbourhoods (Hackler et al, 1973).

Displacement or Diffusion ?

The issue of the displacement of crime is still unresolved. In other words, will rationalised situational opportunities and in-built defensibility potentials have the effect of simply displacing crime from one place to another? Displacement of crime can take place in time, or space, or to a different crime, but not all criminals will continue to hunt for targets. Contemporary environmental criminologists believe that different levels of opportunities are likely to trigger persons with different levels of criminal motivation, with weaker opportunities only triggering action by those with the most powerful compulsion to crime (Brantingham & Brantingham, 1991/b; Gottfredson & Hirschi, 1990).

In general, CPTED has been found to have an impact on burglary/theft, street offences, nuisance behaviour and vandalism; *and* there might well be some beneficial *diffusion* too (Clarke, 1992) - a halo effect. It seems self-evident that if preventative/defensible and benign/proactive environmental design and management were implemented *on a wide enough scale,* the issue of displacement could become neutralised.
The unavoidable assumption, in terms of campus security, is that every effort must be made to secure the campus for the untrammelled use of it's legitimate users, and that the soft target image of campuses must be altered - whatever impact this might have on neighbouring suburbs. All things being equal, a halo effect could eventuate, and the general quality of the whole university 'region' could be ameliorated..

Fear of Crime and Geography of Fear

Fear (perceived risk) influences behaviour (limits options). People develop strategies to avoid places/times/modes of transport etc which are perceived of as threatening. Where people fear to use an area this results in less people using it overall, which further enhances both the fearfulness of those who do go out (feelings of isolation) and the opportunities for crimes to be perpetrated (due to low use and thus low surveillance potentials).

Victims, not unlike criminals, act in rational ways. An understanding of fear of crime and criminal victimisation must include socio-situational experiences both *before and after* the victimisation experience. Besides affecting actions before a crime (via projections/suggestions of individual and/or community/campus vulnerability) fear often also immobilises victims after crimes, and helps explain low rates of reporting.

Studies frequently distinguish between myth and reality, and investigators are currently focusing on cognitive issues such as a 'sense of insecurity' (Calogirou, 1990) and 'bad reputation' (Dulong, 1990; Paperman, 1990) in order to understand spatial behaviour in residential areas.

Areas in which crimes occur are not necessarily areas which people associate with crime or perceive as dangerous. Nonetheless, a feeling of insecurity about a place or area has real consequences *ie* people behave differently towards that place. Indeed, a hypothetically *in*defensible place which has low rates of recorded crime is not necessarily a safe-place at all. If people fear a place they tend to avoid it. Thus, the majority of people, women especially, would *avoid* dangerous places, which reduces the likelihood that an attack will occur there. This will account for the lower recorded rates there; however, the ratio of the number of users to the frequency of assaults may actually be higher in these areas perceived as insecure, and thus the perception of danger may indeed be accurate.

Merry (1981b) asked residents from four ethnic groups living in a housing project to indicate, on a map, areas of the project which were safe and which were dangerous. Respondents differed in their perceptions, and had different neighbourhood ranges, and there was a clear incongruity between a sense of danger and the objective occurrence of crime. Areas in front of residents homes were described as the most safe (and 70% of interventions to deter a crime occurred in these areas) yet these were also the frequent locations of robberies.

It was also clear that residents found narrow dark walkways, low underpasses, and convoluted entrances to buildings to be dangerous, *and* robbers also considered these places to be ideal for crimes. Residents avoid these areas, and hence the actual rates there were not as elevated as might be expected, given their situational vulnerability.

Fear of Sexual Harassment on University Campuses

Fear of rape, on American university campuses, peaked during the late 1980's. Situational remedies adopted included 'blue-light telephones' located throughout campuses, from which threatened women could call security services (Princeton now has about 70), whistles handed out to women students, and 'walls of shame' - lists of alleged date rapists pinned to bathroom walls or distributed on campus - also popularly referred to as castration lists! Social remedies included Take Back The Night marches and speeches, sexual harassment peer-counselling groups, and the distribution of pamphlets giving sample date-rape scenarios or entitled "Is Dating Dangerous?"

Kirk (1988) investigated perceptions of safety on the Urbana-Champaign campus of the University of Illinios, and reported that 'the areas students felt to be most dangerous were not areas that were statistically the most dangerous'...regarding sexual assaults. An earlier study of neighbourhood insecurity by Scheppele (1983) reported that 'the geography of fear does not necessarily parallel the geography of rape'.

Kirk's study indicated that places students mention as being dangerous were those which were underpopulated/deserted, had poor lighting and/or places to hide (thick vegetation and/or

architectural design). However, assaults were more likely to occur, in reality, in *student residential neighbourhoods ie* where the students live, and *en route* to these places. The *Ms.* study (Warshaw, 1988) mentions that sexual assaults were most likely to happen in isolated places, such as dormitory rooms in college residences and in cars parked outside the residences.

Because of this misconception *ie* that the residential zone is a safe place, people might not be taking the necessary precautions, and hence opening themselves to the heightened possibility of being assaulted in these areas.

Certain commentators are sceptical of the emphasis placed on rape on campus. Gilbert (1992), questioned the way rape was measured in the *Ms*. magazine study of date rape on campus (Warshaw, 1988). 73% of the 1 in 4 women who were categorised as rape victims in that study did not themselves define their experience as rape, and this, it is claimed, reveals more about sexual politics than about sexual behaviour. The fact that date and acquaintance rape is an area of notorious confusion for women is not, however, acknowledged, nor that women today are more willing to recognise the existence of this problem, or that they might indeed have been subjected to events that involved *a lack of consent* that they would now view as sexual harassment. Roiphe (1993) believes that this 'fascination with sexual harassment' and date rape is a 'feminist preoccupation' which sees women as victims, or as 'survivors' of victimisation, and that it is a self-fulfilling prophecy, reinforcing their vulnerability, 'officially' multiplying their fears, unnecessarily limiting their freedom. Moreover, the campus rape-crisis culture denies natural female desires and infantilise them, perpetrating myths about female innocence. Women are afraid to walk around campuses at night; unnecessarily so, Roiphe claims, and quotes statistics of 2 reported rapes at Princeton between 1983 and 1992, hardly a convincing argument, given the inappropriateness of reported crime rates in regard to rape and sexual harassment. Moreover, the figure seems absurdly low, given the 33 sexual assaults recorded (and leading to arrest) at Florida State University between 1985 and 1990 (Florida State University Police Dept records). More relevantly, she reminds readers that men are not immune to assault, that danger and fear are not an exclusively female domain.

Given the nature of a university campus, the area tends to become rapidly depopulated after 5pm and after 7pm is likely to be more or less deserted. The on-campus residential *domains* are similar in many ways to medium and high density housing in urban neighbourhoods, and similar environmental design and situational strategies are applicable to both. It is imperative that campuses in general, and their residential components specifically, are designed, planned, managed *and* perceived as 'safe-places'. Lott et al (1982) reported that 77% of sexual assaults on the three Rhode Island campuses took place near (or in) residence halls, fraternities and sororities. Other areas implicated were parking lots, pub areas and even in academic buildings.

Molumby (1976) investigated patterns of crime at Florida State University's married student housing development, Alumni Village - located some two miles from the campus proper. Although the main focus of the study was property crimes, CPTED paradigms are involved. [4] Results indicated that 25% of the households questioned had been victimised one or more times during the survey period (15 months). Only 55% of these crimes had been reported to the police. Buildings in Alumni Village adjacent to the intersection of the major thoroughfares, along the borders of the village (high access/egress opportunities) proved to be the most vulnerable. These buildings also had no buildings directly across from them, which created a surveillability problem. Although these buildings represented only 39% of the apartments in the village, they were responsible for over 65% of all the crime occurrences. A similar understanding can be drawn from a study undertaken by students of the author (in 1991) on the UNSW campus, which brought to light the perception that one of the least defensible places on the campus was the area around the group of residential colleges clustered on the High St. side of the University. Several gates give unguarded access from High St. to the colleges and their parking areas, and High St. is a major thoroughfare, is bordered by the Randwick Racecourse, and is lit on one side only (the racecourse side). There are thus no buildings facing the colleges on the street side, entrances to the campus are dark, and surveillance opportunities are reduced as a result.

[4] There is a large amount of expensive equipment on campuses and crimes involving property make up the vast majority of offences recorded on-campus. Due primarily to the difficulty of distinguishing potential offenders from legitimate students, on-campus theft deterrence becomes largely an issue of security management and commonsense, not environmental design.

Avoidance Behaviour on Campuses

The fact that women have greater fear about public places is well documented. A recent poll in Canada showed that almost 90% of women respondents restrict their activities for self protection (Ottawa Citizen, 1991). The defensive position in which women are placed vis ⑦-vis men means that 'wherever they are, their peripheral vision monitors the landscape and those around them for potential danger' (Stanko, 1990). Environmental cues alert women to the possibility of personal danger, for example, places such as abandoned buildings, parks, open space, dark alleys and places where getting away or calling for help would be difficult. Most men would also try and avoid places like these, but the risks are proportionately greater for women because of their sexual vulnerability and the physical prowess of men in general.

Existing research suggests that women are also restricted from using university facilities because of fears for their personal safety (Dagg and Thompson, 1988). Klodawsky and Lundy (1994) showed that almost two thirds of academic and student women at Carleton University/Canada (22,000 users, of whom 46% are women) restricted their movements; and that an even greater proportion of female academics and graduate students expressed concern about personal safety on campus that did urban women about walking in their neighbourhoods at night. Both female and male students who live in residence restricted their movements more than those who live off campus and use it during the day.

The research reported here also indicates that women are fearful of using their campuses at night, and the multitude of comments made by women when filling in their situational experience maps, such as "I would never walk alone at night anywhere on campus" attest to the extent to which they use avoidance behaviour in order to protect themselves.

Attitudes and Perceptions

While earlier research within universities (mainly in the USA) focused primarily on sexual harassment, there is now also a movement towards analysis of physical environments in the context of existing social relations (Roark, 1987). Attitudes and behaviours override environmental cues *ie* the way men perceive women is more relevant than the 'man-made environment'.

Ms. magazine commissioned a study funded by the National Institute for Mental Health (Warshaw, 1988) of over 6000 male and female undergraduates on 32 college campuses across the United States. One of four (or 25%) of the women respondents had had an experience that met the American legal definition of rape or attempted rape ('most of the rapes had happened off campus'). A similar number had been subjected to 'sexual coercion', and more than 2,000 (of the 3,187 women) had been subjected to unwanted sexual contact. Moreover, on average, 22.5% of women students at Auburn, St. Cloud, South Dakota and Brown Universities admitted to having been raped, often as a 'date rape' (Wolf, 1990) - not necessarily on campus.

Of particular significance was the finding that 84% of the victims knew their attacker, and 57% of the rapes had happened on a date. This issue of acquaintance rape should be of great concern to university authorities, since current liberal policies concerning co-ed college residences are possibly exacerbating this particular variation of sexual victimisation. The issue is partly situational *ie* men and women occupying proximate rooms, the age of the group, the availability of alcohol and drugs...and partly a result of the masculinity mythology which is pervasive in groups of young men (especially those living together) and which conceives of women as objects of conquest. Moreover, there is a great degree of uncertainty where acquaintance rape is concerned: it might have been preceded by some degree of consensual sexual intimacy, there is usually minimal violence, and it revolves, ultimately, around the 'degree of resistance' put up by the woman. There is also an ethos in all-male colleges (called fraternities in the USA) that seems to tolerate behaviour towards women that would not otherwise be contemplated - and Australian universities are no exception.

30-50% of sexual assailants in the University of Massachusetts and Rhode Island University studies were strangers, thus implicating spatial elements - as well as socio-psychological

elements *ie* where the victim knows the aggressor. In the latter cases, Lott et al (1982) showed how attitudes were implicated; for example, a proportion of both men and women respondents stated that : "most women who are sexually insulted provoke a man's behaviour by the way they talk, act or dress".

Knowledge of such attitude sets should encourage university administrators to ensure that their educational agendas include exposure to equity and ethical 'attitude appraisal' programs - such that sexist, racist, ethnic and minority discrimination is confronted. It might well be the case that such attitudes have not been adequately challenged prior to a student entering university life, and that they are held in a non-critical and/or unconscious way.

Similarly, attitudinal programs - not to be confused with the spectre of 'social engineering' - could address two attitude sets which indirectly influence safety on campuses. It is well recognised that women who have been the victims of sexual violation experience feelings of shame (and disgust) *ie* they are literally ashamed by what has happened. The fear of being rejected by possible suitors, or of being accused of complicity, or blamed, or pitied..might place major obstacles in the way of making public the event and/or exposing the perpetrator. A coping response might even involve an individual developing 'amnesia' concerning the event - treating it as if it never occurred (denial). Such responses inadvertently give out a message that it is possible to sexually harass women and get away with it; whereas, in contrast, people are generally aware that if they physically assault anyone they will usually have to answer for that act.

It also seems that adolescent and young adult males consider it inappropriate to admit to feelings of fear or vulnerability. Possibly, the fear of being accused of being a wimp, weak, a coward *ie* not a 'man', is a more powerful motivator than fear itself - despite that fact that fear is an evolutionary strategy which has been vital to our continued survival. Moreover, the fear of being raped is virtually non-existent in the male psyche - although some 10% of victims reported at Rape Crisis Centres in the USA are now males (Warshaw, 1988); and there is probably a further sense of male invulnerability because of a perception (conscious or not, realistic or not) of being 'impenetrable'. The abhorrence of rape is surely associated with *penetration* - the violation, both physically and symbolically, of the sanctity of the self.

However unpleasant and offensive the experience of a physical attack may be, it does not seem to have this desecration aspect about it.

As long as males continue to feel ashamed to admit to or express fear, and/or conform to the stereotypical male image, they are unlikely to readily empathise with women's experiences of places, and it should not be surprising if they unconsciously renege on their roles as natural defenders of campus domains, or feel little sense of accountability for the safety and welfare of their more vulnerable peers. Again, the message that is transmitted is: this place is not defended; it thus becomes more offence prone.

A multi dimensional solution to the problem will have to take the issues of victimisation and targets into account, given that campuses are likely to be perceived (correctly) by potential offenders as places frequented by thousands of young women - now more than half the intake (SMH, June 16, 93). *Victimisation personalities* and behaviours need to be taken into account, and instruction in both self-defence and self-confidence techniques made available to women students and staff. At the same time, an accessible and approachable grievance/complaint system needs to be enshrined in university charters.

Criminal Victimisation

In the case of crimes against persons, wherever they occur, offenders will also have to make judgements about a victim's character, strengths and weaknesses, and the likelihood that others will come to their defence. Here it is the person's vulnerability (accessibility to self) rather than that of a building, a neighbourhood or a campus that is interpreted; and the strengthening of potential victims by dealing with 'victimisation personality types' is crucial to crime prevention.

Criminal Victimisation Surveys

Considering the very low rates of reporting of personal harassment events (sexual harassment in particular) the reality of the situation on campuses, housing estates and inner city zones

cannot be appreciated, and adequately responded to, unless attempts are made to unearth unreported offences. The technique being employed since the early 1980's is the criminal victimisation survey, conducted at both national and local levels.

Findings from these micro-victimisation studies are relevant to experiences on university campuses - themselves micro-environments, where large numbers of high-risk young men and women congregate on a routine basis, of whom a considerable proportion use library facilities afterhours, or attend evening courses, or live on-campus and use it regularly *after dark.*

Relevant extracts from criminal victimisation studies in Australia and the UK, relating to offences against the person, are given below.

First Australian National Crime Victim Survey /1975 *(*Braithwaite and Biles, 1980). Offences against the person were shown to occur predominantly *at night* - robbery with violence 83% of the time, assault 70% of the time, and rape/attempted rape 60% of the time. The focus on use of campuses *after dark*, in the research reported here, is reinforced by such findings.

Perpetrators of the sexual offences were categorised as a close friend 17% of the time, an acquaintance 40% of the time and a stranger 43% of the time. In other words, persons were *known to the victim 57% of the time.*

Crime in Australia: as measured by the Australian component of the International Crime Victims Survey 1989 (Walker, 1991*).* Factored estimates suggested that over 1,000,000 sexual incidents would have occurred in Australia in 1988, of which only 7.6% would have been reported (confirming campus reporting rates). However, shortcomings relating to how these events were defined - legally rather than experientially, and the *meaning* to respondents of the different labels ('rape' or 'indecent assault') make the estimates suspect. Around half the sexual offenders would have been known to the victim, (similar to the 1975 survey), with one in eight being described as a 'close friend'.

The British Crime Surveys (BCS) were national victimisation surveys conducted in 1982, 1984 and 1988. Findings indicated that fear of crime is more of an issue than the actual occurrence of crime. The BCS indicated that young men were more likely to be victimised, and that risk was associated with lifestyle, *eg* the number of evenings spent outside the home, particularly on weekends, and the frequenting of pubs, all increased the risk of street robbery. Where women follow similar lifestyle patterns, however, their risks are found to be similar to those of men (Gottfredson, 1984). With regard to rape and sexual assault, the BCS found that the heightened fear unearthed could not be explained by the actual risks, which were apparently negligible.

However, criticisms levelled at the BCS include arguments that high and low rates in different areas were aggregated, thus masking the real geographical spread; and that the concentration on women's fears, and on legally defined crimes, led to an exclusion of their everyday, commonplace experiences of racial/ethnic abuse and offensive behaviour directed at their sexuality in public places. Albeit not criminal, this phenomenological reality constitutes a form of victimisation which impacts significantly on their quality of life or their 'lived reality of social experience' (Painter, 1992). The issue of differential perceptions of crime is highly relevant. The differences between legally defined high crime areas (or crime hot spots) and those which residents perceive as crime prone can be substantial. Brantingham and Brantingham (1991/b) report on a study they undertook which identified differences between resident and business owner explanations. Residents considered high crime areas to be those where nuisance behaviour occurred (noisy kids congregating, eg), while business owners reserved that definition for areas where shoplifting occurred. We would expect the elderly, and women, to have different perceptions again, as would people from different cultures. Routine activities and expectations determine to a large extent the behaviours that are considered to be objectionable.

Furthermore, it is now generally accepted that women are involved in hidden and unreported violence which occurs in private places, and that large-scale victimisation surveys are not appropriate instruments with which to unearth the true extent of family violence (Stanko, 1988) and/or acquaintance harassment.

Micro Victimisation Surveys

Micro-surveys were carried out in London in the latter half of the '80's, which concentrated on small areas in inner city boroughs (at the level of streets and estates, in Islington and Hammersmith/Fulham), and which led to a 'mapping' of criminal victimisation by locality, time and gender (Painter, 1988; 1989a; 1989b). These local victim surveys showed that in the inner city areas surveyed and on peripheral council housing estates, *women were proportionately more likely than men to be the victims of crime* - which finding justifies their fear of crime as being realistic, and contradicts findings in national victim surveys. For instance, in Islington women were 40% more likely to be a victim of a street robbery than men, (equally likely in Hammersmith and Fulham), and twice as likely to be assaulted (and violently). Sexual assault in Islington was also shown to be *14 times higher* than the BCS averages, and was particularly prevalent amongst 16-24 years olds. Moreover, women experienced greater levels of threatening and abusive behaviour in public places (reported by 43% of respondents in Islington).

Kate Painter succinctly sums up the issue: 'To put it bluntly, the women surveyed do not fear crime, they fear men'.

Environmental Design: Campuses and Colleges of Residence

Architectural design aspects derive from *spatial cues* and latent or built-in *opportunity potentials*. These relate to surveillability or visibility, accessibility or ease of entry and escape, private- public space hierarchy (influencing proprietary attitudes or responsibility for space), clustering (spaces between buildings), targets (land-use), activity patterns, lighting and vegetation, etc (Cloward & Ohlin, 1960; Newman, 1972, 1976a, 1976b; Mayhew et al, 1976; Jeffery, 1977; Taylor et al, 1980; Sarkissian, 1984; Geason & Wilson, 1989;...*inter alia*).

Two general principles underlie the campus study reported here: Opportunity Potential and User Characteristics. Within the Opportunity category are surveillability, accessibility and activity; within the User category are responsibility, susceptibility and demographics. Surveillability itself is further demarcated into issues of visibility; architectural form and cues; lighting; and electronic surveillance. Accessibility encompasses issues of openness and enclosure; access in terms of public/private demarcations, and 'gatekeeping'; street and path design; and boundaries (real and symbolic). Activity is concerned with building type and function; mixed-use zoning; targets; and time-place profiles.

Responsibility is concerned with issues of student, resident and staff participation and representation in university design and management; and individual appropriation - signs of personalisation and territorial markers, and signs of *de*personalisation - graffiti and vandalism. Susceptibility relates to past experiences and future expectations; fear mapping; place avoidance behaviour; victimisation; and cue interpretation in settings. If it were possible to interview actual campus offenders, the picture of the campus environment as seen from their perspective would be of unrivalled salience in guiding design and policy decisions. Finally, demographics considers socio-economic status; cultures and sub-cultures of students and residents of surrounding areas; as well as the standard descriptors such as age and gender.

Design, planning and management can also alter the *image* of an area. Campus image refers to the sense of place, or lack of it, emanating from a campus, and which is perceived by users (legitimate and illegitimate) of the campus. Where the design and supervision of an area elicits perceptions of it as a safe-place it will tend to be used often. This in itself discourages potential assailants because of the presence of other people, surveillability opportunities, lack of escape routes, presence of electronic surveillance equipment, etc. In other words, both the user's and the potential criminal's perceptions of the area are altered (Carter & Hill, 1979). It is assumed that the sense of appropriation characterising a university community will influence the occurrence of natural policing and intervention rates *ie* the tendency to go to the assistance of victims.

Given that night-time use of the campus represents the period of least defensibility, an application of urban planning principles which encourages a *mix of uses* could help promote a more frequent use of the campus after-hours, for example: a pedestrian network of retail outlets, cafes, a cinema/theatre complex, conference and exhibition venues, sports facilities...all linked with residential domains, and electronically monitored.

CPTED principles which are relevant to the design of urban environments and residential environments are also applicable to university campuses, which are in many ways microcosmic urban/residential/pedestrian environments. The same three general principles apply: surveillability, accessibility and territoriality/suggestibility. And the time of most concern, in environmental criminological terms, is *after dark*, when the student community is considerably reduced, and when residents at the colleges on campus are going to and from their places of residence.

Repertoire of Situational Setting Design

An abbreviated repertoire of situational setting design issues drawn from the literature and possibly relevant to campus design is presented below. The repertoire is not a guideline, or even a framework for a guideline, or an evaluation, but is an attempt to describe design elements that would ultimately need to be considered when a campus safety guideline is ultimately produced. It is not intended to be exhaustive, but indicative; and where appropriate is presented in point form rather than as narrative, for ease of reference.

Surveillability

- *siting of buildings and colleges of residence*

* College entrances, driveways, gardens and especially windows should overlook adjacent spaces, in order to generate enhanced opportunities for vigilance.

* entrances to student residences should face towards adjacent campus roads. Merry (1981b) mentions that where dwellings only face into courtyards and do not also face the road, there is

not enough of general interest happening in these courtyards to generate regular patterns of natural surveillance (Jacobs, 1961).

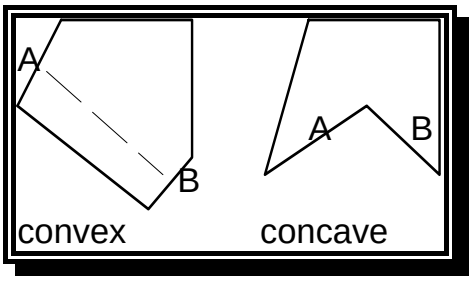
* entrances should not project out from the facade, since this can obstruct the view down the road, or 'sightlines' (Hillier 1984).

* buildings visible from roads and/or well-travelled walkways suffer less crime (Rouse & Rubenstein, 1978).

- *areas between buildings, or building interstices*

* Hillier (1984) derived a technique to evaluate how the spatial configuration of buildings defines public space, and its use. In order to encourage people to move freely and interact often, dead-end spaces and secluded streets with 'short sightlines' should be identified (and eliminated) via space syntax techniques such as convexity maps and 'axial' maps.

The convexity map shows an area broken up into convex and concave segments. A convex segment is one in which a person standing at any point on the perimeter of a segment can see another person at any other point on its perimeter. A concave map has blind spots in it.



It is suggested in the Recommendation section that intersecting paths generate a *convex node*.

- *window size and placement...and glazing type*

* placement/location for *overlook*/surveillability of non-private spaces.

* glazing *type:* - the use of light sensitive or photochromic glass would permit surveillance by occupants of outdoor spaces but at the same time diminish the capacity of outsiders to see in *ie* people want to see out but do not want others to see in (invasion of privacy).

Such glazing also has energy efficient properties, the use of which could help meet new standards for building/development applications currently being developed by local councils (Leichhardt Council, 1993) and contribute to the quality of the ecological environment. In any event, glazing for surveillability should not be frosted, patterned, beaded.

- *street and footpath design*

* paths should not be located near to windows of colleges (to maintain privacy), but proximate (to enhance surveillability).

* cul de sacs 'privatise' domains, reduce stranger presence and generate more territorial functioning *ie* neighbourhood ties are stronger on cul-de-sacs than on through streets (Brown & Werner, 1985). Cul-de-sac residents indicated a greater sense of identity and responsibility, were more satisfied with security and sense of community, and had more contact with neighbours than through-street residents. Together, these attitudes and behaviours represented a heightened sense of neighbourhood *attachment*. University college domains could, similarly, be located in cul-de-sac domains, which could enhance a sense of attachment and responsibility for place.

* pedestrian footpath design: Angel (1968) posits that where pedestrian presence is low there will be no crime *ie* few potential victims (this is debatable); and that there is a 'critical intensity zone' where most crimes take place *ie* where increased pedestrians represent potential victims, but not enough people are present for adequate surveillance. As pedestrianisation increases further, pedestrian areas become safe again. In other words, the juxtaposition and mix of activities on campuses and the design of paths to and through them are critical design/community interaction issues which must be carefully addressed.

- *mixed zoning*

* anticipated consequences are: the inclusion of local facilities, residential, commercial, recreational, teaching and library domains in a *fabric* which, by 'populating' these areas, results in heightened 'animation' during the daytime hours and, particularly, at night. In principle, 'eyes on the street' (Jacobs, 1961) enhance natural surveillance opportunities and reduce fear - due to the presence of potential witnesses and, hopefully, people who feel strongly enough to actually intervene (or at least make the effort to alert the security services/police).

Where land-uses do not have continuous occupancy there is a gap in the socio-spatial fabric, and because surveillance is lower, these places - *ie* at the *'territorial interstices'* - are likely to be assessed by 'marginal' individuals as good places for crime (Taylor, 1988).

See Recommendations for elaboration of a mixed-use campus domain.

- *cluster/court design of student housing*

* incorporates principles of human scale (low-rise), integration of open space, protection of privacy (no overlook onto private space) and enhancement of surveillability (overlook onto semi-private open space). Clearly delineated public space, community space and private space (both physical & symbolic), and clear transitional filters between them are a hallmark of successful housing, wherever it is located.

* clusters within clusters can be developed where small groups of students have exclusive use of an entrance, bedrooms clustered around an internal courtyard area, common balcony, bathroom facilities, and even cooking facilities. This enhances their sense of control and appropriation over these domains.

* physical proximity and the clustering of dwellings (Whyte, 1964) or dormitory rooms can be considered to provide an in-built potential for friendship and group formation; but whether or not friendships (or hostilities!) actually form will depend on intervening variables such as

socio-cultural homogeneity, routine behaviour patterns, and similarity between value systems and interests - which frequently lead people to seek like-minded individuals far beyond their immediate living domains (Gans, 1967). Physical propinquity, thus, is complemented by functional distance (Festinger et al, 1950), which depends on design and positional relationships such as the orientation of dwelling places to one another (front and back doors, windows), location of paths to commonly used facilities, position of letter boxes, garbage bins etc. This functional distance depends, thus, on recurring and shared activities in time-space, which in turn provide situational opportunities for social contact. Case (1981) showed how (socially homogeneous) senior college students tended to choose roommates, and develop longstanding friendships, according to architecturally determined 'domains of acquaintance' from their junior years *ie* according to functional interactions which were determined by the sharing of paths to facilities (such as showers) and the juxtaposition/clustering of their dormitory rooms.

Cluster designs and courtyards, repeated at varying scales and levels of interaction (from the formal to the intimate) can enhance both propinquity and functional proximity in campus college buildings.

* Merry (1981b) evaluated a major urban renewal housing project which had one of the highest crime rates in the city (for robberies and assaults particularly), despite the fact that about 50% of the project is designed as low-rise cluster housing around quiet dead-end streets. It was in this subsection of the estate that she conducted her survey. Access to the upper apartments in these low-rise clusters was via an exterior stairwell; and there was, thus, a minimum of interior public space. Small porches and patios were shared by only two dwellings. Pathways were lined with trees, play areas for children and adolescents were provided, with adjacent sitting areas with benches, clearly visible from the adjacent dwelling units. Only four families shared a single entrance. In sum, all the defensible design elements suggested by environmental criminologists are present, yet crime was frequent, and over half the robberies reported in her victimisation survey occurred in areas which are architecturally defensible.

In terms of design, Merry mentions several *micro-features* which could have contributed to this situation. The exterior stairwell, for instance, makes four turns before arriving at the landing, which makes it impossible to see who is in it before beginning to ascend or descend. Glazing in this stairwell was translucent not transparent; and the front of the apartments afforded hiding places between the fences enclosing the trash can area and the sides of the stairwell. Both obstructed the view of the porches from the courtyards. Half the robberies took place on these porches and in these stairwells - where visibility was obstructed.

Most importantly, the *repetition of building styles within a multitude of spatial configurations* was found to be confusing by the residents, who could not readily form a mental image of the project [unintelligible in Coleman's terms (1985), illegible in Lynch's terms (1960), or having poor space syntax in Hillier's (1984)]. The project had a reputation in the neighbouring communities as a 'mazelike area into which criminals could easily vanish'. Residents said they would have felt safer living in a neighbourhood with regular street patterns and house entrances which were flush with these streets.

In the final analysis, it must also be remembered that this housing project was an urban renewal scheme, with the attendant loss of sense of community, attachment and appropriation associated with renewal schemes.
Understanding micro-design issues is, evidently, as important as understandings the lived reality of people from micro-victimisation surveys.

- *lighting (and visibility)*

* level (*and type*) of internal and external lighting is extremely important in any defensible design.

* Sterner (1987) interviewed women about the design characteristics that contribute to them feeling unsafe, and 'dark; poor lighting' was the most frequently mentioned issue (60% of responses).

* vandal-proofing of all vulnerable glazing (windows and lights) is an absolute necessity.

- *transport nodes*

* design and management of railway stations and bus stations serving campuses require special attention; CCTV might be a good solution, and in any event good lighting is crucial. Good lighting does not only illuminate the node itself, thus allowing users to stand out in a dark background, but illuminates a wide area around the node, thus allowing users to sight other people approaching.

- *surveillability of parked vehicles*

* underground parking requires CCTV (where possible) and controlled/scrutinised access; open-air parking should be proximate to colleges & visible from them. Lighting is crucial, and gate-keeping an important deterrent (restricting access). Poyner (1993) showed how CCTV systems at a Surrey University (UK) parking lot reduced the incidence of theft from cars. Over and above the issue of cars being stolen, or maliciously damaged/broken into is the issue of the potential opportunity for muggers/robbers to hide amongst parked cars, and the apprehension women often experience when walking in the vicinity of parked cars with darkened interiors. Lighting should be of such a nature as to both illuminate the area generally, and to project light at levels that penetrate into car interiors.

- *open landscaping*

* low bushes and hedges, high canopy trees, and level ground can increase sightlines, and remove potential hiding places.

* Large open spaces unused at night require special consideration *ie* sports fields and ovals, and open spaces between campus buildings and transport nodes or carparks.

- *boundary walls*

* the design of boundaries between campuses and city streets is crucial, since boundary walls can either help restrict unwanted access, or, by representing places that have been overlooked (forgotten about *ie*) and/or cannot be overlooked (surveyed) these transitional zones can unwittingly provide hiding places. Once scaled, solid walls offer protection against being seen. *Open fencing*, perimeter lighting, and orientation of windows can help overcome this.

- *visibility inside buildings*

* lobbies, halls, elevators and stairwell/fire escape stairs are places where most crime occurs inside buildings (Newman, 1972; Rouse & Rubenstein, 1978). Similarly, Newman (1972) found that where there are multiple alternative escape routes from the inside of buildings, *eg* inter-accessible lifts, staircases and exits, crime rates are higher. And he also pointed out that where corridors are external they are open to view from the street, whereas internal corridors that do not have windows onto them from dwelling units allow criminals to circulate freely.

* in high rise residential blocks, it is the ground-floor apartments which are most victimised (accessible), followed by top floor apartments (access from roof, plus low surveillability).

* Shaw Associates (1983) suggest that there is a conflict of interests between *safety and security* in the provision of fire escapes. In their study of a housing estate they found an annual rate of 1 fire per 5 dwellings. It seems likely that this high incidence of fires were acts of arson, and were exacerbated by the fire service's requirements for additional and windowless staircases and exits, areas where criminals and arsonists are shielded from scrutiny (and which serve as convenient escape routes).

Accessibility (penetrability/legibility)

- *access/egress control*

* via entry controls, gatekeepers, concierges, supervisors, parking lot attendants;

* and via physical mechanisms:-

I) relationships of external/out-buildings to main residence *ie* access from roof, fences and walls, carports and drainpipes; height of windows above ground, presence/absence of prickly shrubs beneath windows, locked-open ventilation systems for windows, height of balconies above ground;

ii) target hardening *viz.* locks/bars, anodised aluminium security doors, with double cylinder mortise locks, pin numbers, swipe cards and entry-phones, and front door peepholes. Entry phones are vulnerable to vandalism, and once damaged can increase a sense of lack of control, since legitimate visitors cannot gain entry.

* at the same time, the social issue of limiting access via front door control to multiple tenant buildings (such as colleges of residence) is problematic. When legitimate users encounter someone at the door who does not have a key but is trying to gain access, they are reluctant to seem unfriendly, or uncivil, are unsure if the other person is legitimate or not, or might well be intimidated if the other person is aggressive or threatening.

- *boundaries*

* can be physical &/or symbolic; and gaps in boundaries, which allow strangers to take short-cuts across campus residential domains, should be designed out. Entire residential college domains can also be bounded, with access/egress restricted to one gateway controlled by a gatekeeper.

- *distinctiveness of entrances*

* this is a symbolic environmental cue which can provide 'out of bounds' messages and help create semi-private space; via use of varying materials, textures, patterns, levels & setbacks.

Environmental Suggestibility and Territoriality

Environmental suggestibility is largely influenced by territorial markers, and area imagery.

- *environmental or territorial markers/cues*

* environmental cues are indicators of ownership, occupancy, investment, caring...and include explicit elements such as "Keep Out" signs, and implicit elements such as upkeep and beautification, and symbolic signs of uniqueness, etc. These are non-verbal messages to people in settings about how they should behave there (Rapoport, 1982) *ie* there is an association between physical cues and appropriate social behaviour. Physical and symbolic features *cue* people into a setting.

- *area images*

* Gestalt theory suggests that individuals tend to group objects by proximity and similarity, and Carter and Hill (1979) found that criminals expressed an intuitive 'feeling' about an area, in terms of criminal opportunities and risks. These 'background expectancies' were important to the formulation of their strategies. Specifically, criminals formed images of areas according to their familiarity with an area, their perceptions of police/security presence there, and the perceived difficulty of making a 'mark'. These images influenced short-term operational considerations (tactics) regarding specific crimes in specific places. It is likely that campuses would be considered as soft targets.

The Chicago School of sociologists were the first to identify the importance of the juxtaposition between areas of criminal (delinquency) residences and criminal opportunities eg, districts zoned for industry/commerce (Burgess, 1916; Shaw & McKay, 1931). Current understandings are similar. The Brantinghams (1991/b) confirm that individuals move through the opportunity map to sites where opportunities match their criminal intentions.

- *social malaise indicators*

Coleman (1985) derived a 'disadvantagement score' (the inverse of quality) for evaluating housing in terms of design characteristics, and measured the incidence of social malaise occurring in each configuration. Campus housing could be appraised similarly.

15 design parameters were considered:-

Size variables: dwellings per block; dwellings per entrance; storeys per block; storeys per dwelling;

Circulation variables: overhead walkways; interconnecting exits; vertical routes; corridor type;

Entrance Characteristics: entrance position (facing public street); entrance type (communal only); building on stilts or above garages;

Features of *Grounds*: spatial organisation (single-block or semi-public multi-block); blocks in site; access points.

Coleman evaluated 729 blocks of flats (Carter street division, Southwark) and using 1980 crime figures, showed that burglary, juvenile arrests, theft, criminal damage, bodily harm, sexual assaults and robbery (in that order) increased as the disadvantagement score increased.

- *wayfinding/legibility*

* where rooms, colleges, buildings, quads, roads and domains are prominently named & numbered, maps are strategically located at all entrances and throughout campuses, and territorial cues such as *landmarks* (Lynch, 1960) are built-in, a sense of legibility can be generated. This ability to find one's way easily around a campus (or the interior of a building) can add to one's sense of security.

- *legibility or building semiotics (language of space)*

* is a building or place what is seems to be? *ie* can users (legitimate and illegitimate) associate its function with its style/form, thus know how to act 'appropriately'. Do colleges look like residences, and is this important?

Whether semiotics are important in the decision making processes of criminals has not been researched, but it seems likely that function will outweigh form, and sense of community and commitment will outweigh physical features in their estimations of situational contingencies.

In conclusion:

An analogy between human beings and safe-places seems apt. If we were to take a human being and line up all his/her organs and vessels in a line what we would have would not be a human being. Moreover, searching for a mind or soul would be fruitless. Quite clearly, the whole is greater than the sum of the parts. To be human, thus, assumes intricate relationships between the parts, and between the being and its environment. This represents the macro-scale of situational contingency. At the same time, should one tiny tube in the human system block, or rupture, or one valve fail to open or shut, the entire macro-system can disintegrate. The importance of the micro-scale to the systems functioning is no less critical than the functioning of the macro-system.

Unless all factors are taken into consideration, there will be a strong likelihood that unforseen micro and macro-issues will thwart the best laid intentions of environmental criminologists and environmental psychologists.

University campuses are complex interacting quasi-urban neighbourhoods, with multiple functions, and thousands of people using them year-round. Their administration is similarly extremely complex, and security is but one of these functions. It is, however, critical to the use of all the other functions, and should be given due consideration in all budget, management and design decisions. In itself, security is a complex issue. It involves much more than hardware and guardians. Most importantly, it involves the users of campuses themselves.

Methodology

The proposed methodology initially submitted to the funding body (EIP/DEET) was an estimate of the range of possible tactics which could be undertaken. This was before the realities of undertaking the empirical field research could be fully appreciated, and the extent of time that would be required for the project director to single-handedly undertake all aspects of the project.

In particular, the undertaking to evaluate a large number of campuses determined that none of them could be evaluated in depth, given the one-year time period allotted.

In retrospect, it would have been preferable to have budgeted for research assistance. The coding of raw questionnaire data, its transformation into spreadsheet files, and into SPSS databases for analysis consumed several months of research time alone.

After the first stages of the research were underway, it was recognised that not all facets originally envisaged could be undertaken, given the time period and manpower resources available. A revised methodology was submitted to EIP/DEET in August, 1993, and the Progress Report of December 31, 1993 elaborated on the revised methodology and some of the preliminary information derived to date.

During the second and final phase of the research (July 1st - Dec31st, 1994) similarly, it became evident that some methods were yielding significant amounts of innovative empirical information, and others would be too time-consuming to pursue. An executive decision was made to concentrate on areas which could yield most data in the shortest time and using limited resources most efficiently, and to limit investigations in others.

In particular, it was decided to expand the questionnaire into a vehicle encompassing a wide range of pre-tested research techniques - considerably wider than originally envisaged, and to survey only the highest risk group on campus. These are the students living at the on-campus

residential colleges. Surveying this group would be most likely to yield salient information regarding campus and college security, and they are a 'captive' group, ideal for questionnaire management with limited resources - a happy coincidence.

The communication of the 22.02.1994 with the Acting First Assistant Secretary refers to some of these decisions. The details are outlined below.

Revised Methodology (Phase Two)

Since the appointment of the project director at UNSW was half teaching (1st semester) and half research (second semester), it was not possible to gain access to potential student assistants to carry out interviewing during the second half of the year, for the questionnaire & interviewing phase.

It was thus decided to conduct only a self-report questionnaire survey of students. The sample was limited to students resident-on-campus. This allowed for a 'captive' population to be readily accessed, without the employment of assistants to distribute questionnaires in general campus areas and collect them, etc.

The questionnaire, however, was comprehensive, and contained a variety of techniques as intended in the original research paradigm *ie* to undertake multi-methodological research (also called 'triangulation').

The rationale for choosing only college students is that these students live on campus, and of all the individuals and groups who use campuses, including those who use it afterhours and *after dark* for academic purposes, the issue of security is paramount for campus residents. They are potentially the highest risk group. Any recommendations not including this group would be spurious. However, if the afterhours academic, residential and pedestrian requirements of this group were met, in all likelihood requirements for groups less at risk would also be met.

Campuses without on-campus residences were thus not evaluated, which made the task somewhat more manageable, given that all campuses of the 5 universities make up close to 20 different domains which would require individual evaluation.

As it turned out, the UTS response to the questionnaire was so low that, for all intents and purposes, it too was eliminated from the evaluation. Similarly, although UWS/Kingswood has a new residential complex housing about 100 students, and the Campus Coordinator was in favour of the research, security management at Kingswood did not proceed with the distribution of the questionnaires.

Ultimately, 4 university campuses were evaluated: the University of New South Wales main campus in Kensington; the University of Sydney main campus in Camperdown, the Macquarie University campus in North Ryde, and the University of Western Sydney/Hawkesbury campus in Richmond.

The information gleaned from the user experience survey is extensive and comprehensive. It forms the major portion of the research.

Video recordings were not made. There was some initial uneasiness expressed about this procedure by several university administrators, and it was not deemed an essential part of the research, given that extensive unobtrusive observation was conducted by the project director, and a photographic record made.

Other than the interview with the Principal of Women's College, Sydney, interviews were conducted only with security personnel on all campuses (UWS/Nepean and Macarthur included - despite the fact that further analysis of those campuses was not undertaken). Furthermore, security personnel indicated that local police data would be likely to duplicate criminal events recorded by them on their campuses, and that if crimes were not reported to campus security they would be unlikely to be reported to the police. Other than the one

interview undertaken with The Chief Inspector of Maroubra Police Station (Progress Report refers) no other interviews were sought.

ABS and census data were not evaluated. A separate request for funding was made to EIP/DEET (but was refused) in order to undertake a 'phenomenologically valid' victimisation survey of the areas surrounding all campuses, which could have provided the information at the level required to make a meaningful assessment of neighbouring areas.

Data from the NSW Bureau of Statistics was substituted for this phase, albeit inadequate in itself in many respects (Progress Report refers).

The recorded crimes on campuses section is incomplete. Despite repeated overtures made to security managers on all the campuses, over an 18 month period, data was not forthcoming from UWS/Nepean, UWS/Macarthur, and UTS.

In order to attempt to gain access to recorded crime figures a request was made to Dr. Potter from UNE/Armidale. However, the information received appeared to be inconsistent with data garnered by the project director from security records at UNSW and Sydney, and was not included in this report. This exemplifies the difficulty of deriving valid data on recorded and reported crimes on campus, which was further exacerbated by the need for the researcher to manually extract data from records in a format not adapted to such cross-referencing evaluations (crime by place and time). The data presented in the relevant section is necessarily incomplete and no reliance should be made on it. It is indicative of trends and patterns only.

The questionnaire undertaken by the Student Guild on the UNSW campus, although initially reported in the Progress Report as being 'fortuitous' and timely, proved to be a restriction on the capacity of the project director to carry out the survey at all UNSW colleges. The data

relating to this survey had not yet been analysed by the time of writing, and is not included as an appendix, as originally anticipated.

The use of a multi-methodological approach using multiple and convergent methods has resulted in a wide range of methods being employed in this study, some of which have been pursued to greater depths than others.

The nine different methods applied in this study:

1 POE Safety Audit

2 Environmental Experience Evaluation Ratings

- 2.1 Importance
- 2.2 Satisfaction
- 2.3 Environmental Fit

3 Plus 3 - Minus 3 Survey

4 Interviews (with Security Service Managers re Security Systems)

5 Recorded Offences, by campus (Security Service Records)

6 Unreported Harassment Experiences

- 6.1 Student Write-In
- 6.2 Expert Report

7 Situational Experience Mapping

- 7.1 Sense of Fear
- 7.2 Sense of Safety
- 7.3 Victimisation Experiences - (micro-victimisation/community risk assessment)

8 CPTED Safety Audit

- 8.1 Expert Checklist Walkthrough
- 8.2 Photographic Record

9 Neighbourhood Profile (NSW Bureau of Crime Statistics data)

The Sample

Given the limited resources available to the researcher, and the one-year time span for completing the work, it was not possible to evaluate each university in great depth. Each campus is the equivalent of a large urban domain in its own right, and each could warrant a year's study. The intention of this research is to provide a general picture of the state of affairs and state of mind of a sample of students regarding safety issues on campus. There was no provision in the budget to employ research assistants, who might have conducted more extensive interviews in the field, or have been dispatched to the campuses to distribute and collect questionnaires in several locations. It was thus necessary to rationalise the approach and conduct the questionnaire survey via the colleges of residence on each of the campuses. This represented a potential sample of 3,570 respondents (UNSW 1064; Sydney 1314, UTS 105; Macquarie 525; UWS/Kingswood 100; UWS/Hawkesbury 464). Moreover, this sample represents the students who *live on campus*, and thus are required to use it at night and after hours, the time period deemed to be problematic. Theoretically, this sample could have been a valid representation of situational experiences of campuses. As it turned out, some colleges declined to partake, others agreed to but failed to distribute the questionnaires, and the overall results can only be partially representative as a consequence.

The methodology followed to select the sample was an initial letter to all college masters, principals and wardens, explaining the nature and purpose of the research, and requesting their participation. A sample questionnaire was also provided. After a poor response, and some expressions of concern regarding a few explicit questions, a second letter was distributed, with a revised questionnaire schedule included, and the offer was made to grant not only the student respondents anonymity but also the colleges themselves, who, presumably were not happy about the prospect of being named in a report. Ultimately, 10 colleges and 3 groups of colleges (@ UWS/Hawkesbury) took part.

UNSW

5 colleges at UNSW agreed to take part, representing 642 potential respondents. The so-called Kensington Colleges, however, were reluctant to partake. Amongst the reasons given were that a questionnaire had recently been conducted at UNSW colleges, by the Student Guild, (called 'Personal Safety in Colleges') which related to similar issues, and that no results had been forthcoming. The researcher's contacts with the representative at the Student Guild were to no avail. The questionnaires remain un-analysed at the time of writing. The researcher had in fact been associated with the development of this questionnaire (having become aware that it was pending) and also had included two questions from it in the questionnaire reported on here. It was, indeed, one of these questions that these colleges objected to as being too explicit/sensitive, and which was removed in order to accommodate them.[5] The rationale for the inclusion of this question was to unearth any incidents of 'date or acquaintance rape' that might have occurred in colleges and not been reported. This is an important issue, and this importance has been discussed previously. However, it was deemed prudent to eliminate this question so as not to alienate the colleges on the campuses, and thereby get no information at all. It should still be possible to get information regarding this particular incidence when, ultimately, the student survey is analysed. In the event, these UNSW colleges still refused to partake, despite attempts to explain the rationale of the research to them, and to assure them of confidentiality. This attitude, unfortunately, also permeated two other colleges on the campus which finally agreed to partake, but did not apparently distribute the questionnaires delivered to them. The timing of the Student Guild questionnaire and the research reported here was most unfortunate. **3** colleges collaborated in the survey, representing 320 potential respondents, of which there were 109 responses (response rate 34%). A student survey [6] of these colleges is included.

Sydney

[5] The question related to personal experiences (if any) of being pressured into having sexual activity when they didn't want to, or of sexual harassment by someone they knew, or by a stranger, and so on.

4 colleges agreed to partake, representing 760 potential respondents. However, one all male college did not collaborate as promised, and the **3** colleges which did eventually partake represented some 590 potential respondents, of whom 97 responded (16% response rate). Other all male colleges either excluded themselves or were excluded by the researcher because of concerns about the likelihood of their residents not responding in the spirit of the survey. A 1994 student survey [7] of the Darlington campus complements the above.

Macquarie

All three colleges agreed to partake, representing some 525 potential respondents. 80 valid replies were received (15% response rate).

UTS

Has only **1** college, off campus, but agreed to partake. Of the 105 potential responses only 5 were received. For most analytic purposes these responses have not been included since they are unrepresentative and could skew the overall results.

UWS/Kingswood

Has **1** college on campus, and initially agreed to partake, but later insisted on censoring the questionnaire. This was agreed to, and the questionnaires were delivered with the understanding that the changes would be made, the questionnaires distributed, and returned to the researcher. Two months later, at the time of final analysis, nothing had been received, and the Kingswood campus was not included in the analysis.

UWS/Hawkesbury

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6 Students in the course 'Environmental Psychology' (under the researcher's supervision) surveyed the Kensington Colleges and International House in 1993, and these pilot results are also discussed.

Agreed to partake. **9** small on-campus colleges are roughly grouped into 3 domains. Of the 464 potential respondents, 89 responses were obtained (a 19% response rate).

Overall, there were **380** total responses; of a potential survey population of 2000 (a response rate of 19% - quite reasonable for a postal survey).

Multi-Dimensional Methods [8]

The POE Safety Audit took the form of a series of questions deriving from an initial response to whether or not respondents "had ever felt afraid or unsafe whilst living at college". Although he major emphasis in this safety audit was experiences of situations in college, the phrasing of this question was intentionally ambiguous in order to allow for recall of incidents or situations which were experienced whilst living at college but not necessarily in college *ie* on the campus too. Once a respondent had acknowledged a sensation of insecurity, they were asked to respond to a further 4 sub-sections, which dealt with what circumstances made them feel afraid, where in college they felt afraid, when they had felt afraid and how often. The Safety Audit section concluded with an open-ended question, allowing for further comments regarding their impressions or experiences of both safety and/or insecurity in college.

The *Environmental Experience Evaluation* technique is an elaboration on questionnaires which inquire only about satisfaction, or only about preference or importance. It is of little import to know that an individual or group is satisfied with an issue when the issue might be of little relevance to them. Similarly, to know that an issue is important without knowing if the same individuals are satisfied with environmental provisions relating to that issue, is to understand only half of the situation as experienced by users.

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[7] Students (as above) piloted the major methodologies employed in the research reported here, with Darlington campus users as the sample, which adds to the understanding of the nature of the lower campus.

[8] Note: The two student surveys conducted under the supervision of the researcher can be treated as pilot studies, and data from them are included in the Analysis & Discussion wherever relevant.

The rating scales applied in the Environmental Experience Evaluation section are 7-point scales with a central point representing a 'neither/nor' or 'no opinion' evaluation. This technique allows for respondents to be unsure, to have no opinion, or not to care about the issue, and does not force them to answer (spuriously) on the importance or satisfaction scales. It is not equivalent to a N/A point, which in certain cases needs to also be available (see Satisfaction scale example below). The 7-point scale is presented as a **-3/+3 scale**, on the assumption that respondents respond naturally to minus and plus signs *ie* that negative and positive evaluations are associated with the signs, whereas in a standard 1 to 7 scale, there is no logical reason why 1 or 7 should be associated with negative or positive in people's minds. The scales are a form of semantic differential scale, with polar adjectives at the extremes.

Example of scaled questions included in the Importance and Satisfaction scales, extracted in the original format adopted in the questionnaire schedule, are provided (below):

Could you indicate, on the scales below, how *important* it is,

to you, that the college of residence where you live, has:

	not at all important			neither/nor or no opinion			very important
Boundaries around the college	-3	-2	-1	0	+1	+2	+3
Control over access to the building		-3	-2	-1	0	+1	+2 +3
All-night internal corridor lighting	-3	-2	-1	0	+1	+2	+3
Clear 'sightlines' down internal corridors	-3	-2	-1	0	+1	+2	+3

Could you now indicate, on the scales below,

how *satisfied* you are with the:

	not at all satisfied			neither/nor or no opinion			very satisfied
External lighting around the college		-3	-2	-1	0	+1	+2 +3
College parking area lighting	**N/A**	-3	-2	-1	0	+1	+2 +3
Lighting on college access roads/paths	-3	-2	-1	0	+1	+2	+3

Environmental Fit represents a measure of the congruency between the needs of an individual and the provisions of the environment (Van Harrison, 1978; Baillie et al, 1987). The differential between people's preferences and their satisfactions is a measure of the fit of the environment. It has been employed here to establish, first, the expectations of students resident on campus in terms of the perceived *importance to them* of a range of issues - relating to both college and campus design and management; secondly, to establish their evaluations of their experiences of the same range of issues *ie their satisfactions*; and, thirdly, the extent to which these two measures accord with each other - *their fit*. This environmental experience evaluation technique has been discussed by the researcher (Samuels & Ballinger, 1989) and also applied in two other recent studies undertaken by the researcher (Ballinger, Samuels et al, 1991; Samuels & Ballinger, 1992).

The **scoring system** applied in the environmental fit (EF) analysis is as follows:

a) Only items evaluated as important are taken into consideration
ie on the -3 to +3 scale only items scored as ^{3} **+1**;
The mid-point (0) is the indeterminate point, *ie* where respondents express 'neutral' or 'neither/nor' opinions, and is thus also disregarded from the EF analysis.

b) Any level of satisfaction is included in the EF analysis.

c) However, where satisfaction > importance the EF analysis records a **N/A** score, which does not figure in the overall tally for EF. The rationale behind this is that where importance is relatively low *ie* a lower priority is accorded to the attainment of a preference, a higher degree of satisfaction is more readily attained.
Logically, this should not be 'rewarded' (scored as a better fit) in the EF analysis.

d) When EF is calculated, the score is converted from the -3/+3 ratings to a score ranging from 1 to 7. This is in order to take cognisance of the **zero EF differential**, which, in this case, represents a *state of best fit or congruence*
ie no discrepancy between Importance and Satisfaction.
Zero is scored here as the equivalent of 7.
The worst fit cases (-6) are scored as 1 in the converted scale (see below):

-6	**-5**	**-4**	**-3**	**-2**	**-1**	**0**
1	**2**	**3**	**4**	**5**	**6**	**7**
misfit			**ÜmidpointÞ**			**fit**

e) The midpoint of the scale is 4. Anything > 4 is a measure of fit;
anything < 4 is a measure of misfit.
The higher the overall EF score for an item, the better the overall fit.

f) For the purpose of analysis, the scales are considered to be the equivalent of semantic differential scales (treated as an interval scale), and the Pearsons r correlation coefficient is calculated to determine levels of **significant association** between items, and campuses as composites of items.

g) In the EF analysis, equivalence is given to all zero ratings *ie* where an individual expresses a very strong preference for an item (+3) and a very strong satisfaction with its provision (+3), this is taken to be the equivalent, in terms of EF, of someone whose NB rating is less (+1, eg) and their satisfaction rating is also less (+1).

The *Plus 3 - Minus 3* survey is a technique which was developed by the Australian Construction Services and applied in their Post Occupancy Evaluation program (Pegrum & Bycroft, 1988). It has the advantages of being open ended, thereby eliciting responses from respondents without providing them with cues, and of being easy to analyse, given that there are only three responses in each subsection which require content analysis. Respondents are simply asked to list the three best and three worst aspects of a general issue, for instance, 'What do you think are the *three best and the three worst aspects* about safety/security on your campus ?'

This is asked as the first question. If, on the other hand, they had been asked to respond to a specific question, pre-selected by the researcher, there would be no way to ensure that their responses are phenomenologically valid and are not reactions to the pre-selected item or list of items, some or all of which might never have occurred to them before.

The +3/-3 technique has been utilised by the researcher in several other research programs (Ballinger, Samuels et al, 1991; Samuels & Ballinger, 1992).

Interviews were conducted with security service managers at UNSW, Sydney, Macquarie, UTS, UWS/Nepean, and UWS/Macarthur; and with EEO/AA personnel UWS/Hawkesbury. The interview was both structured and open-ended, with the researcher asking pertinent questions and security personnel recollecting and expressing their opinions (based on their experiences) in narrative form. This information was later content categorised by the researcher, and coded in terms of the structured format which underlay the interview schedule. Questions relating to security systems (patrols, access to buildings, gatekeeping, and policy) formed the major categories investigated.

Data relating to *recorded offences* for the periods 1992 and 1993 were requested from security managers, and UNSW, Sydney and Macquarie opened their books to the researcher. The idea was to try and collate type of incident (personal harassment) with place and time of occurrence. While a spreadsheet program could extract this type of epidemiological data without problem, none of the systems were capable of this type of analysis at the time, and all data had to be extracted and collated manually. Inevitably there is a lack of rigour in this procedure, particularly exacerbated by the fact that the recording systems are not set up to analysis data by place/incident categorisation. Data presented in the relevant tables in section 4 should not be taken as definitive. Future research will hopefully find security systems recording campus crime with more sophisticated procedures, which will allow for more reliability in findings.

UTS was in the process of computerising their system in late 1994, and eventually the relevant data were received; UWS/Hawkesbury EEO personnel assembled the relevant data; UWS/Macarthur and UWS/Nepean data were promised but not forwarded (despite frequent requests). The researcher was thus obliged to approach an independent source (Dr. H Potter, of UNE/Armidale) who had assembled this data on his own accord. This data was not categorised by place/incident, and thus could not be used directly as a substitute for missing data. The researcher is nonetheless indebted to him for providing this information.

The researcher trailed an unconventional methodology, *Unreported Harassment Experiences*, in an attempt to unearth unreported harassment and assaults on campuses. This was reported in Progress Report 1, December 31st, 1993. The relevant extract from that report follows:

An innovative but unconventional methodology was devised (see Revised Methodology forwarded to DEET, August 1993) in an attempt to unearth unreported incidences of personal harassment on campuses (original proposal to DEET refers). Criminologists, police and campus security staff all recognise this area as being of enormous concern (since until some reasonable measure of *actual incidence* is established, preventative and other measures of 'appropriate' magnitude will continue to seem to be 'unjustified').

To this end, Editors of university staff and student newspapers were contacted, and asked to publish a standardised letter (provided by the researcher) in their next editions. Similarly, managers at campus Overseas Student Organisations were contacted, and they also agreed to publish the letter in their newspapers (posted to the homes of 3,000 overseas students at UNSW, for example).

The letter stated the general aims of the research, and called for individuals who had experienced harassment on a campus and had not reported it, to contact the researcher, anonymously (in writing), with details of the event and the situation in which it occurred.

A journalist from Campus Review interviewed the researcher by telephone and then, unfortunately, wrote a misrepresentative and sensationalised article in the August 19th-25th, 1993 edition, entitled "Architecture may have to change after assault study". The researcher wrote a disclaimer/rebuttal, which was published in Campus Review (August 26-Sept 1), and personnel at EIP/DEET were informed of the incident.

Understanding the ramifications of both unreported crime and victimisation was deemed important enough to warrant a trip to consult with an expert in Melbourne (Ms. Daley of Suzanne Daley's Self-Defence for Women), who has counselled thousands of victims over the past 9 years. She has confirmed that only about 6-7% of the post-trauma victims she has counselled have reported the event to the police. Data furnished by Ms. Daley relates to 1,150 cases of sexual abuse/rape survivors during the period 1990-1994.

Situational Experience Mapping is a novel technique, in that it combines Fear mapping - previously trailed by researchers such as Merry, 1981b (who asked residents living in a housing project to indicate, on a map, areas of the project which were safe and which were dangerous) - with Victimisation mapping. This combined technique has not previously been utilised (to the researcher's knowledge).

Victimisation surveys have of course been carried out before, both in Australia (First Australian National Crime Victim Survey/1975 *(*Braithwaite and Biles, 1980); and Crime in Australia: as measured by the Australian component of the International Crime Victims Survey 1989 (Walker, 1991*),* and overseas (The British Crime Surveys of 1982, 1984, 1988, for instance). Moreover, *micro*-victimisation surveys have also been conducted, in London in the latter half of the '80's, for instance, which concentrated on small areas in inner city boroughs (at the level of streets and estates, in Islington and Hammersmith/Fulham), and led to an understanding of criminal victimisation by locality, time and gender (Painter, 1988; 1989a; 1989b).

Victimisation *mapping*, as a form of micro-victimisation survey or community risk assessment audit, does not seem to have been carried out prior to the research reported on here.

The relevant instruction page, adapted from the questionnaire, is included (below):-

This section consists of three *maps* of your campus, including the colleges of residence and the streets immediately surrounding the campus

You will be asked to indicate on **...**

Map 1) the areas or places in which you feel insecure or afraid *afterdark*

You are also asked to indicate, **on Map 1** just ***how*** *insecure/afraid* you feel by entering a number ranging from 1 to 10 at the appropriate place on the map

where:- *1 = Not Very Afraid and 10 = Very Afraid*

Map 2) the areas or places in which you feel safe

Map 3) the areas or places in which you have had a victimisation experience (if any)

Such an experience could have been a verbal insult,
or a physical or sexual assault, a street robbery etc...

Could you *indicate* ,*the place* where it happened
what happened, and at what *time* (ie. day/night) it occurred

Questionnaires sent to each campus contained maps of that campus.

Given that the sample included only college residents, and also that some colleges declined to participate, the situational mapping evaluations tended to be locationally specific, and not representative of the whole campus population *ie* certain areas of campuses were often over-emphasised, while others were ignored, depending on the location on campus of the responding colleges. This is not true of all the responses, but a wider ranging sample would be required to provide phenomenologically valid results. Staff, for instance, might well place more emphasis on parking areas/garages and on the interiors of academic buildings, two areas noticeably under-represented in the mapping evaluations of the current sample. Security personnel would be expected to have yet another perception of the campus. Future studies should take this into account.

The *CPTED (Crime Prevention Through Environmental Design) checklist* is a schedule developed by the researcher in order to systematically evaluate, through observation, the *potential* situational cues embedded in the physical fabric of campuses and colleges. A summary version is presented in the Appendix. It is based on the three fundamental notions underlying CPTED analysis: Surveillability, Accessibility and Territoriality. This rationale has been discussed in the Background Literature Review section. This methodology is a form of expert walkthrough, a technique now standard in POE surveys.

The *photographic record* was initially intended as both stills and a video analysis. The latter method has not been carried out due to time constraints, but also because it was considered that nothing significant would emerge from this tactic given the very wide range of other overlapping methods already employed .

Neighbourhood Profile is a technique employed to address the issue of the extent to which crime and harassment *on-campus* is influenced by the extent of crime harassment prevalent in the surrounding neighbourhoods.

The assumption is that the higher the (*real)* rates of crime and harassment prevalent in such areas (*ie* experienced by residents, not only recorded in police statistics) the more university campuses located in those neighbourhoods will be infiltrated by criminally-motivated perpetrators of neighbourhood crimes - who are also likely to perceive campuses as 'soft touches'. This being true, campuses would exhibit crime and harassment rates which are to some extent dependent on their geographic locations, over and above being expressions of illegitimate behaviours of the legitimate users of those campuses. Realistic statistics (*ie* victimisation rates) relating to such areas are currently unavailable.

In recognition of the need to understand the 'offence profiles' of these areas, the researcher extended the research methodology, and requested data from the NSW Bureau of Crime Statistics and Research. This data, unfortunately, is of limited value to the research, for four main reasons. First, it is recorded data and as such does not adequately reflect the actual experience of crime and harassment; secondly, the smallest areal breakdown available is at postal code scale, which is too large an area to adequately reflect on the specifically designated zones around campuses; thirdly, the data refer only to legally defined crimes, thus excluding a large number of harassment events which, although not crimes *per se*, impinge on the opportunities of people (women especially) as free citizens to use certain areas or facilities (including campuses) at certain times. Finally, the Bureau statistics relate only to offence occurrence, not offender residence, thus it is impossible to know where offenders live. Even victimisation surveys cannot easily overcome this latter constraint. However, since victims (in victimisation surveys) can be asked if they know the identity of the perpetrator, it is also possible to ask if they are known to live in the study area.

The only way to attain data that begins to reflect adequately on offence profiles in terms of 'phenomenologically valid', day-to-day experiences in campus neighbourhoods is to conduct local, *micro-scale*, criminal victimisation surveys. A distinct advantage of such surveys is that they allow one to precisely define the domain of interest, eg. a kilometre-wide radius around a campus - albeit arbitrary in itself.

A proposal to conduct such research was made by the researcher to the EIP/DEET in June 1994 ('Criminal Victimisation Surveys: Offence Profiles of University Campus Neighbourhoods in Sydney') but was not funded.

The rationale for emphasising empirical field research methods in this research rests on the understanding that experiences and evaluations of users are both phenomenologically valid and are distinct or different from the expectations and assumptions of 'experts' - professional researchers and designers of the built environment.

Both insights are required - both expertise and experience. One without the other is meaningless.

Nonetheless, this position is tempered by the understanding that expert evaluation need not be necessarily overridden by user experience where differences occur - given that users do not necessarily perceive the totality of a situation either.

Analysis and Discussion

The results presented in this section will follow the same chronological order as the methodologies discussed in the previous section. A discussion of each set of findings will follow immediately after the tables and graphs.

Analytic techniques utilised include Environmental Fit differential calculations; Excel worksheet calculations and graphing; and SPSS statistical calculations [9] and graphing.

As with all surveys, the respondents who answer questionnaires will be self-selecting samples. This is an unavoidable fact of survey analysis. There can never be an absolute relationship between samples and populations. This is taken as given, and any relationships or associations commented on in this analysis relate to the sample, and no attempt is made to generalise findings from questionnaires to entire campus populations. Moreover, only students at colleges of residence have been surveyed. It is nonetheless salient that the sample represents the group of campus users who are most at risk, given their live-on-campus situation, and their perceptions should take precedence over those of all other campus users.

TABLE 5.1: Demographic Data/Respondents

Average	*Age*	*Male*	*Female*	*% Female*	*Total*	*Time on campus*	*Australia*	*Overseas*
UNSW	19.5	35	74	68%	109	1.75	84%	16%
SYD	19.5	20	77	79%	97	2.2	80%	20%
UTS		2	3	60%	5		100%	0%
MACQ	23.2	31	49	61%	80	1.9	75%	25%
UWS/H	22	34	55	62%	89	1.8	85%	15%
% of T		***32***	***68***					
Total					***380***			

[9] Pearson's product-moment correlation coefficient (r)
- which indicates both strength of association between variables and direction of the relationship

Discussion

a] UTS excluded, respondent sizes for each of the 4 participating campuses were roughly similar. No normalisation procedure was thus conducted before testing for correlations.

b] Female respondents formed two-thirds of the sample, which is not unexpected, given the relatively heightened importance to them of personal security issues. It is noted here that male respondents were not automatically ranged on the low insecurity/high security side of scales, and that those who answered the questionnaire also expressed sentiments of fear and mentioned victimisation experiences. It also cannot be automatically assumed that all male respondents were heterosexual, and some at least of the respondents might have heightened sensitivities and perceived vulnerability because of their homosexual preferences. It should also be noted that some males mentioned being afraid in their bedrooms or in bathrooms in colleges; possibly (indirectly) indicative of sexual harassment experiences.

Nonetheless, it is female students who are the highest risk group, particularly those who live-on-campus and thus use it after-hours and after-dark. It would be of little meaning to take the security/safety perceptions of male students as a norm by which to design and manage campuses. Although they fall into a risk-prone group - because of their lifestyles (as previously discussed) - males at universities are at the peak of their physical prowess, are generally part of a supportive group of other male students, and while on university grounds are very unlikely to become the victims of aggressive attacks by other university students or strangers who have penetrated the campus. [10]

Responsible environmental design should accommodate the more vulnerable members of a society. We acknowledge that male students are in the fortunate position of being a low risk group, and direct our attention to providing situational opportunities and security systems that diminish women's vulnerability and enhance their quality of life potentials while on campus. It is not asserted here that environmental design creates safe-places, only that it increases or decreases the likelihood of criminal and harassment situations occurring.

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10 Drunkenness is an issue aside, and is an endemic issue concerning young males in general.

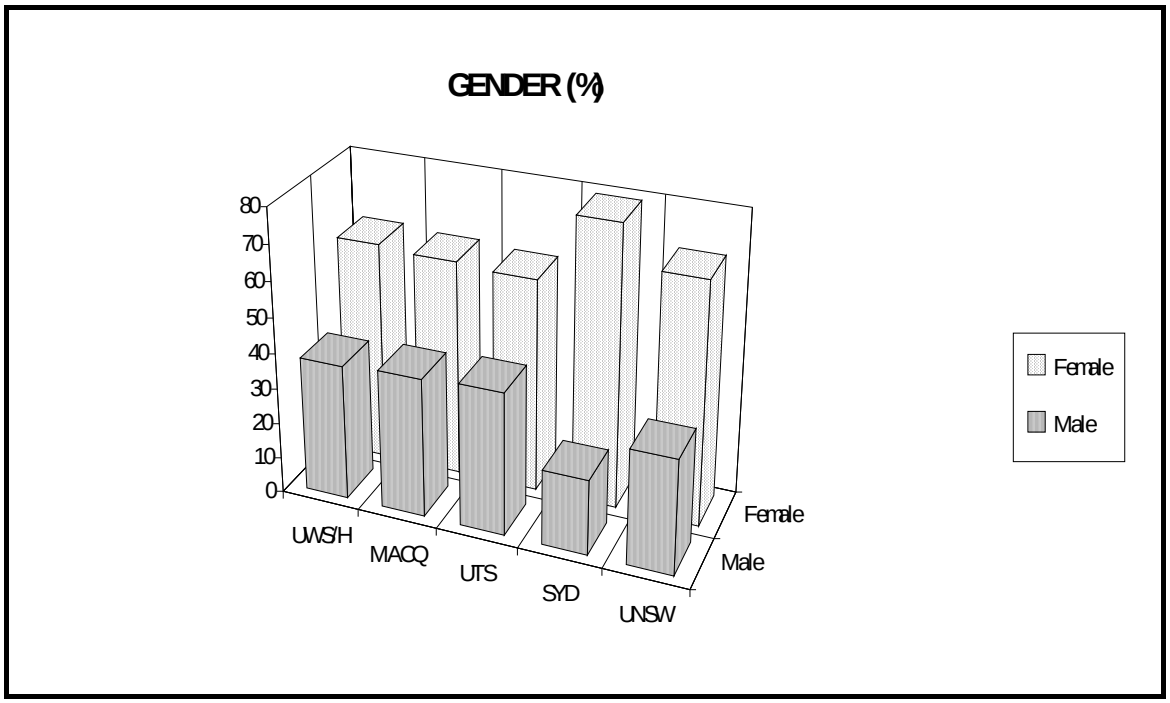

FIGURE 5.1: Breakdown of Sample into Male and Female Sub-Samples, All Campuses

c] The percentage of overseas students responding, in proportion to overall percentages on the various campuses, is high.

TABLE 5.2: Percentage of International/Foreign Students, 1992

UNSW	12%
SYD	4.4%
MACQ	5.2%
UWS/H	3.7%

Source: Selected Higher Education Statistics, 1992, Higher Education Division, DEET.

This might indicate that perceptions of security are of greater import to overseas students, who are in unfamiliar surroundings, do not fully understand the cultural imperatives, patterns and signals which might subconsciously underlie local students' responses to environmental cues and situational opportunities. They also have less social support, and are likely to be

more reticent about mentioning any victimisation incidents to family members because of particular socio-cultural expectations relating to privacy and loss-of-face concerns. It is also true that Asian cultures tend to inculcate a greater sense of deference to authority in their children, while Western cultures seem to be more tolerant of non-conformity. Asian students would thus be more likely to seek order and control in situations, and might well express greater uncertainty and sense of insecurity as a consequence in situations which are unfamiliar to them. It might also be true that given a greater deference to authority, they might feel more obligated to respond to a questionnaire. Or, the reason might be none of the above, but simply because there are proportionately more overseas students living at colleges of residence.

POE Safety Audit

This segment of the questionnaire was intended as a self-report, post occupancy evaluation of colleges, and campuses - (any place that is 'occupied' can be the subject of a POE).

TABLE 5.3: Have You Ever Felt Afraid or Unsafe Whilst Living at College

		UNSW	*UTS*	*SYD*	*MACQ*	*UWS/H*	*Sub-Total*
Yes		69	3	68	45	42	227
No		40	2	29	35	47	153
Total		109	5	97	80	89	**380**
% Yes		63	60	70	56	47	**60**
% No		37	40	30	44	53	**40**
% of Yes vote / Female		*85%*	*66%*	*85%*	*82%*	*83%*	*80%*
% of No vote / Male		*45%*	*100%*	*31%*	*74%*	*58%*	*62%*

Discussion

a] Sydney University respondents expressed the highest *sense of fear* whilst living at college [11] (70%), UNSW and UTS follow and are similar, while Macquarie was second lowest and UWS/Hawkesbury the lowest (47%). It should be remembered that Sydney also had the highest percentage of female respondents (79%) which is not unusual given that of the 3 colleges partaking 2 were women's colleges and 1 was mixed.

[11] not necessarily only in college

It is thus more interesting to look at the percentage of Yes-votes amongst female respondents in general, and the percentage of No votes amongst male respondents - on the assumption that males feel less fear. Ignoring the UTS vote (too small to be reliable) between 82 to 85% of the Yes-votes were recorded by female respondents across all the campuses surveyed. Male No-votes, on the other hand, ranged from a low of 31% at Sydney (possibly because of the low numbers of male respondents) to a high of 74% at Macquarie.

Overall, given that women voted in similar fashion on all the campuses, it might be legitimate to consider that the Male No-vote best distinguishes between sense of fear at colleges, and in this sense Macquarie colleges would come off best.

b] Generally, 60 % of respondents recorded a Yes-vote -*ie* a sense of insecurity at colleges is more pervasive than a sense of security.

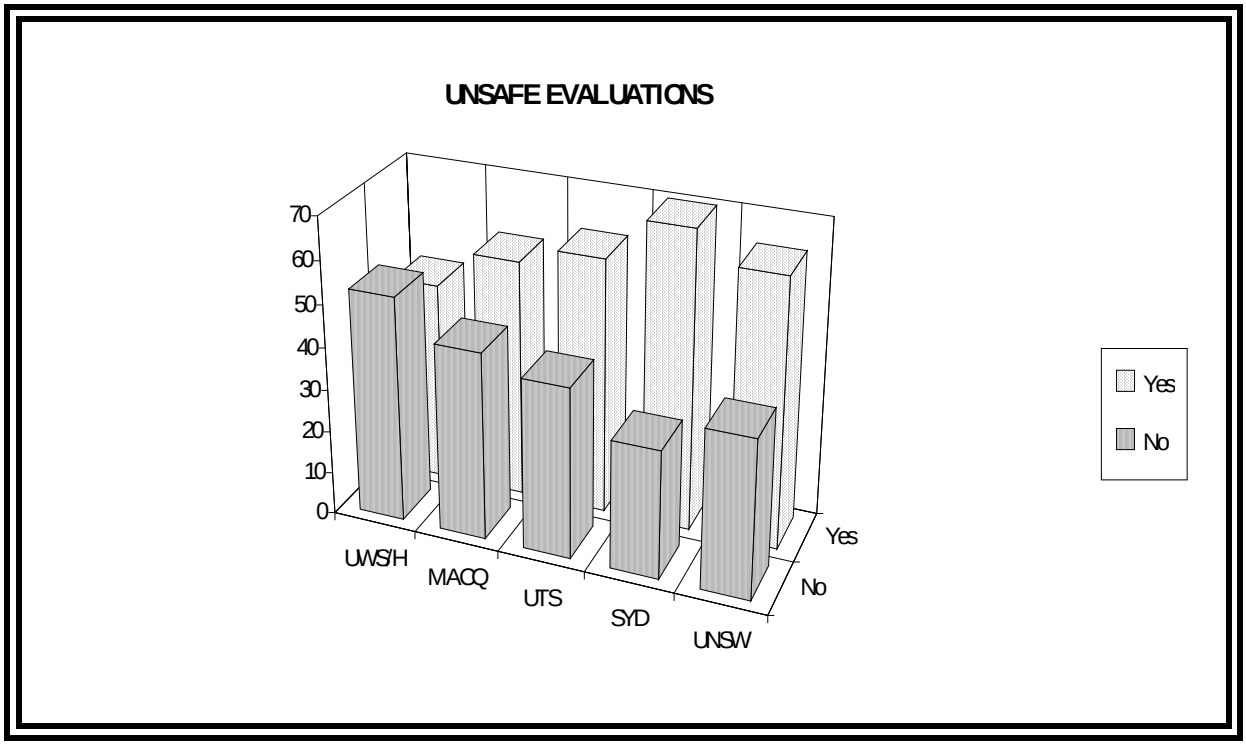

FIGURE 5.2: Sense of Insecurity, Depicted by Percentage of Yes/No votes, All Campuses

TABLE 5.4: What Circumstances Made You Feel Afraid or Unsafe

WHAT	*poor lite*	*walk to C*	*alone*	*act/resid*	*staff*	*stranger*	*act/strang*	*memory*	*rumour*	***Total***

UNSW										
	20	32	10	3		13	6	2	10	**96**
% of Total	21	33	10	3		14	6	2	10	
			Personal ->		Þ	Þ	Þ	% Personal ->		**46**
SYD										
	51	58	29	9		31	14	6	30	**228**
% of Total	22	25	13	4		14	6	3	13	
			Personal ->		Þ	Þ	Þ	% Personal ->		**52**
MACQ										
	32	35	18	9		17	9	8	13	**141**
% of Total	23	25	13	6		12	6	6	9	
			Personal ->		Þ	Þ	Þ	% Personal ->		**52**
UWS/H										
f	20	18	21	12		18	8	5	10	
m	5	1	3	3		4	2		2	
t	25	19	24	15		22	10	5	12	**132**
% of Total	19	14	18	11		17	8	4	9	
			Personal ->		Þ	Þ	Þ	% Personal ->		**67**
UTS/B										
	2	1	2	3		1	1	1	2	**13**
% of Total	15	8	15	23		8	8	8	15	
			Personal ->		Þ	Þ	Þ	% Personal ->		**77**
Total	130	145	83	39	0	84	40	22	67	**610**
% Ov-T	21	24	14	6	0	14	7	4	11	
				% other people in Res			*Þ 27*			
								% Personal ->		**59**

Discussion

A breakdown of male/female profiles was undertaken for UWS/H data, to provide an example of the different response patterns of the two genders.

a] The circumstances of greatest import were walking to colleges and poor lighting, both factors external to the colleges themselves, accounting for almost half the response, overall.

- The focus of remedial attention should be on developing campuses as pedestrian precincts - with good path lighting, in particular.

b] This general picture holds true of all the campuses surveyed, with the exception of UWS/H, where 'personal' circumstances prevailed as the major concern. 67% of total responses (to this question) fell into that category, in comparison to about 50% on each of the other campuses (UTS excluded - the actions of one particular male student showing up as a high incidence in the 'actions of a resident' item, which indicates how single events can skew results in small samples).

- Overall, 59% of circumstances were 'personal' - suggesting that remedial action within colleges should focus on management and community type solutions (including access control) rather than architectural design issues (although internal lighting and other privacy issues relating to bedrooms and bathrooms are also of concern - see Environmental Evaluation ratings).

UWS/H has a particular setup in their colleges where bathrooms are unisex and have no provision for privacy - no curtains and doors etc. This is apparently a tradition carried over from the days when it was an all-male agricultural college. This setup might be expected to suit male students in mixed colleges, although it was not only females who objected (see Satisfaction ratings), and some female students either also accept this arrangement, enjoy it , or have accommodated to it over time. Nonetheless, UWS/H responses indicating fearful circumstances relating to 'other people in residence' are more elevated in each of the sub-categories (actions of a resident/presence of a stranger/action of a stranger) than on the other campuses, 36% overall when compared to the all-campus average of 27%.

This also indicates a dissatisfaction with access control to colleges *ie* the ability of non-residents to gain access - which appears to be less rigorous than at other campuses (see Environmental Evaluation Ratings).

c] The category 'action of a resident' is interesting in the light of the 'sexual harassment by acquaintances' issue. This is one of a handful of questions (see also bedroom/bathroom responses) where inferences about such matters can be made, given that objection was expressed to the explicit development of this notion.

39 situations were recorded, **6% of the total responses** (to this question). Whether or not these circumstances were sexual harassment or other events causing a feeling of fear/insecurity cannot be determined. The events might have been of a racial, ethnic or religious nature.

Unreported acquaintance harassment in colleges, nonetheless, seems to be in the order of 6%; and we can infer from overseas research that a high proportion of this will be of a sexual nature.

Again, UWS/H records a response of 11%, compared to between 3 and 6% for other campuses (UTS excluded), for the item 'action of a resident'.

d] Reactions to the 'actions of a stranger' item are indeterminate. Fear of theft is probably associated with this event; and poor access control and low levels of corridor lighting will be implicated. There is, however, a further, distinct issue - manifest at Sydney university (for instance) - which concerns the invasion of women's colleges by male students, often from neighbouring all-male colleges, often inebriated. It can be assumed in these cases that the intentions of these male students might well be sexual - if not to actually physically harass female students at least to gain some perverse gratification by invading their privacy, possibly seeing them in a state of undress, etc. Socially irresponsible actions such as these are an aberration, and fly in the face of both government anti-discrimination legislation and university EEO policies, and should no longer be tolerated.

- Note that of all circumstantial events mentioned, Sydney's share was high, accounting for 37% of total mentions (the lowest was UNSW @ 16%).

e] The items 'memory of a bad previous experience' and 'rumours of bad experiences' in colleges were mentioned in 15% of responses, overall, in roughly equal proportions on all the campuses. This cannot be assumed to be simply a repeat of circumstances mentioned relating to residents and strangers, which was twice as prevalent. The relationship of these past experiences to sexual harassment remains indeterminate. More research is required.

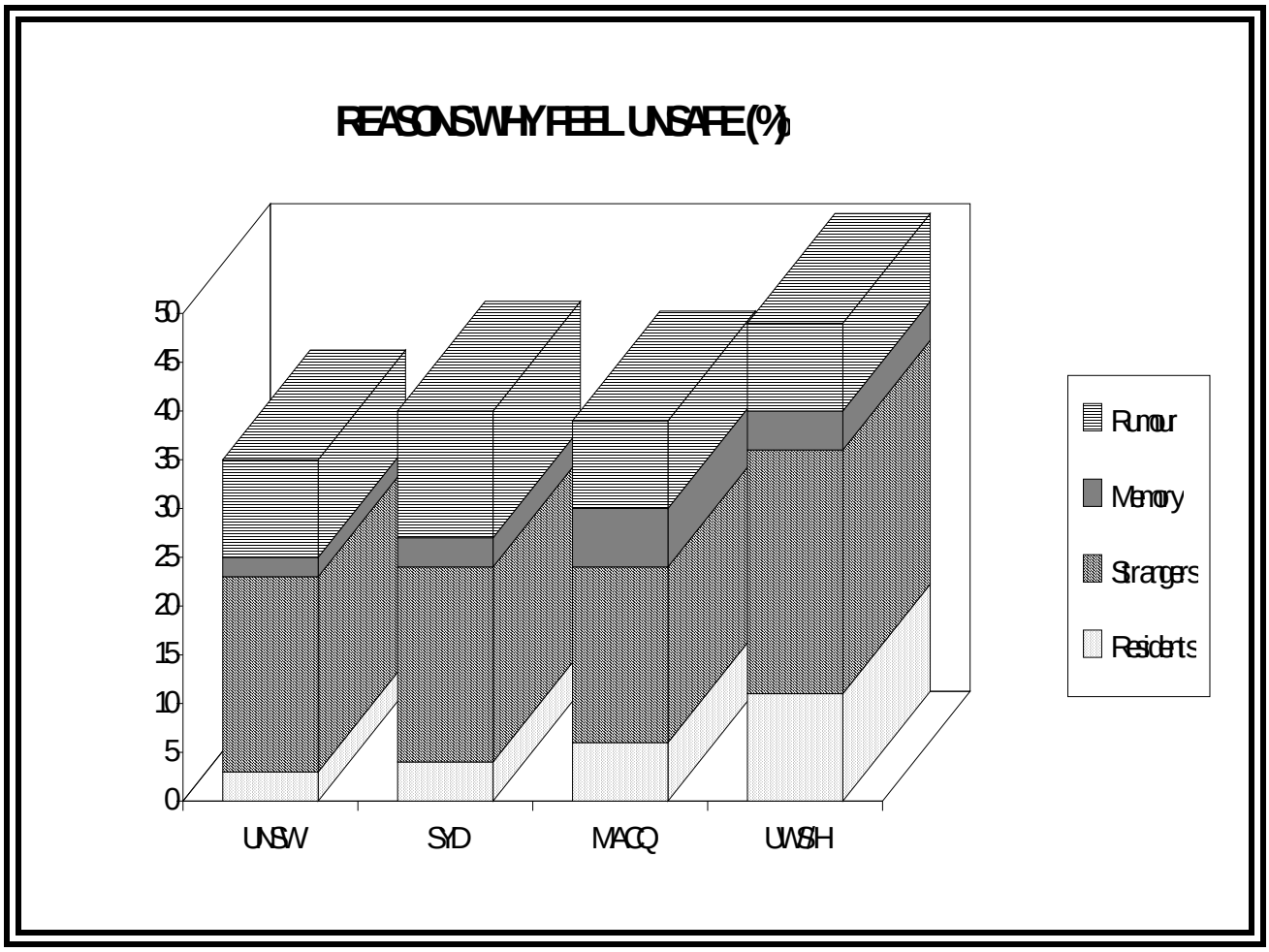

FIGURE 5.3: Reasons for Perceived Sense of Insecurity, Colleges , 4 Campuses (%)

TABLE 5.5: Where In College Do You Feel Afraid or Unsafe

WHERE	*bedrm*	*other bed*	*bath*	*common*	*dining*	*stairs*	*corrs*	*lites-in*	*outside*	*paths*	*parking*	*lane*	***T***
UNSW													
	2		4			4	2	3	17	37	11	18	**98**
% of Total	2	0	4	0	0	4	2	3	17	38	11	18	

									% Outside ->				*85*
	% Private/inside		*6*										
SYD													
	9		14	6		12	14	21	44	57	54	51	**282**
% of Total	3	0	5	2	0	4	5	7	16	20	19	18	
									% Outside ->				*73*
	% Private/inside		*8*										
MACQ													
	3	1	12	2		6	8	10	19	39	26	23	**149**
% of Total	2	1	8	1	0	4	5	7	13	26	17	15	
									% Outside ->				*72*
	% Private/inside		*11*										
UWS/H													
f	4		14	3	3	9	4	14	20	20	24	14	
m	3		2	3		1	1	3	4	3	3	2	
t	7		16	6	3	10	5	17	24	23	27	16	**154**
% of Total	5	0	10	4	2	6	3	11	16	15	18	10	
									% Outside ->				*58*
	% Private/inside		*15*										
UTS/B													
						2			1	1	1	2	**7**
% of Total	0	0	0	0	0	29	0	0	14	14	14	29	
									% Outside ->				*71*
	% Private/inside		*0*										
TOTAL	21	1	46	14	3	34	29	51	105	157	119	110	**690**
% Ov-T	3	0	7	2	0	5	4	7	15	23	17	16	
	% Private/inside		*10*						*% Outside ->*				*71*

Discussion

a] Of the total incidence (*ie* fearful places mentioned) Sydney accounted for 41%. Overall, no real differences can be detected in the proportion of these places assigned to different categories (such as paths, or bathrooms, etc) but there were 3 times more mentions at Sydney than at UNSW, which faired best. Taken in conjunction with Sydney's 37% share of the incidence of circumstances making students feel unsafe, this might be indicative of a general malaise - which should demand extensive future research and serious remedial action.

b] These overall findings can be categorised into several distinct areas of concern:

- Outside areas generally, and paths, parking and rear lane access (71% of total mentions) - are quite evidently the areas of major concern, rather than interior college spaces. Of these, the most salient issue appears to be the *paths* - again suggesting that university

campuses are residential and pedestrian domains as much as educational domains, and that remedial action and future design of new campuses should take this into account;

- Private interior spaces (10% of mentions) - which, although mentioned proportionately less overall, might well represent a higher *priority* to residents than outside areas *ie* the meaningfulness to them of bedrooms and bathrooms should be evaluated.
  Future research could build-in this requirement, by also asking residents to rank the importance of each of the items.

  Bathrooms at UWS/H, as expected, represented 10% of mentions for UWS/H, although 8% of mentions at Macquarie also related to bathrooms as places of concern.

  Policy issues relating to the mix of sexes in bathrooms should be examined. It is logical that private functions undertaken in bathrooms require more thorough investigation, and college corporate planning should appreciate the importance of the issue;

- Internal circulation spaces such as stairwells and corridors (9%) - which also relate to access to colleges by non-residents, corridor lighting and internal sightlines down corridors (see Environmental Evaluation section);

- Internal lighting issues (7%).

c] With regard to fear in *private spaces*, UWS/H records 15% of total mentions (the highest of the 4 universities) while percentage of mentions relating to outside/campus spaces is 58% (the lowest). UNSW is the opposite, with 6% private/inside and 85% outside/campus.

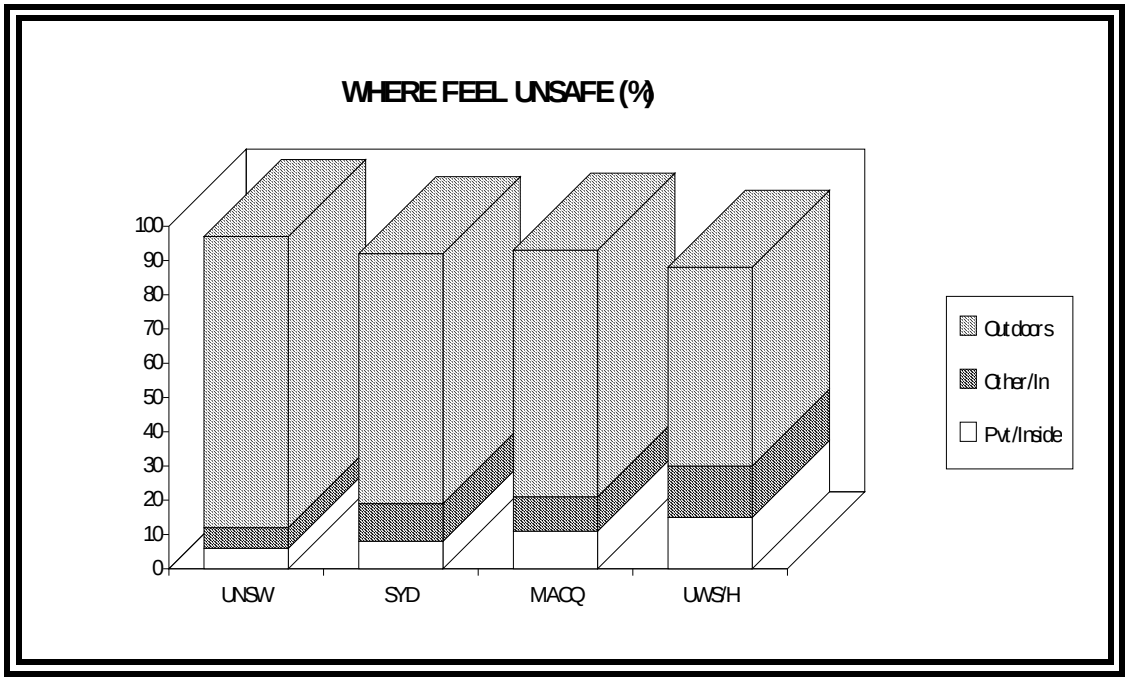

Figure 5.4: Places Where Sense of Insecurity is Experienced, 4 Campuses (percentages)

TABLE 5.6: When Have You Felt Afraid or Unsafe in College

WHEN	*early morn*	*daytime*	*night-time*	*weekend*	*holidays*	*visitors in*	*always*	*T*
UNSW								
	3	1	38	1	3	6	0	**52**
% of Total	6	2	73	2	6	12	0	
SYD								
	11	2	61	7	16	14		**111**
% of Total	10	2	55	6	14	13	0	
MACQ								
	4		41	8	3	10		**66**
% of Total	6	0	62	12	5	15	0	
UWS/H								
f	2		32	12	8	4	1	
m	2		6	3	2	3		
t	4		38	15	10	7	1	**75**
% of Total	5	0	51	20	13	9	1	
UTS/B								
		1	2	1	1	1		**6**
% of Total	0	17	33	17	17	17	0	
TOTAL	22	4	180	32	33	38	1	**310**
% of Ov-T	7	1	58	10	11	12	0	
	early morn	daytime	night-time	weekend	holidays	visitors in	always	

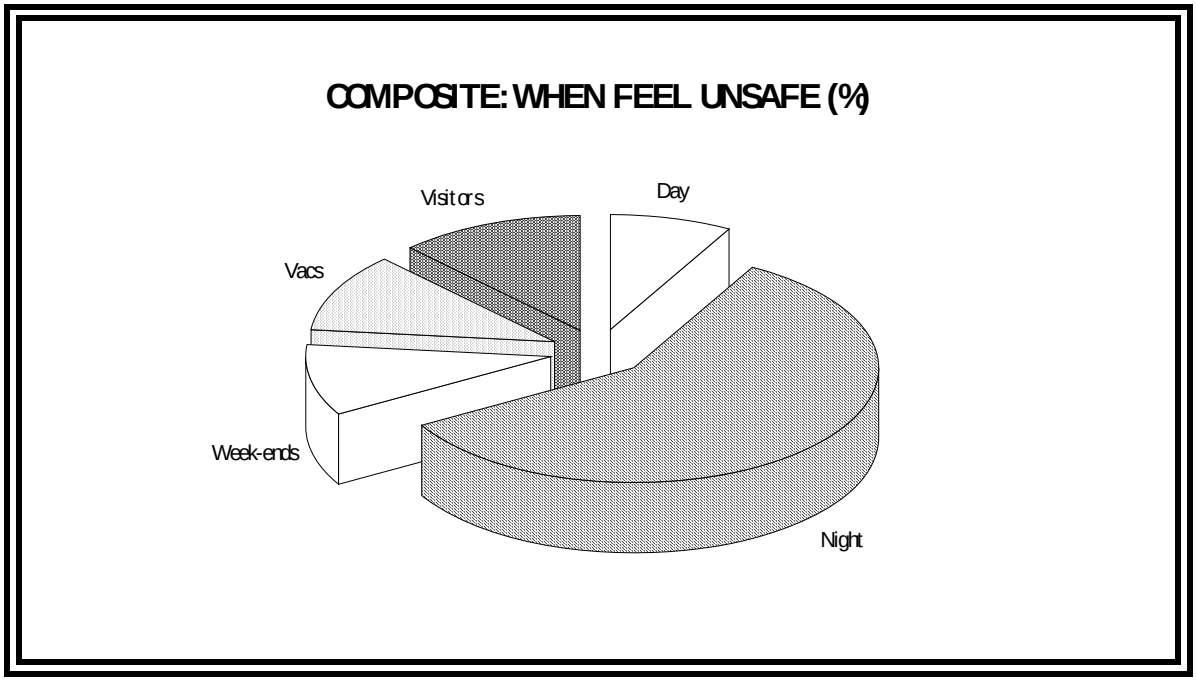

FIGURE 5.5: Time When Sense of Insecurity is Experienced, All Colleges (%)

Discussion

a] 58% of insecure feelings occur at night, with a further 33% occurring on week-ends, during holiday periods and when visitors are in colleges. Some mention was also made of the low numbers of people around on week-ends (and, as an aside, the low security presence on week-ends). Strategies to enliven campuses in off-peak periods and animate and populate them at night will be proposed as recommendations to alleviate this problem.

b] Again, the number of mentions at Sydney colleges was much higher than on other campuses - 36% (compared with 17% at UNSW, the lowest).

c] The patterns on the different campuses vary. Sydney and UWS/H have a similarly (relatively) low night-time fear incidence, while UNSW has the highest. The UNSW pattern is skewed by the location of the responding colleges, the residents of which report a major problem with the lighting on the path running alongside the oval and connecting the colleges with the academic domains of the campus (see Situational Experience mapping for evidence).

Early mornings appear as an issue at the Sydney colleges, while weekends figure prominently at UWS/H.

Again, this uniqueness amongst colleges and campuses is not surprising, and generalised solutions would be inappropriate.

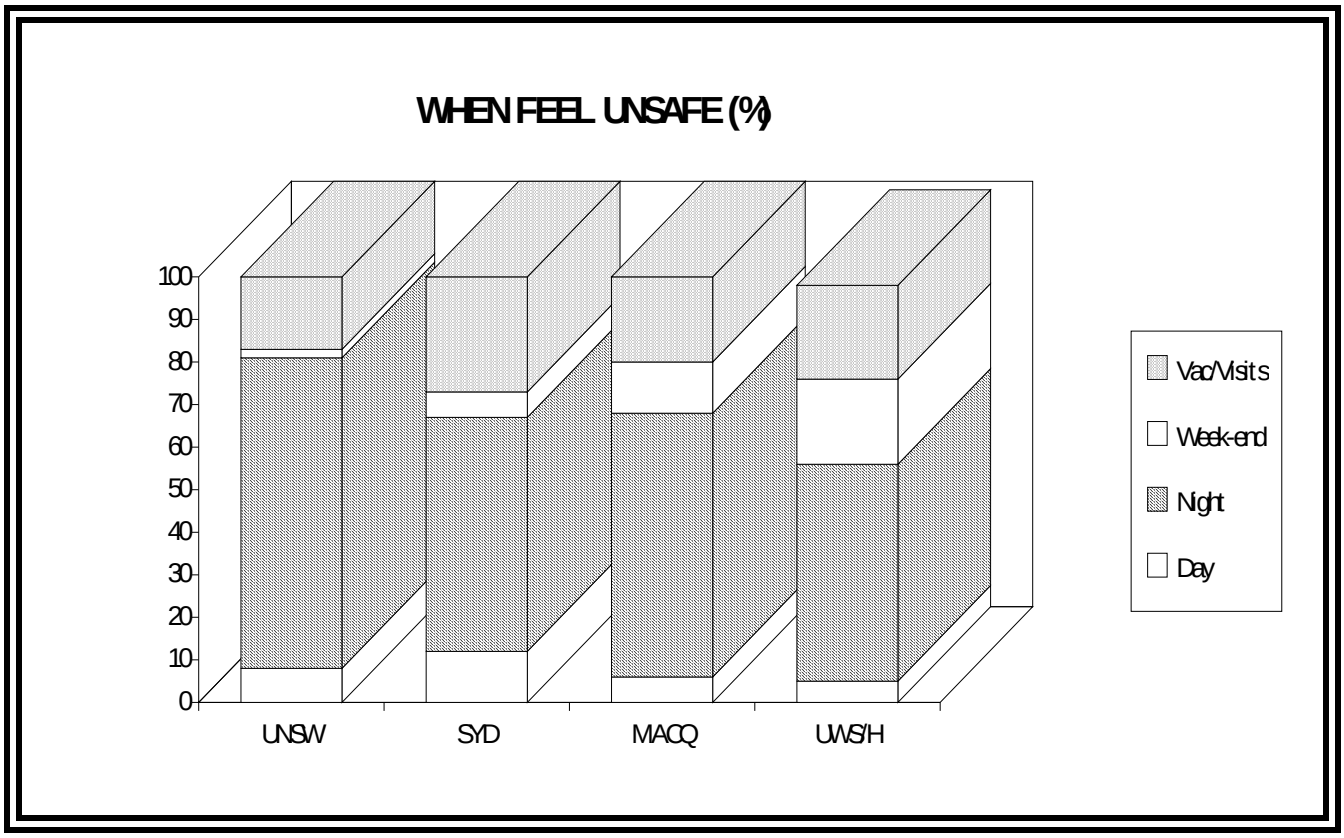

Figure 5.6: Time When Sense of Insecurity is Experienced, Colleges, 4 Campuses (%)

TABLE 5.7: Frequency/Unsafe Feelings

FREQ	*once*	*several times*	*manytimes*	*all the time*	***Total***
UNSW					
	10	27	1	1	**39**
% of T	26	69	3	3	
SYD					
	8	49	7	1	**65**
% of T	12	75	11	2	
MACQ					
	10	31	1	1	**43**
% of T	23	72	2	2	
UWS/H					
f	7	24	6		
m	1	4		1	
t	8	28	6	1	**43**
% of T	19	65	14	2	
UTS/B					
	1	1	1		**3**
% of T	33	33	33	0	
Total	37	136	16	4	**193**
% Ov-T	19	70	8	2	

Discussion

a] Of those respondents who report feeling fear, 70% experience this sensation on 'several occasions'. This would suggest that the issue is not one of a unique experience, but is a recurring pattern. 19% of responses related to a one-off experience/sensation.

b] If the 2 sub-categories: 'several times' and 'many times' are collapsed into one, termed 'often', the incidence is 78% of mentions.

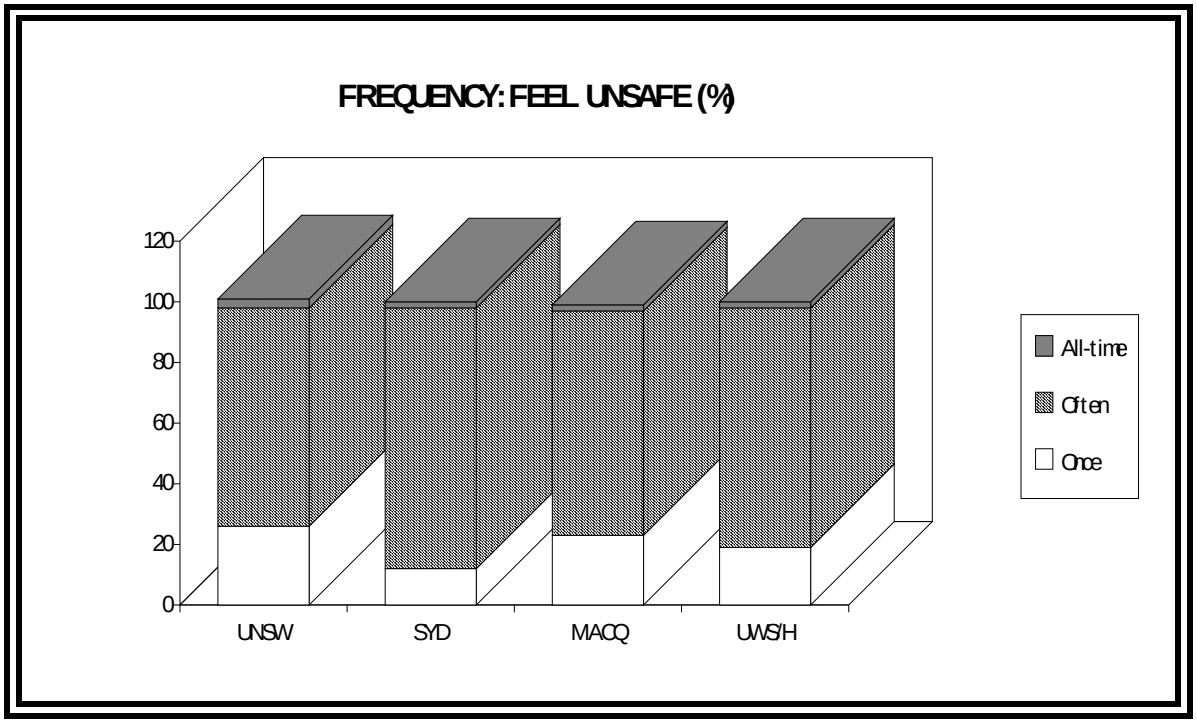

FIGURE 5.7: Frequency of Experiencing Sense of Insecurity, Colleges, 4 Campuses (%)

The POE Safety Audit section of the questionnaire terminated with an open-ended question, asking respondents to add any further comments regarding their impressions of experiences of safety/insecurity in their college.

Comments were content categorised and coded together with the comments from the +3/-3 survey (best and worst features).

Environmental Experience Evaluation

This section of the questionnaire dealt with student evaluations of 15 environmental design categories relating to security in both their colleges and the areas immediately surrounding them, and on the campus as a whole, including the security services provision. In the first instance, the respondents assess the *importance* (*NB*) of each item to them - *ie* a measure of 'user preference' and 'cognitive sets' (attitudes and expectations) - and, subsequently, they assess the extent to which they are *satisfied* (*Sat*) with the provision of each factor, in both the built environment and/or embodied in management procedures.

The Environmental Fit category is then generated, as a measure of the *congruence* between importance and satisfaction, for each item, and on average. Individual items can be evaluated and compared - for instance, the degree of fit of security service patrols and their fit in comparison to the shuttle bus/escort services; and each campus can be evaluated relative to each other, on any number of items, or overall.

A huge amount of information is generated by the Environmental Experience Evaluation procedure, some of which is presented below:

- Boundaries around the college
- Control over access to the building
- All-night internal corridor lighting
- Clear 'sightlines' down internal corridors
- Private or semi-private bathrooms
- Outdoor areas visible from indoors
- Private areas not visible from outdoors (*NB*) & Privacy in bedrooms (*Sat*)
- Highly illuminated outdoor areas
- Highly illuminated parking areas
- Highly illuminated access paths/road
- Clear sightlines down routes to colleges
- Closed-circuit TV monitoring systems

- Security service patrols
- Shuttle bus / escort services
- Activities that enliven/populate/animate
- areas close to the college at night.

Scoring of Environmental Experience Evaluation: NB and Sat

Mean responses are scored on the composite scale shown below. A mean response, for example, of **-0.5** lies midway between 0 and -1, while a response of **-.05** would indicate a relatively smaller rate of dissatisfaction or unimportance *ie* it is closer to the midpoint.

Not Important			**Ü midpoint Þ**		**Important**	
-3	**-2**	**-1**	**0**	**+1**	**+2**	**+3**
Dissatisfaction			**Ü midpoint Þ**		**Satisfaction**	

Scoring of Environmental Experience Evaluation: Environmental Fit (EF)

Congruencies for each response are calculated, summed, and averaged. The meaningfulness of the *EF* evaluation lies in scoring each response to each item by *NB* and its associated *Sat* response. It is laborious, and time-consuming, but the outcome is salient.

The midpoint in this case is 4. Anything >4 = a degree of fit; anything <4 = a degree of misfit.
The higher the ***EF*** score, the better the fit.

1	**2**	**3**	**4**	**5**	**6**	**7**
misfit			**ÜmidpointÞ**			**fit**

It seems appropriate to mention here, in relation to the analysis and interpretation of the complex relationships between campuses as built environments and the attitudes and behaviours of the users of those campuses, that even eminent researchers of the calibre of Professor David Suzuki acknowledge that research is..."far more likely to yield a puzzle than a satisfying answer"....and that there is..."something reassuring in knowing that nature is a lot more complex than we can imagine" (Suzuki, *Time to Change*, 1993).

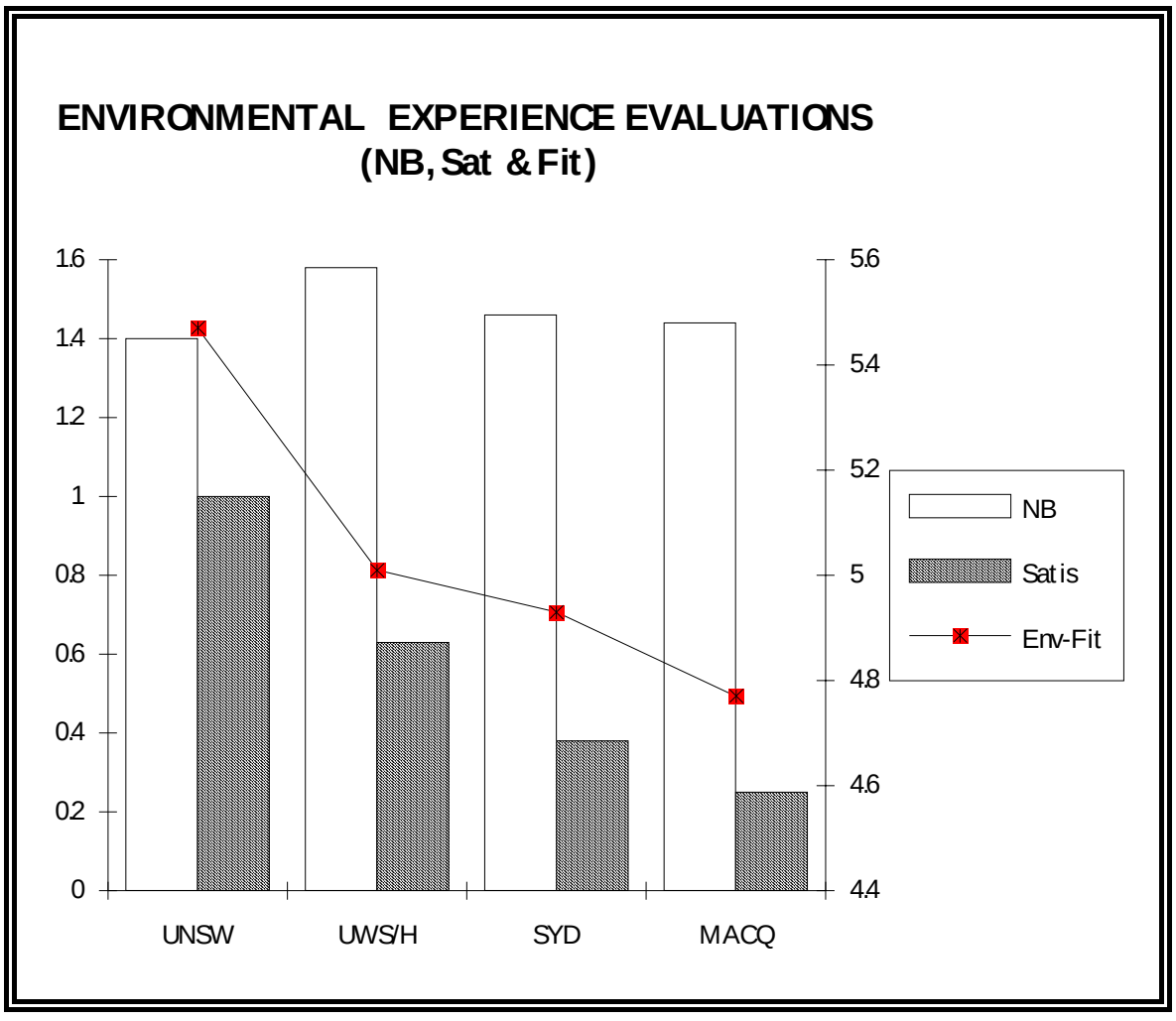

FIGURE 5.8: Mean Overall Ratings of Importance & Satisfaction (Scale: -3 to +3) & Environmental Fit (Scale: 1-7)

Discussion

a] The composite chart indicates that, overall, Importance is virtually identical for respondents at all the universities surveyed (ranging from $\overline{nb}$ +1.4 to $\overline{nb}$ +1.58, of a maximum possible of +3).[12] For this reason less statistical runs were performed with *NB* as the independent variable. A major finding illuminated by the Environmental Evaluation survey is the variability in Satisfaction experienced by the respondents on the different campuses. It is this variable which is responsible for the Environmental Fit differentials evident in Fig 5.8 above. The majority of statistical tests were thus performed for Satisfaction.

b] Satisfaction and Environmental Fit vary proportionately to one other, which confirms that the numerical scoring for *EF* is appropriately reflecting the principles of the *EF* paradigm.

c] From the figure, it can be deduced that UNSW has the highest overall *EF* rating ($\overline{ef}$ 5.47), followed by UWS/H ($\overline{ef}$ 5.01) and Sydney ($\overline{ef}$ 4.93), with Macquarie scoring lowest ($\overline{ef}$ 4.77). The range is small, and relative to a maximum possible *EF* rating of 7, there is a 10% difference between the highest and lowest *EF* ratings - despite the visual impression given by the diagram).

d] It must be remembered that where *Sat* is greater than *NB*, a N/A score is entered; and when *NB* is lower than +1, a N/A score is also entered. The total *EF* score is thus divided by the number of valid scores, not the total number of scores. Some distortion could eventuate as a result. These *EF* ratings should be taken as suggestive only.

e] The highest Satisfaction rating was for UNSW ($\overline{sat}$ +1), the lowest for Macquarie ($\overline{sat}$ +0.25). All *Sat* ratings are positive (above zero); the maximum *Sat* rating = +3.

f] *NB* is higher than *Sat ie* expectations are <u>not</u> being met, to whatever degree.

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[12] $\overline{nb}$ = Mean Importance; $\overline{sat}$ = Mean Satisfaction; $\overline{ef}$ = Mean Environmental Fit

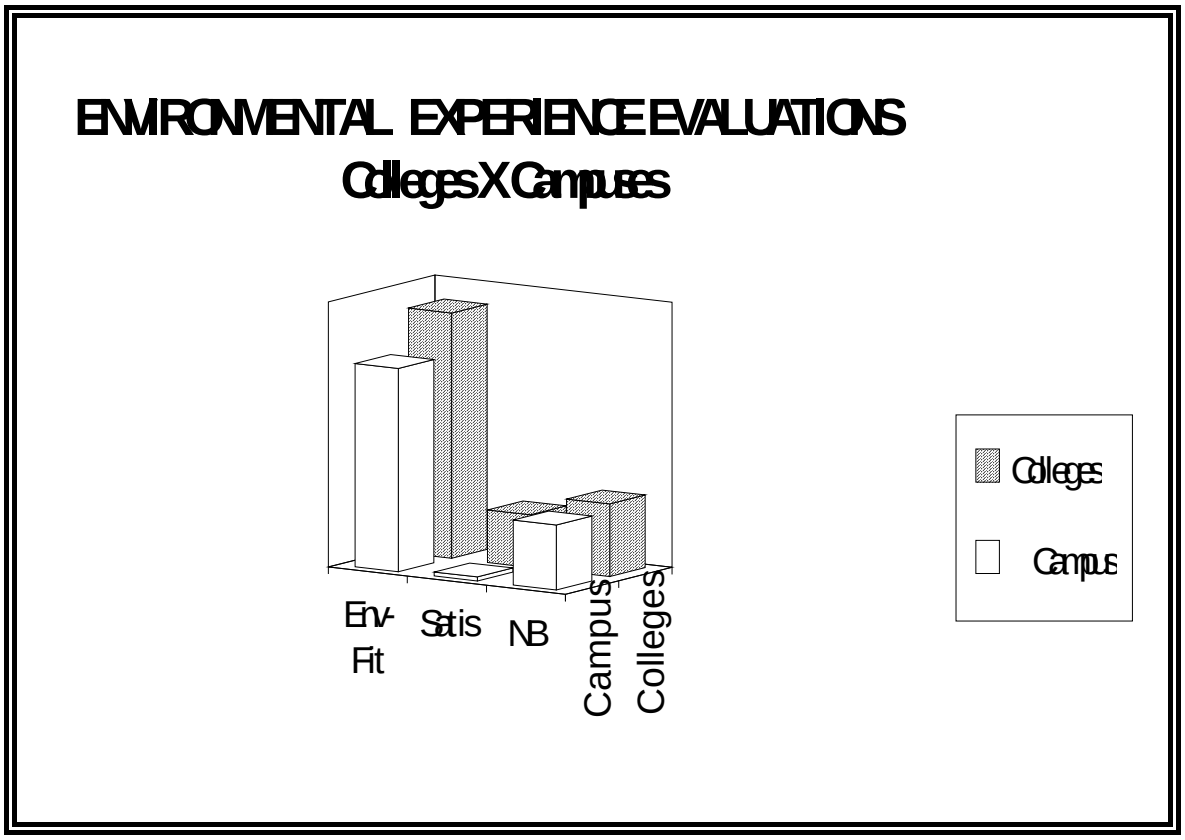

FIGURE 5.9: Proportional Mean Overall *NB, Sat* & *EF*: College Buildings & Campus Domains

Discussion

a] The Satisfaction variable can again be seen to be the dominant factor discriminating between the respondent's experiences of colleges and campuses, respectively. Satisfaction with campuses is of a lower order ($\overline{sat}$ +0.09) than satisfaction in colleges ($\overline{sat}$ +1.19), implicating external campus design and security services as components in this variance.

b] Environmental Fit, consequently, is also slightly lower for campuses ($\overline{ef}$ +1.47) than for colleges ($\overline{ef}$ +1.64) - relative to a maximum +3, this represents a 5% difference.

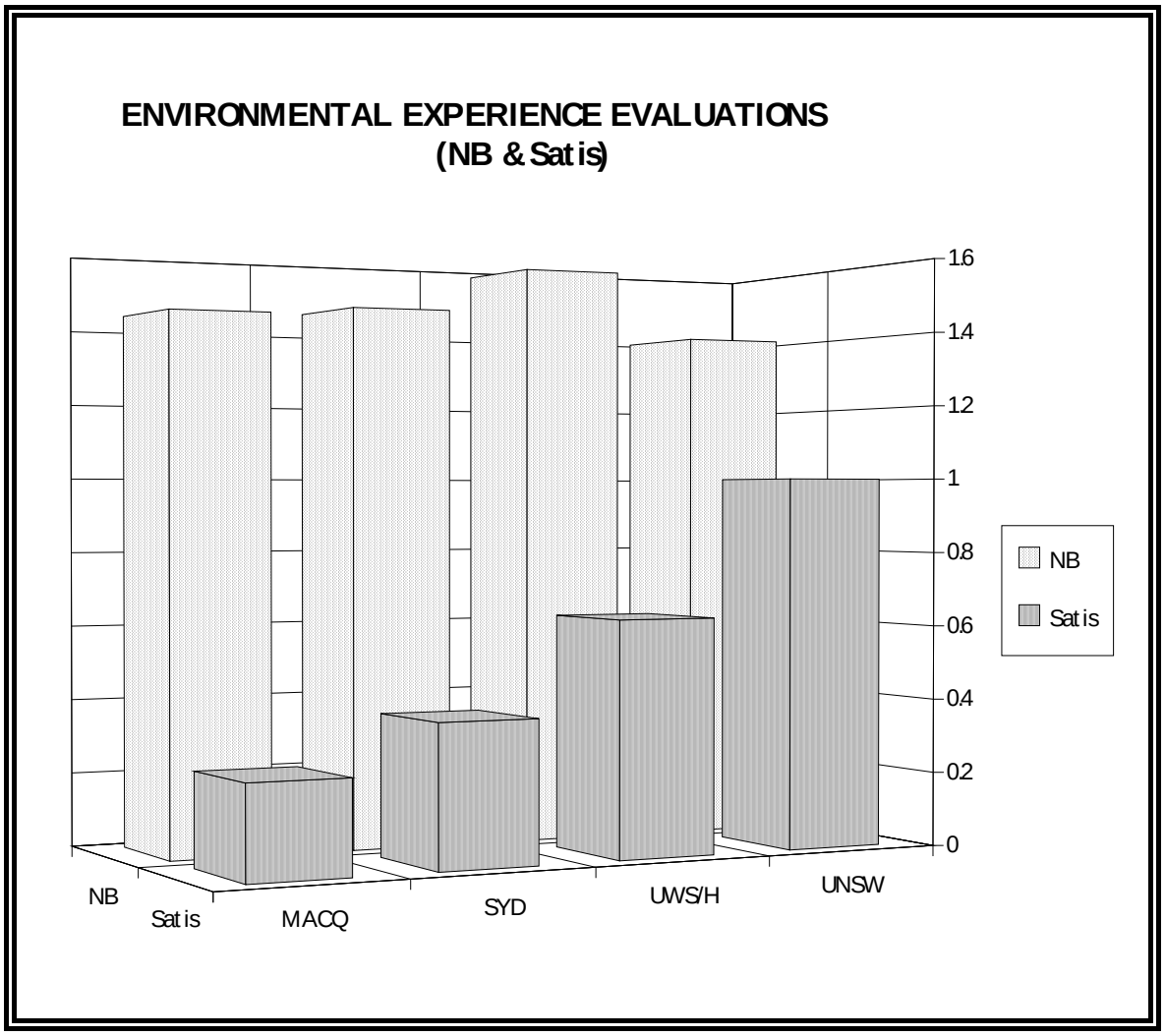

FIGURE 5.10: Relationships Between Mean *NB* and *Sat*, Overall, (without showing *EF)*.

Importance

TABLE 5.8: Rank Ordering: Importance x All

												RANK	Ov
		UNSW		UTS		SYD		MACQ		UWS/H		OV-AV	Rank
access control	**1**	2.7	**1**	3	**1**	2.54	**3**	2.06		1.67		**2.39**	**1**
path lighting	**2**	2.2	**4**	2.3	**2**	2.48	**2**	2.34	**2**	2.23		**2.31**	**2**
light/parking		1.7	**2**	2.8	**3**	2.22		1.82	**3**	2.18		**2.14**	**3**
not see in from out	**3**	2.1	**3**	2.5		1.85		1.57		1.56		**1.92**	**4**
sightlines/paths	**3**	2.1		1	**4**	2.04	**1**	2.42	**4**	1.83		**1.88**	**5**
light/outside		1.5		2	**4**	2.02	**4**	1.92		1.55		**1.80**	**6**
pvt. bathrooms		1.8		2.2		1.34		1.3		1.47		**1.62**	
corridor nitelite	***-3***	0.6	**2**	2.8		1.27		1.47		1.67		**1.56**	
bus/escorts	**4**	1.9	***-1***	-0.8		1.83		1.65	**1**	2.3		**1.38**	
security serv		1.4	***-3***	0		1.4		1.48	**1**	2.3		**1.32**	
see out from in		1.1		1	***-4***	1.14		1.4		1.5		**1.23**	***-5***
sightlines/interior	***-4***	0.9	***-2***	0.5	***-2***	0.8		1.38	***-4***	1.37		**0.99**	***-4***
boundaries		1.2	***-2***	0.5	***-3***	0.91	***-3***	0.74	***-3***	1.19		**0.91**	***-3***
animate/night	***-2***	0.2	***-2***	0.5	***-2***	0.81	***-2***	0.69	***-2***	1.01		**0.64**	***-2***
cctv	***-1***	-0.4	***-1***	-0.8	***-1***	-0.75	***-1***	-0.58	***-1***	-0.17		**-0.54**	***-1***
Ov-Av		**1.4**		**1.3**		**1.46**		**1.44**		**1.58**		**1.44**	
range		*3.13*		*3.8*		*3.2*		*3*		*2.47*		***3.13***	

Discussion

a] Table 5.8 above indicates individual *ranking*, by descending order of importance, for each Environmental Experience item (cctv, eg), by campus, and overall (Ov-Rank); and individual item *mean* scores ($\overline{nb}$), by campus, and overall (*Rank OV-AV).*

b] It is also possible to read-off the overall Importance *ratings* for each campus (see **Ov-Av**), which are very similar (UTS excluded) and range from $\overline{nb}$ +1.4 to $\overline{nb}$ +1.58. This indicates that the items in the questionnaire are thought to be quite important to respondents.

c] Although ranking varies amongst the universities, 'control over access to college buildings' and 'highly illuminated access paths/roads' feature in first and second place in 3 out of 4 cases, and are placed first ($\overline{nb}$ +2.39) and second ($\overline{nb}$ +2.31) overall. These scores are very high (where a maximum is +3), and indicate the salience of access control and path lighting in the conceptual sets of students living-on-campus. Only slightly less salient is the issue of 'highly illuminated parking areas' ($\overline{nb}$ +2.14) - ranked third overall.

Clearly, environmental design issues are implicated here, and recommendations will be made based on these findings. this is true for the 4th ranked item too, which relates to privacy ($\overline{nb}$ +1.92).

d] Of interest also is the high ranking of the variable 'clear sightlines down routes to colleges' ($\overline{nb}$ +1.88), which figured prominently in evaluations on all the campuses, and which is an environmental design issue which should be seriously considered in any remedial action and in the design of new campuses. This notion of 'space syntax', discussed previously, is evidently an important consideration which has not be given due consideration to date *ie* the value of being able to see ahead, and discern who might also be on the path before encountering them, could be a powerful CPTED deterrent.

e] Of least importance, indeed evaluated as of negative importance ($\overline{nb}$ -0.54), is a Closed Circuit Television monitoring capacity (CCTV) for colleges of residence - overall and on each campus. This option would, in all likelihood, be evaluated differently by security service members, certainly for areas on campuses other than colleges of residence. Several campuses already have CCTV monitoring systems, for example, a library entrance (Macquarie) and internal spaces and computer labs (UTS). The UTS system is the most extensive of all, and allows for considerable electronic surveillance within their major Broadway and Harris street buildings.

f] Another issue considered to be of little importance overall were 'activities that enliven/populate/animate areas close to colleges at night'. The wording of this variable, in the questionnaire, however, could be improved. Some respondents indicated that it was very important <u>not</u> to have any such activities near their college, and cited previous experiences

with drunken male students as the reason. The overall impression seems to have been given that such activities would inevitably be associated with the consumption of alcohol, and the consequent rowdy and intimidating behaviour often associated with it. A case will be made, in the Recommendation section, for the proper consideration of this alternative which, if handled properly, could have an influence on fear and victimisation experiences on campuses. It is true of night animation strategies in any situation, that the juxtaposition of inappropriate activities leads to the opposite of what is intended.

g] Also of interest is the relatively low ranking ($\overline{nb}$ +1.23) relating to being able to see 'outdoor areas' from indoors *ie* surveillability in the classic sense. Albeit a positive score, it is assumed here that a ranking of 11th out of 15 factors is indicative of a low proprietary sense amongst students *ie* they are little concerned with the college as a territory which might need defending - unlike home owners, who tend to appropriate the semi-private and semi-public spaces around their dwellings. Moreover, it could be inferred that they are expecting physical access controls ('hardware') to deter potential invaders of their private spaces and gatekeepers to keep a lookout on their behalf; or it might never have occurred to them that their on-campus college is part of a *neighbourhood,* or that they are part of *a residential community.*

Such a notion is not usually a part of the 'culture' of on-campus colleges. It could be. It should be. Environmental management is implicated here. Inculcating a sense of responsibility for places, and allowing students a greater role in decision-making about the running of their colleges, and in the design and/or amelioration of their colleges, are strategies which will be elaborated upon in the Recommendations section.

Because of the importance of surveillability as a fundamental CPTED principle, further analysis was undertaken to determine whether any statistical significance could be established. Three significant correlations emerged from the analyses (over).

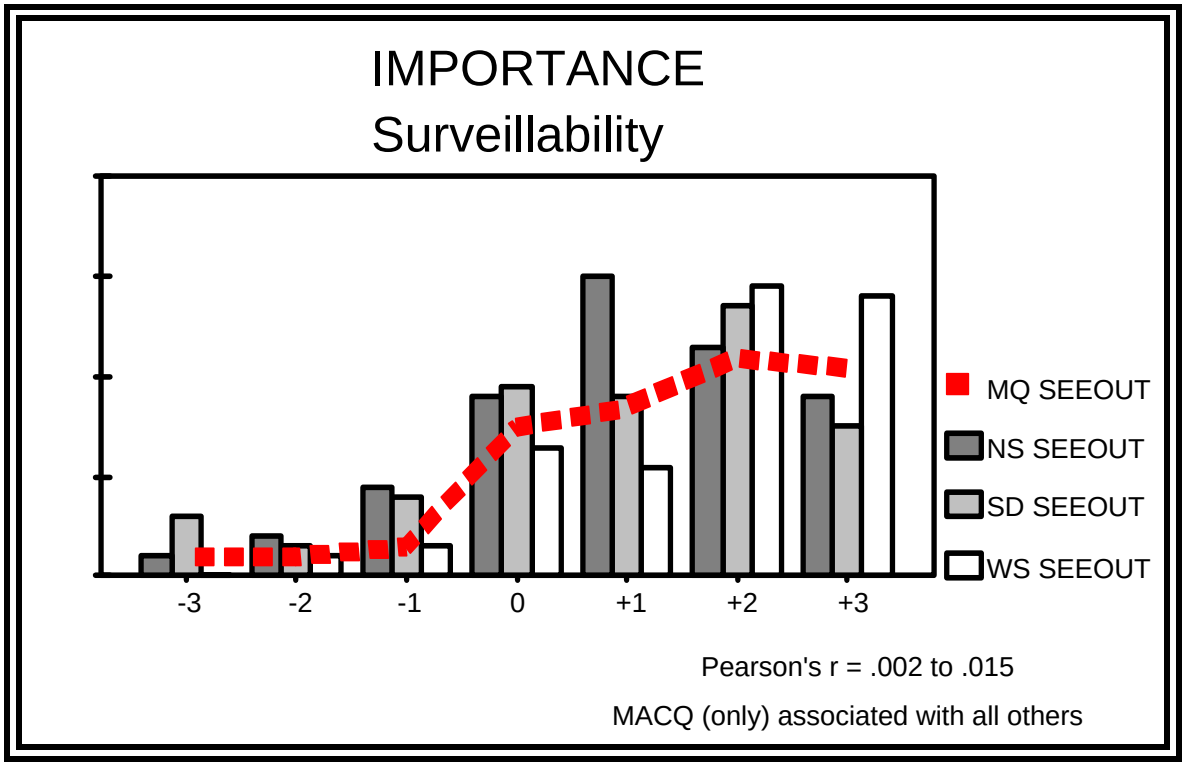

FIGURE 5.11: Significant Correlations, 4 Campuses:
Importance Attributed to Surveillability Potentials

Discussion

a] The SPSS graph (above) indicates that surveillability is weighted on the positive side of the *NB* scale. There is also a significant positive correlation between the importance afforded this factor by Macquarie respondents and those on all the other campuses (but not between any of the others) - as indicated by the curved line. This suggests that there is a kernel of elements in the Macquarie response which could be taken as representative of the perceived importance of surveillability; while the pattern of response between the other universities is dissimilar (see, eg, the +1 or +3 response). Further field research would be required to elicit this nucleus of common elements.

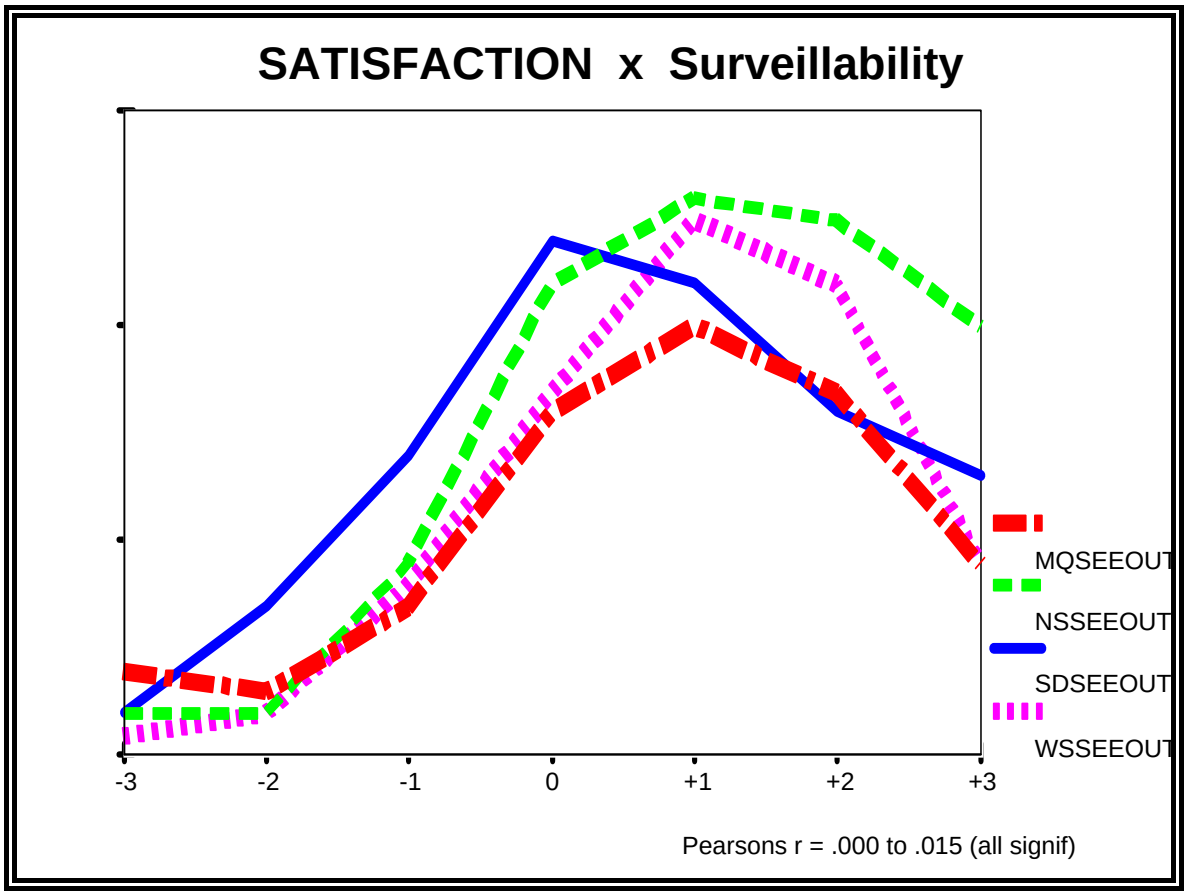

FIGURE 5.12: Significant Correlations, 4 Campuses:
Satisfaction with Opportunity for Surveillability

Discussion

a] Figure 5.12 indicates that satisfaction with surveillability is weighted on the positive side of the *Sat* scale, and is high, overall; although the Neither/Nor or zero score is also high. The responses on all the campuses are closely associated *ie* there are significant correlations between them - the similarity in the shape of the curves indicates this graphically.

b] Since only Macquarie displayed significance in the NB ratings (Fig. 5.11), these relatively high satisfaction ratings might be illustrating the 'illusion' discussed earlier *ie* where a high priority/importance is not afforded an item, satisfaction with it is more readily obtained.

- Only UNSW displayed a significant correlation between the **NB** and **Sat** ratings for surveillance *ie* high importance associated with high satisfaction (Fig. 5.13 below). The UNSW model requires further investigation to determine the factors accounting for this relationship (design, management, expectation, experience...?).

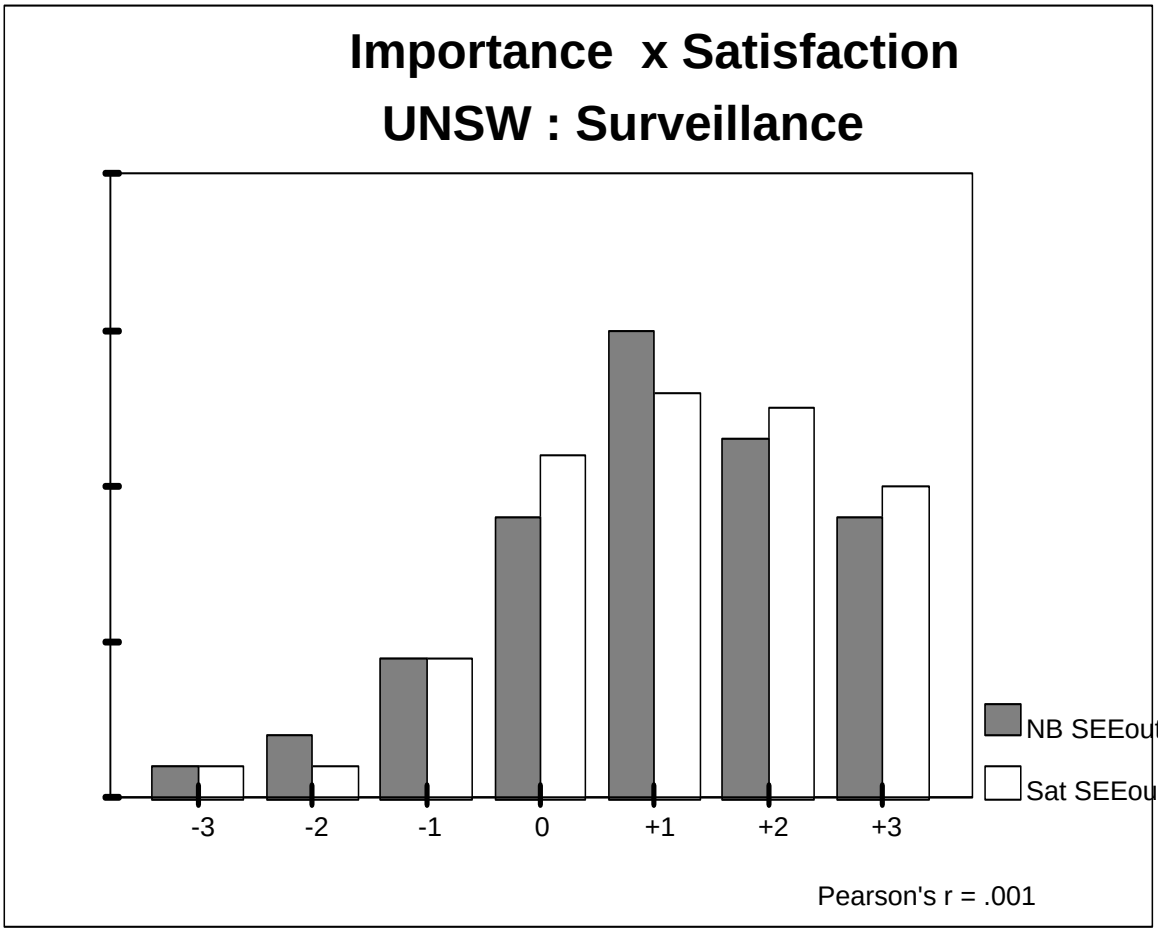

FIGURE 5.13: Significant Correlations between *NB* and *Sat* for Surveillability, @ UNSW

Importance x Exterior Factors (Campus Domains)

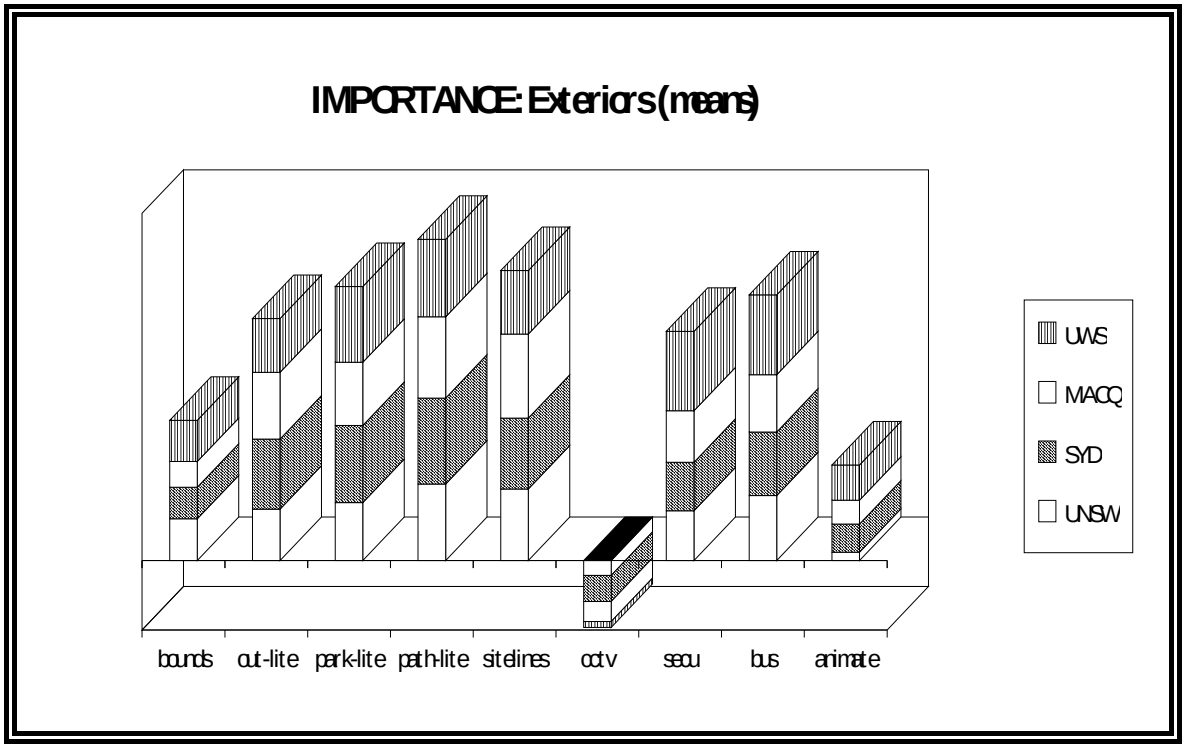

FIGURE 5.14: Mean *NB* Attributed to Campus Domain Factors (volume represents relative *NB*)

Discussion

NOTE: Figs. 5.14 and 5.15 are representations of overall averages for ratings with data for UTS removed. They are thus slightly different from the values shown in Table 5.8. The resultant general pattern indicates that low values increase slightly and high values decrease slightly. The overall average is not different. Relevant rank position changes of $\overline{nb}$ are: path sightlines - up to 3rd (from 5th), and bus/escorts - up to 5th (from 9th).

a] Lighting on paths/roads, clear sightlines down those paths/roads ('routes to colleges'), lighting in parking areas, and lighting outdoors, generally, are the most important issues for respondents on all the campuses - clearly environmental design issues.

- The important relationship between lighting and sightlines has been previously discussed. Because of the potential significance in any campus design programme of lighting and sightlines, statistical analyses were undertaken to determine if correlations could be established (see: Figs 5.17 & 5.18).

b] The importance of the security shuttle bus/escort services and security services in general are also highlighted in the diagram. Statistical correlations were established for these elements too (see: Figs. 5.19 & 5.20).

c] The low importance ($\overline{nb}$ <0) attributed to CCTV facilities is also clearly evident.

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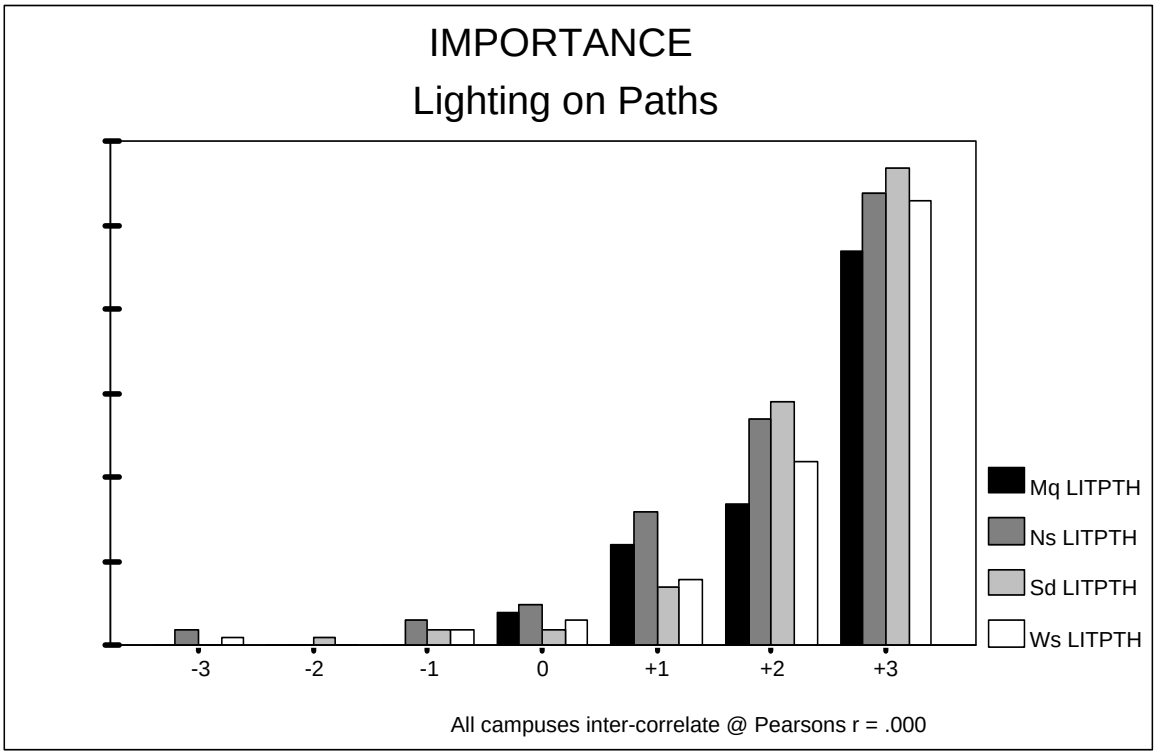

FIGURE 5.15: Significant Correlations: Importance Attributed to Path Lighting, 4 Campuses

Discussion

a] The exponential pattern evident in Fig 5.15 is a clear indication of the importance attributed to lighting on paths. The 'very important' category (+3) is the most salient, by far. The Pearson's correlation coefficient is p<.0001, for all campuses. In other words, the highest significance is attributed to path lighting on all campuses surveyed.

- This is a major finding of the research, and will be elaborated upon in the Recommendation section.

b] Figure 5.16 is included here to indicate the low *satisfaction* levels with path lighting which was evaluated similarly at both UNSW and Sydney (p<.001). The pattern is the opposite of that indicated in Fig 5.15.

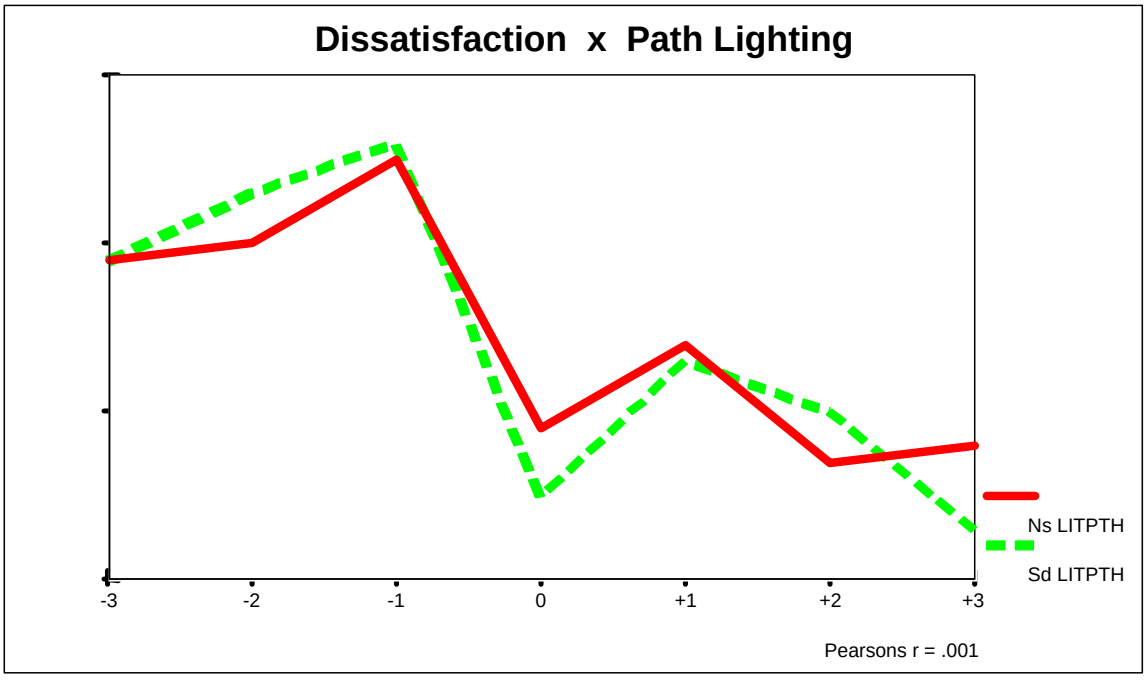

FIGURE 5.16: Significant Correlations, Dissatisfaction with Path Lighting, UNSW and Sydney

- Fig. 5.17 indicates the importance attributed to external sightlines, which although not quite as dramatic as the pattern for path lighting (Fig 5.15) is nonetheless clearly weighted on the positive side of the scale. The correlations between the various campuses are shown beneath the figure.

- The important association between sightlines and pathlights is shown in Fig 5.18 (over). Again the exponential pattern is evident, and the relationships between these two items are highly significant for UNSW, Sydney and Macquarie.

  UWS/H appears to have a different pattern with regard to sightlines (see over).

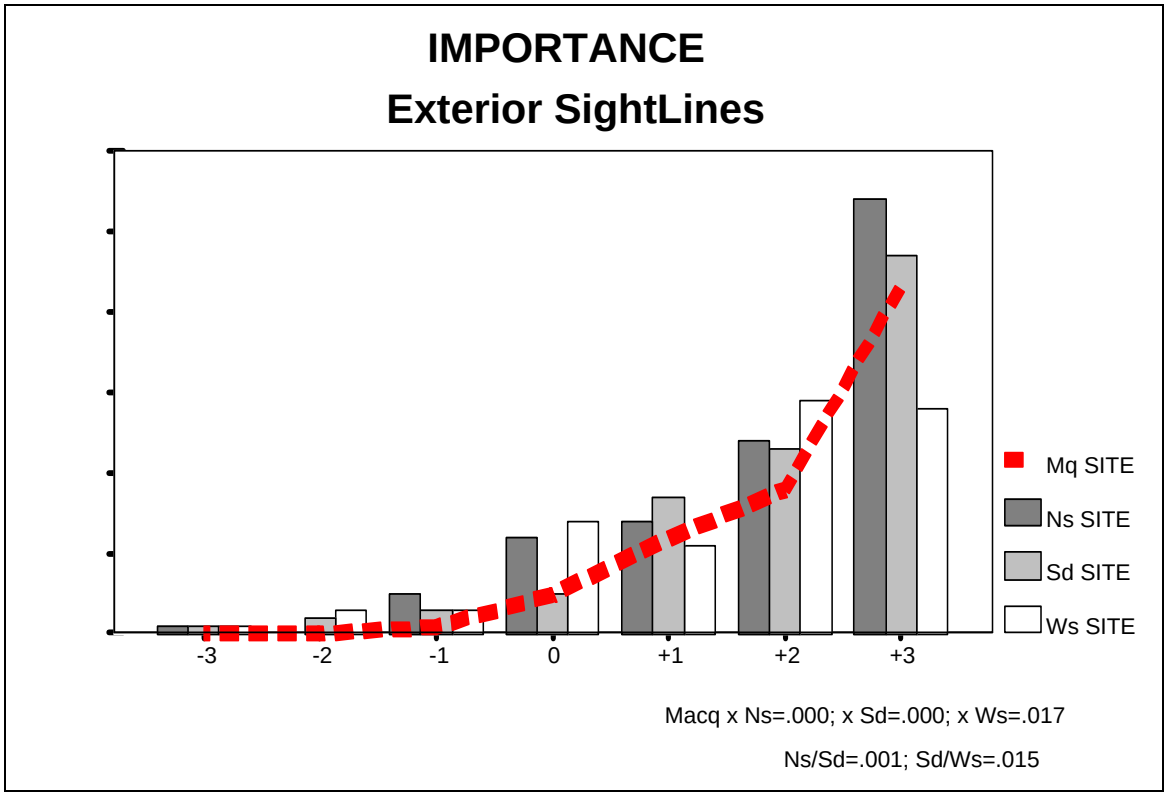

FIGURE 5.17: Sig. Correlations: NB Attributed to Path/Route Sightlines, 4 Campuses

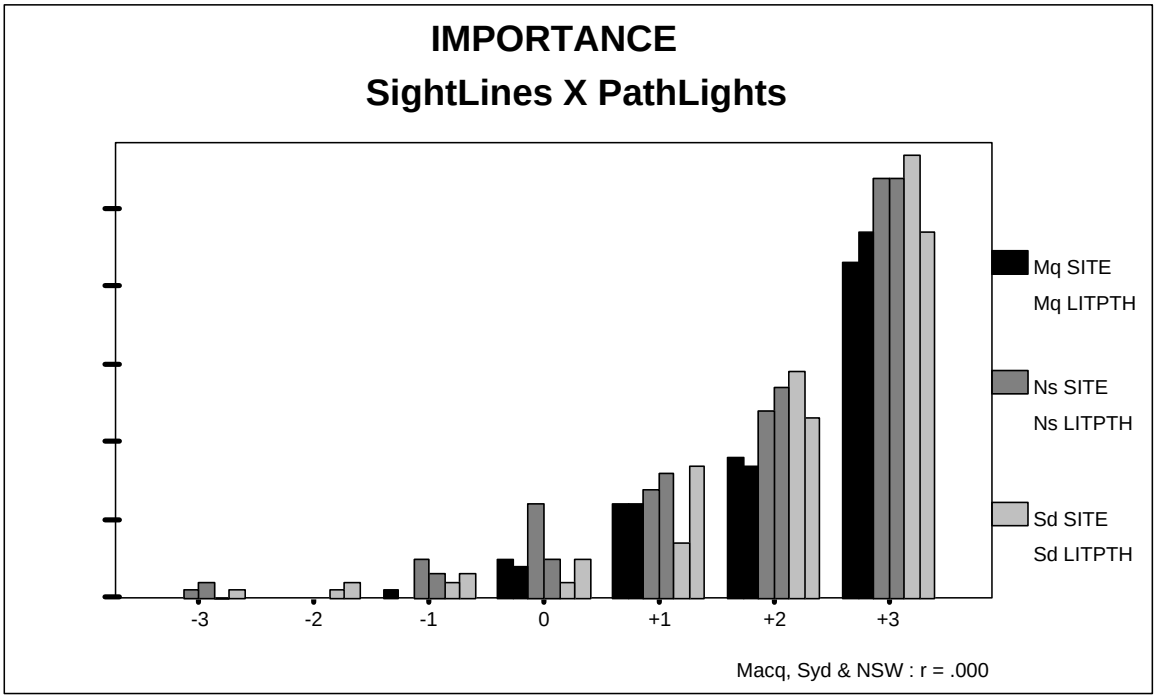

FIGURE 5.18: Sig. Correlations: NB Relationships between Sightlines and Path Lighting

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Figure 5.19 (over) shows the significant associations between importance attributed to security services and to shuttle bus/escort services on all the campuses - except UWS/H: probably because the shuttle bus service is a recent addition at UWS/H, and is very well appreciated, while at the same time does not yet function on Fridays, which is not appreciated. Furthermore, because it is recent, some respondents entered a N/A score for this item *ie* they either do not know about it, or their old habits have not yet changed to accommodate this new service.

Importance is weighted, again, on the positive side of the scale.

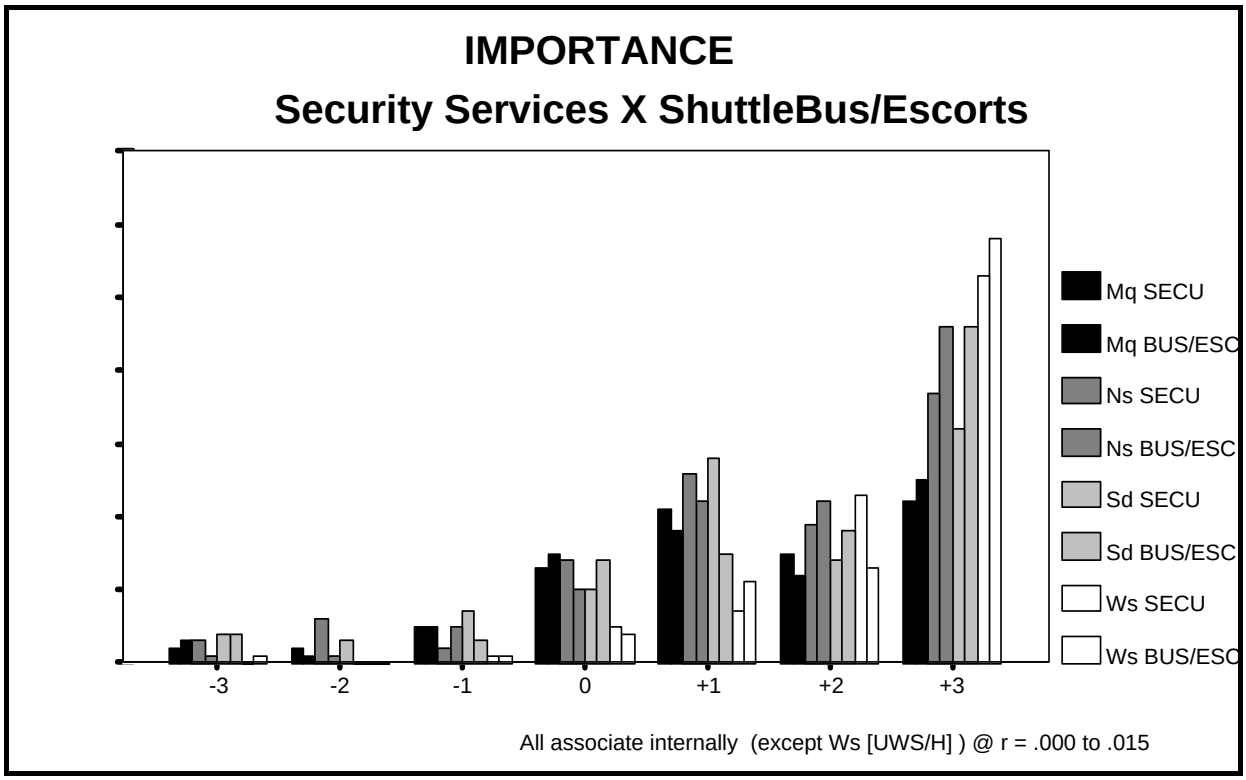

FIGURE 5.19: Sig. Correls: NB Relationships between Security Services and Shuttlebus/Escort Services

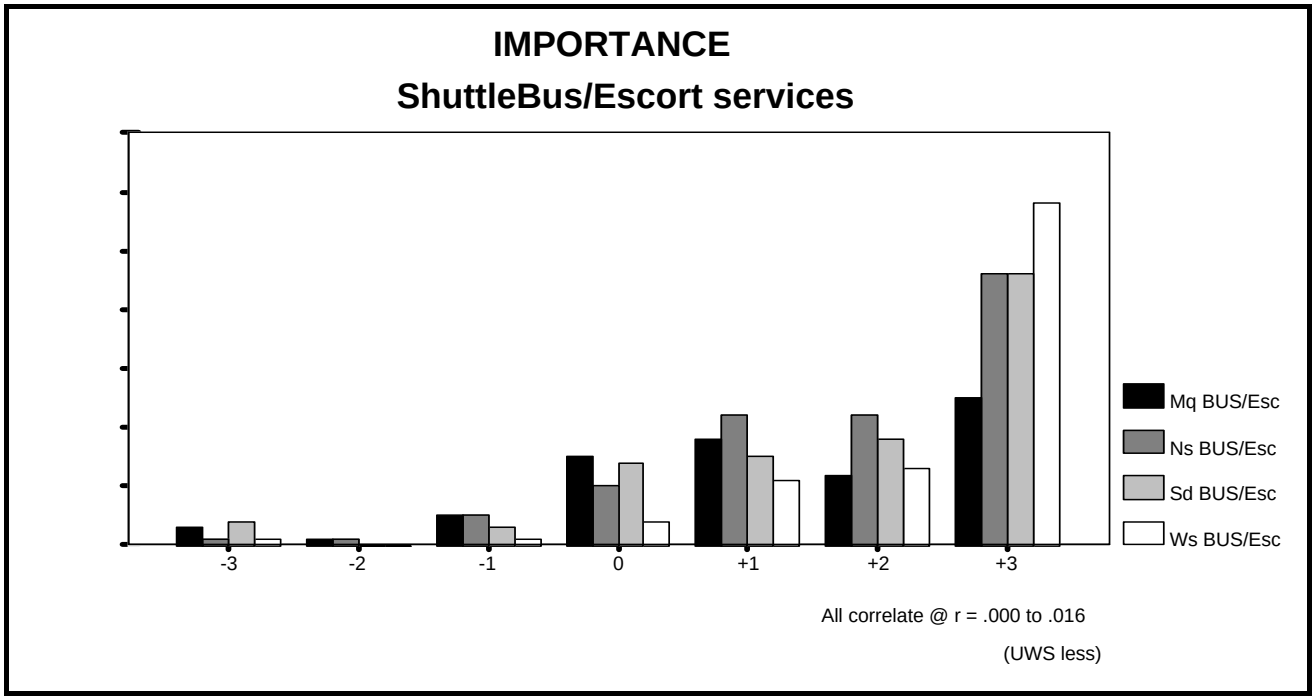

FIGURE 5.20: Sig. corrs: NB Attributed to Shuttlebus/Escort Services, All 4 campuses

Discussion

a] Respondents on all 4 campuses attribute importance to the provision of a shuttle bus and/or escort service. Some campuses provide this facility via the use of security patrol cars, others have a mini-bus service.

b] Again, weight is on the importance end of the scale.

Satisfaction with shuttlebus/escort services is significantly associated on the UNSW and Macquarie campuses. Interpretation of Fig 5.21 (below) indicates higher satisfaction and lower dissatisfaction at UNSW, which provides the most sophisticated escort system: a shuttle bus and student security personnel on bikes. At Macquarie only patrol cars are used, and they do not go right to the residences, but drop-off students, who then negotiate a grassy area and footbridge which are isolated and poorly lit.

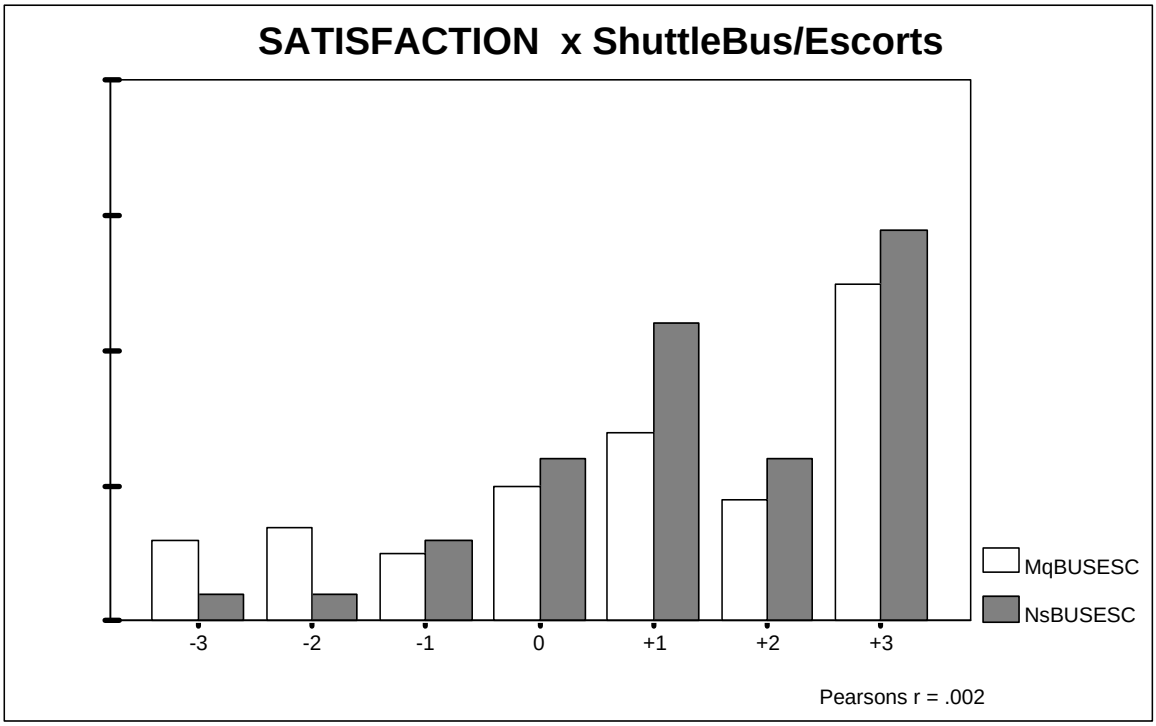

FIGURE 5.21: Sig. Corr: Satisfaction with Shuttlebus/Escort Services, UNSW and Macquarie

Importance x Interior Factors (Colleges)

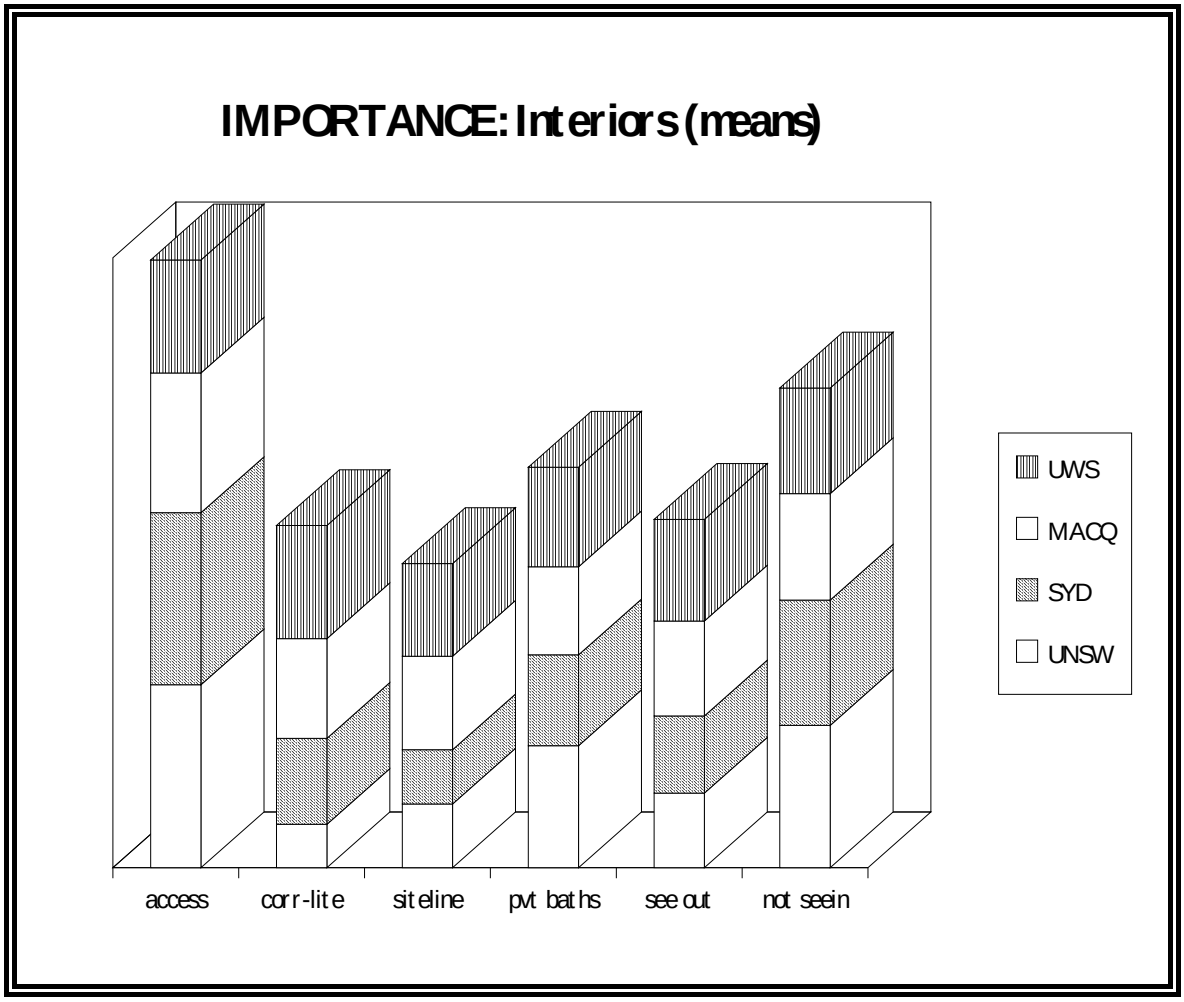

FIGURE 5.22: Mean Importance: Design and Management of College Buildings, 4 Campuses
(volumes represent average importance)

Discussion

Salient college building interior factors highlighted, in descending order of importance, are: access control, privacy (private areas not visible from outdoors, and privacy in bathrooms), surveillability, and internal corridor lighting.

It has been noted previously that access control was ranked as being of the highest importance. Two other issues critical to the philosophy underlying this research are illustrated here: the desire for privacy - a fundamental tenet of Environmental Psychology paradigms, and surveillability potentials - a fundamental tenet of the Situational Crime Prevention Through Environmental Design or CPTED paradigm. The two factors can conflict. A preference to be able to see out might also mean that outsiders can see in, particularly at night when the lights on inside - also a time when 'look-out' capacity is often most required. The issue might find resolution by the employment of 'smart' glazing systems, or window planting, but this is not the place to discuss this dilemma.

Below (*and over)* are three SPSS diagrams illustrating the high levels of significance associated with the importance of control over accessibility to college buildings, privacy, and corridor lighting. The issue of bathrooms is dealt with subsequently.

Despite the fact that control over accessibility (a fundamental CPTED tenet) is of great importance on all 4 campuses, there appears to be a significant association only between the evaluations at UNSW and Sydney.

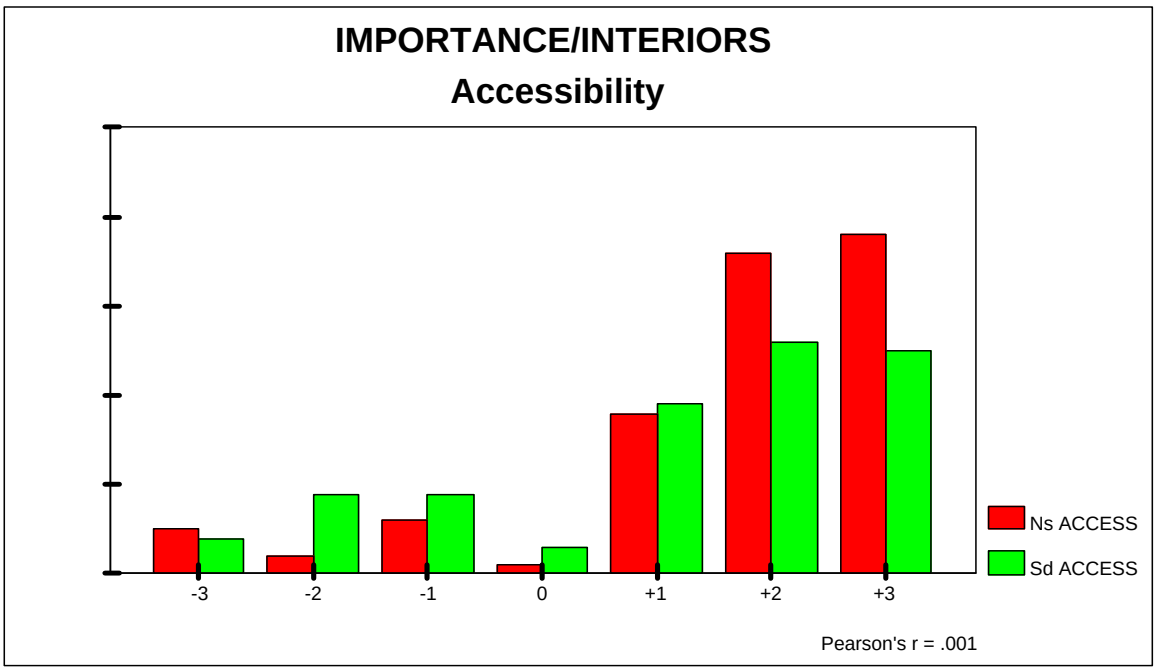

FIGURE 5.23: **Sig. Corr: Importance of Accessibility Control, College Buildings, UNSW & Sydney**

Discussion

Control over accessibility to colleges at both UNSW and Sydney was rated higher than at Macquarie and UWS/H. The highest $\overline{nb}$ was at UNSW (+2.69), the lowest at UWS/H (1.67). Given that there are all-women colleges and colleges of religious denomination in both the UNSW and Sydney sub-samples, but not in Macquarie or UWS/H sub-samples, the finding is feasible. The apparent difference in the chart between the relatively heightened preference which UNSW respondents have for stricter control, over those at Sydney, is of minor importance overall.

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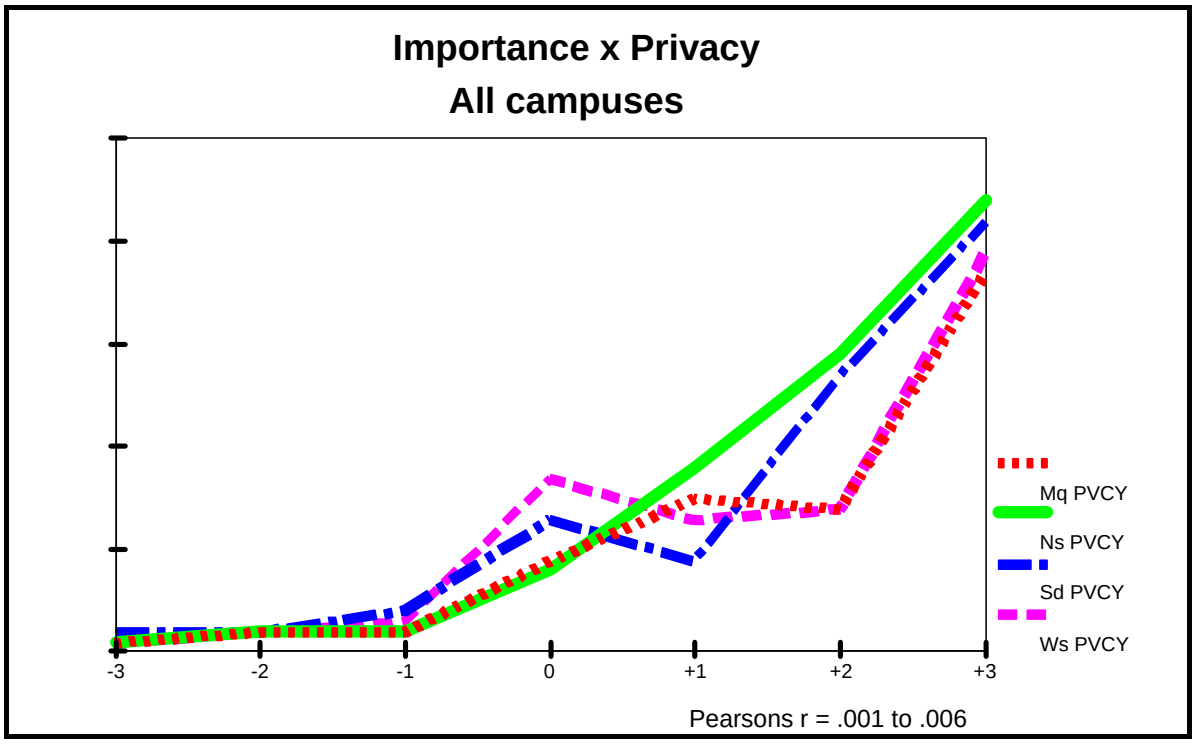

FIGURE 5.24: Sig. corr: Importance of Minimising Visibility of Interiors from Exterior; 4 campuses.

Discussion

There is a clear trend evident in the graph - the obvious preference that respondents at all 4 universities have for privacy *ie* that private areas should not be visible from outdoors. The high levels of significance between the patterns of response on the campuses is indicated by the exponential curve. This finding is not surprising - in any residential setting privacy is a paramount requirement.

It does, however, serve to remind us that certain domains on campuses need special treatment, that they are not unlike residential domains off-campus, and are also relatively high density, non-owner-occupied and unpersonalised settlements, which could thus develop characteristics concomitant with non-defensible places elsewhere. The homogeneity of the residents in terms of age, lifestyle, values and being part of a 'community' are the major factors inhibiting the development of a non-defensible situation. This should not be relied upon. It is quite feasible to build-in environmental cues and devise management-student interaction policies that could augment the opportunities for a sense of responsibility for space to become a natural part of college culture.

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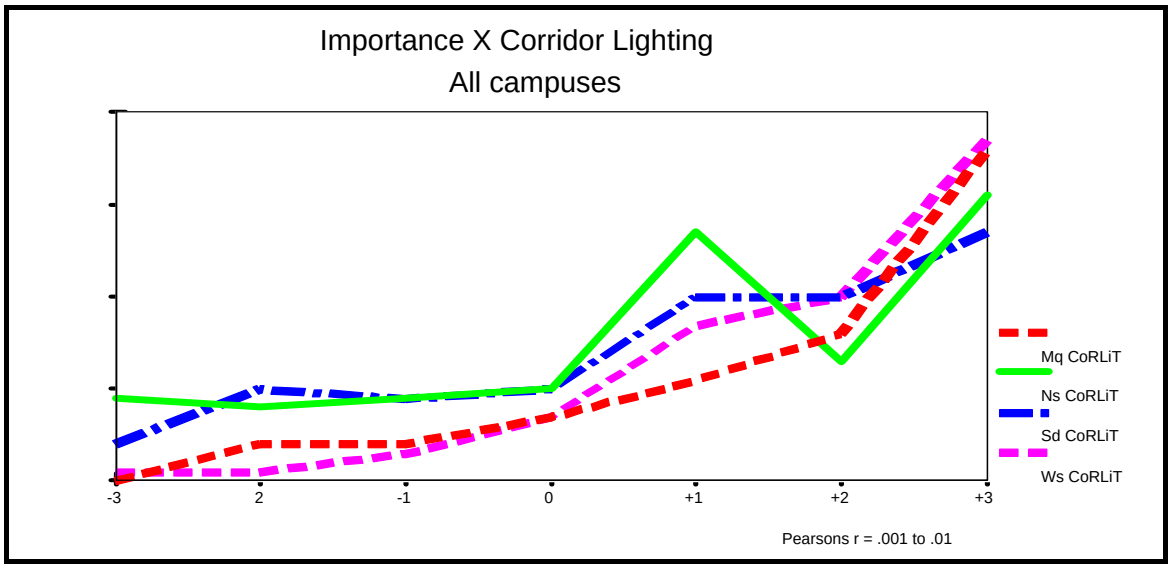

FIGURE 5.25: Sig. Corr: Importance of Corridor Lighting, 4 Campuses

Discussion

Once again the curve is weighted towards the positive end of the scale, albeit an issue of less relevance than those already discussed, and respondents on all the campuses express similar sentiments about the issue. Ameliorating corridor lighting should not be an issue. It can be readily provided, all night if so desired, and at little economic and environmental cost given the highly energy efficient new compact and tri-phosphor fluorescent tubes available on the market.

==========

From the discussion of the importances attributed to exterior (campus) and interior (college building) issues above, it seems evident that attaining such expectations within the buildings themselves is relatively straightforward, given the will and the funds. It is the management and design of the campus domains which pose more problems, and require most input. Intervention at the macro-scale will be discussed in the Recommendations.

Satisfaction

TABLE 5.9: Rank Ordering: Satisfaction x All

												RANK	**Ov**
		UNSW		***UTS***		***SYD***		***MACQ***		***UWS/H***		***OV-AV***	***Rank***
bedroom privacy	**3**	1.5	**1**	3	**1**	1.47	**1**	1.41		0.62		**1.60**	**1**
corridor lites	**2**	1.6	**3**	2.4	**2**	1.4	**2**	1.02	**2**	1.13		**1.51**	**2**
sightlines/interior	**2**	1.6	**4**	1.6	**4**	1.11	**4**	0.73	**3**	1.05		**1.22**	**3**
shuttlebus/escorts	**3**	1.5				0.73		0.34	**1**	1.8		**1.09**	**4**
security in bathrm	**1**	1.7	**2**	2.6		0.99		0.48	***-1***	-0.46		**1.06**	
see out from in		1.1		1		0.65	**3**	0.83		0.86		**0.89**	
access control	**1**	1.7		1	**3**	1.24		0.27	***-2***	0.07		**0.86**	
security serv	***-4***	0.6	***-4***	-0.5	***-4***	-0.14		0.22		0.81		**0.20**	
boundaries/coll		1.3	***-1***	-2		0.46		0.03		0.93		**0.14**	***-4***
night animation	***-3***	0.4				0.1	***-1***	-0.72		0.42		**0.05**	***-3***
lites/outside		0.7		-0.2	***-3***	-0.2	***-3***	-0.55		0.52		**0.05**	***-3***
lighting/parking	***-3***	0.4		0	***-2***	-0.62		0.01	***-4***	0.39		**0.04**	***-3***
sightlines/outside	***-2***	0.3	***-3***	-1	***-1***	-0.9	***-4***	-0.05	***-3***	0.26		**-0.28**	***-2***
lighting/paths	***-1***	-0.2	***-2***	-1.3	***-1***	-0.9	***-2***	-0.57		0.45		**-0.50**	***-1***
Ov-Av		**1.00**		**0.55**		**0.39**		**0.25**		**0.63**		**0.57**	
range		*1.9*		*3.9*		*2.4*		*2*		*2.26*		*2.49*	

Discussion

a] Table 5.9 above indicates individual *ranking*, by descending order of satisfaction, for each Environmental Experience item (bedroom privacy eg), by campus, & overall (Ov Rank);
and individual item *mean* scores ($\overline{sat}$) by campus, and overall (*Rank OV-AV*).

b] It is also possible to read-off the overall Satisfaction *ratings* for each campus (see **Ov-Av**), which, unlike those for Importance (Table 5.8) are different from each other, ranging from $\overline{sat}$ +0.1.00 to $\overline{sat}$ 0.25 (UTS excluded).

c] Most importantly, the Satisfaction scores are generally lower than the Importance scores, indicating that respondent expectations are not being met.

d] Furthermore, the **variance** between the highest Importance rank ($\overline{nb}$ +2.39 for access control) and the highest Satisfaction rank ($\overline{sat}$ +1.6 for bedroom privacy) is 27% which is substantial.[13] (If UTS is excluded, the highest $\overline{nb}$ is +2.24, the highest $\overline{sat}$ +1.29, a variance of some 32%.) Albeit that these campuses are relatively 'innocuous' in comparison with some of the American campuses discussed in the Background review section, there is quite clearly room for improvement. Given that access control was ranked first in importance but only 7th in satisfaction is indicative of a specific amelioration which would be appropriate.

e] Satisfaction with college buildings is higher than satisfaction with security services and with campus domains, in that order.

f] Satisfaction with 'bedroom privacy' ($\overline{sat}$ 1.60) ranked in first place, and 'interior corridor lighting' ($\overline{sat}$ 1.51) in second place. Third was satisfaction with interior corridor sightlines ($\overline{sat}$ +1.22) - all internal/building issues.

The shuttle bus and escort services ranked in fourth place ($\overline{sat}$ +1.09), which overall is not a particularly high score. Of the rankings at UWS/H, this service was ranked first, a clear sign of the value placed on this new service (commenced 22nd August, 1994 - running from 6pm - 9pm, Mon -Thurs). It was also attributed the highest Importance, equal to security services - both $\overline{nb}$ of +2.3. In comparison to the service offered at UNSW (ranked third @ UNSW) it is still minimal, but obviously having a major impact on campus expectations and experiences.

g] It should be noted that satisfaction with bathroom privacy was ranked first at UNSW and last at UWS/H, which is not unexpected given the peculiar situation prevalent in the UWS/H colleges.

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13 relative to a maximum possible rating of +3

h] The items ranked *lowest* on the overall Satisfaction scale were: Lighting on college access paths/roads ($\overline{sat}$ -0.5), sightlines down routes to colleges ($\overline{sat}$ -0.28), lighting in parking areas around colleges ($\overline{sat}$ 0.04), and external lighting around colleges ($\overline{sat}$ +0.05). These factors are either evaluated in the *dis*satisfaction range, or just slightly greater than the neither/nor position.

These are external or campus domain issues, and although targeted at college domains also include general campus design issues because of the path lighting/sightlines issue (both ranked negatively *ie* as *dis*satisfaction*)*, which is the connection between the non-residential and the residential domains on the campus. The lighting aspect of this latter issue can be readily ameliorated, given the will; ameliorating sightlines is more complex, and more costly. Landscaping will be involved, as well as the creation of nodes, where lines of sight change direction. These issues will be discussed more fully in the Recommendations section.

i] Night animation also ranked amongst the lowest of satisfaction evaluations. As mentioned previously, this is confusing. Does it mean too much or too little? Given the wording of the Importance question it is likely that respondents are indicating that there is not enough night animation. There was also a high N/A response to this question, which begs the question of whether these respondents would have preferred to have more, given that they have none ?

A mixed zone domain will be discussed in the Recommendations section.

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- Figure 5.26 (interiors) [over] and Fig. 5.31 (exteriors) indicate these above relationships graphically; they are, however, based on data with *UTS figures excluded*, and are thus not exact equivalents of figures shown in Table 5.9. The net effect is that low scores are slightly enhanced, and high scores slightly decreased. The overall mean rating stays at

+0.57, and rank positions of items are only fractionally altered - 1st and 2nd position having virtually the same score now, with 'night animation' and 'outside lighting' swapping at the lower end of the scale.

Satisfaction x Interior Factors (College Buildings)

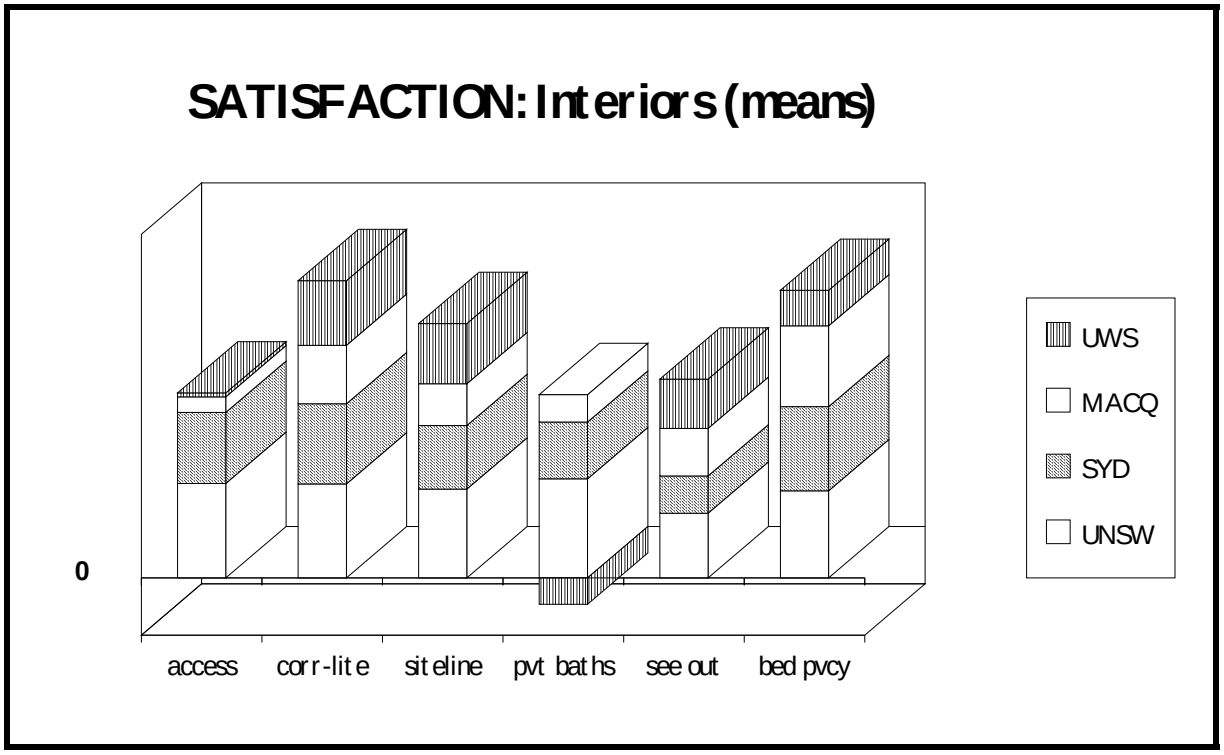


FIGURE 5.26: Mean Satisfaction with College Buildings, 4 Campuses (UTS excluded)

Discussion

- Ratings for individual factors and individual campuses can be read off Table 5.8. Only the overall rankings and ratings are influenced by the removal of the UTS data.

a] Interior factors generally are rated as more satisfactory than exterior or campus factors (see Fig 5.27).

b] Satisfaction with control over accessibility is not negative, but has the lowest rating for an interior factor ($\overline{sat}$ +0.82) and is ranked in 7th position. Given that control over accessibility is rated as of the highest importance, this is an issue that demands amelioration.

c] Bathroom security is evaluated as *dis*satisfactory at UWS/H ($\overline{sat}$ -0.46) ; and although the evaluation at Macquarie is positive it is low ($\overline{sat}$ +0.48), which is largely due to a large percentage of respondents evaluating security in bathrooms as 'neither satisfactory/nor dissatisfactory'.

In colleges of residence, the issue of privacy is raised in the consideration of security provisions of bathroom facilities. Given the very private nature of activities carried out in bathrooms (often also sharing a space with toilets), the two issues are inextricably interlinked. Where privacy is ensured so is security. The *semi-privacy* issue raised by the sharing of bathrooms is one of great importance. In defensible design, semi-public and semi-private spaces are those where ambiguity exists about ownership and responsibility, and where frequently the problems of criminality and delinquency and harassment occur.

The bathroom security/privacy issue is considered as of sufficient importance to be elaborated further here, and some graphs are presented (overpage) to indicate the differences in evaluations at the 4 campuses.

The issue of bathroom security is particularly important in the UWS/H context.

This is discussed first.

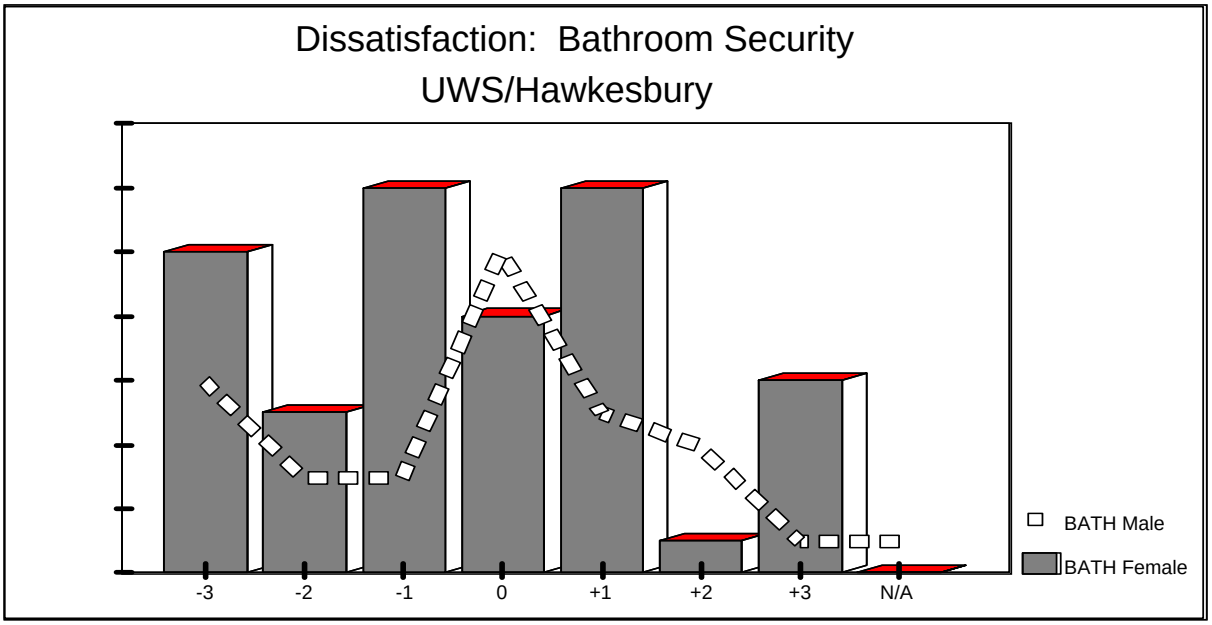


FIGURE 5.27: **Mean Dissatisfaction, Security in Common Bathrooms, Males x Females, UWS/H**

Discussion

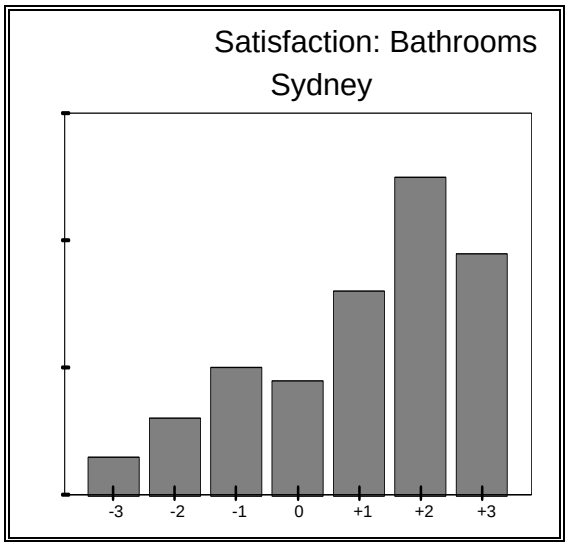
The issue of bathroom management at UWS/H is a relic from the time when the university was an all-male agricultural college. The first women were admitted in 1969; but there was opposition to them entering the college, which persisted until fairly recently, and there is apparently still a minority who still refer to women in derogatory terms. There are now more women than men on the campus (particularly after the introduction of nursing and home economics courses). It was not until 1987, however, that a female successfully used the disciplinary committee for a complaint of sexual harassment against fellow male students. Generally the student body dealt with discipline issues in their own way.

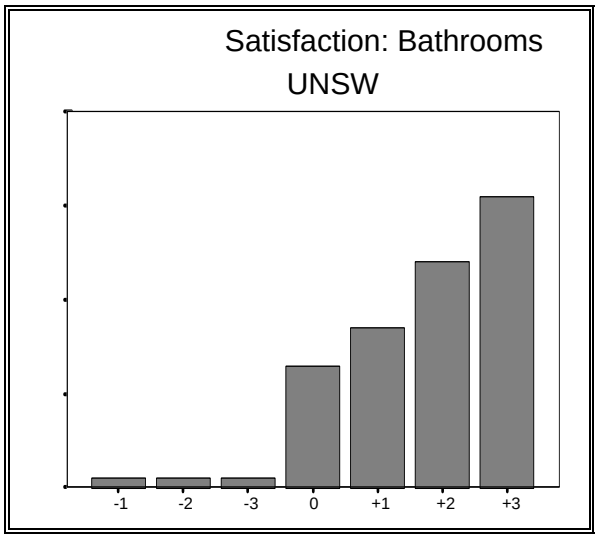
With regard to living on-campus, women were only accepted openly during the late 70's, and to this day, despite the fact that all the colleges now cater to both sexes and bathrooms are unisex, the tradition of *communal showers* has persisted. There is apparently a form of indoctrination of new students by older residents, and some women by their third year also have come to accept it. A bathroom questionnaire was distributed in 1993, but there was not a

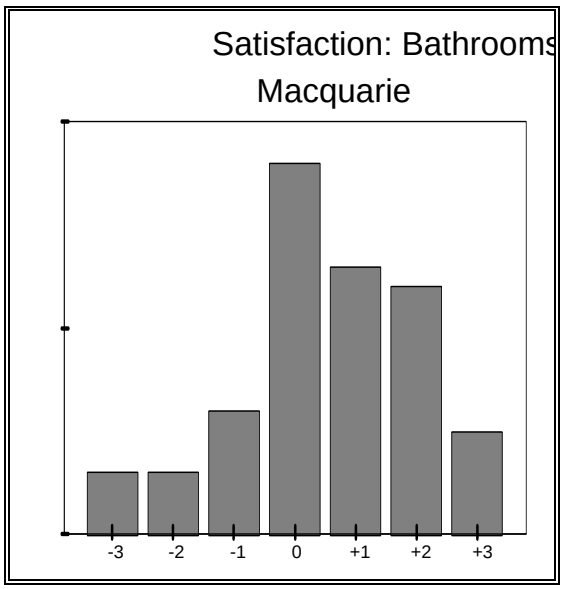
strong response and senior students continue to insist on the no-door policy. With a recent change in college management, some showers have had doors attached.

a] The figure illustrates that it is the female residents who are concerned about the issue of bathroom security/privacy. Their dissatisfaction is obvious. However, male residents do not seem to be satisfied either, and some female respondents are very satisfied (+3).

Presented below are 4 charts (Fig. 5.28) indicating mean satisfaction ratings of bathrooms, on the 4 campuses, to illustrate the differences between them.







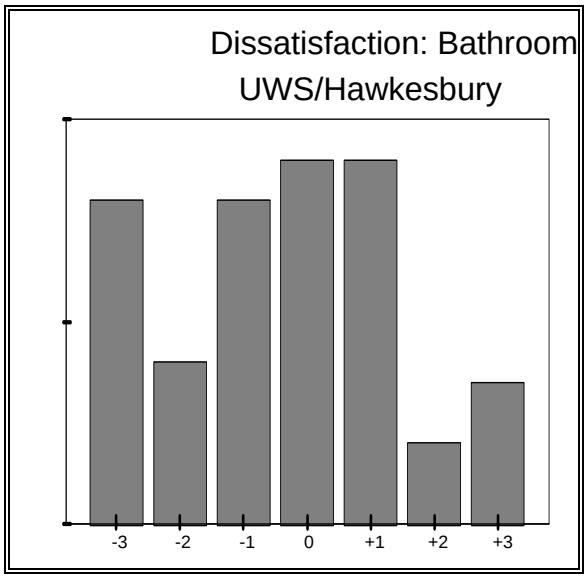


FIGURE 5.28: Mean Satisfaction with Bathrooms in Colleges, 3 Campuses; Dissatisfaction @ UWS/H

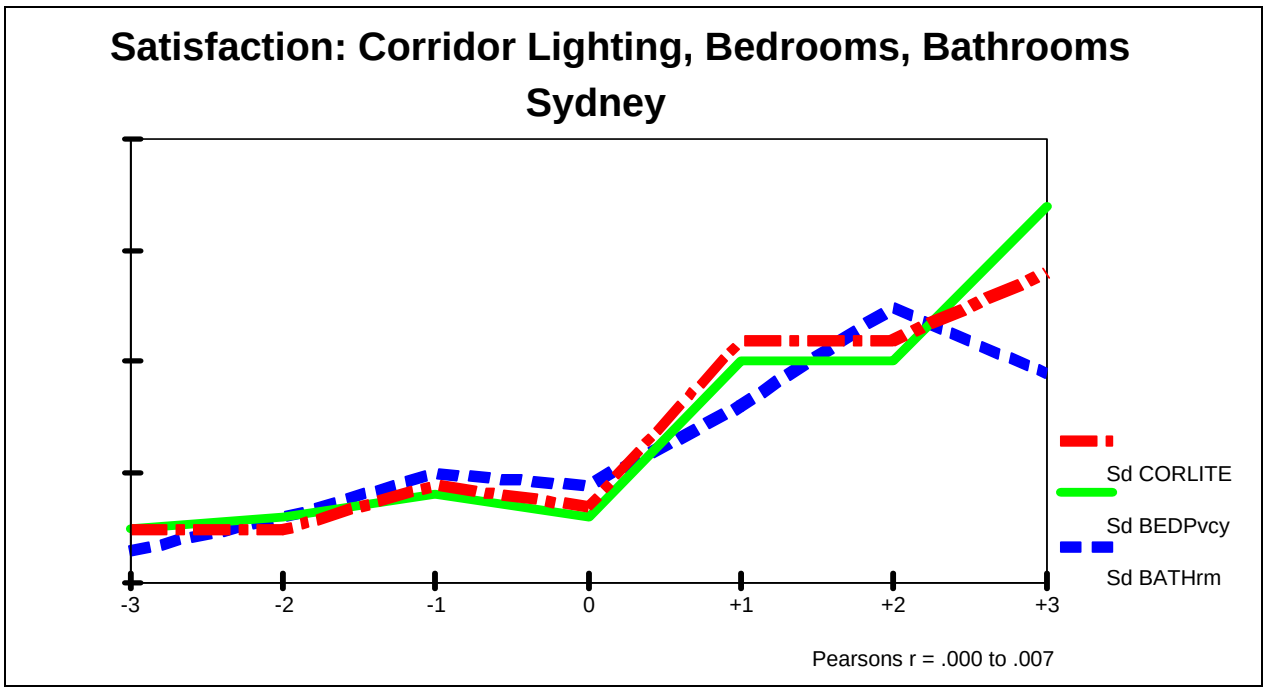


FIGURE 5.29: Mean Satisfaction, 3 Internal/College Factors, Sydney

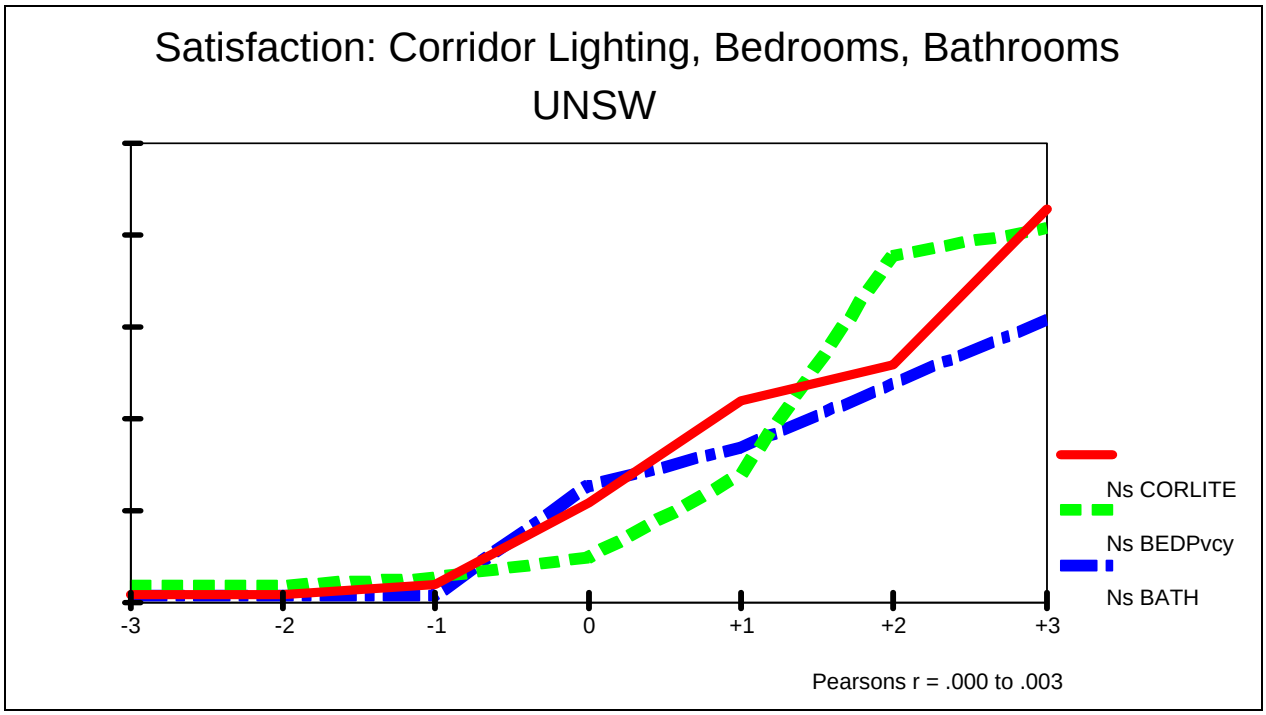


FIGURE 5.30: **Mean Satisfaction, 3 Internal/College Factors, UNSW**

Discussion

Satisfaction with corridor lighting and bedroom privacy rated highest overall, all 4 campuses considered. The two diagrams below are for UNSW and Sydney, where significant correlations between three internal factors were found, indicating that they are evaluated similarly by respondents, and impact upon each other. The associations are between corridor lighting, bathroom security/privacy and bedroom privacy.

Satisfaction x Exterior Factors (Campus Domains & Security Services)

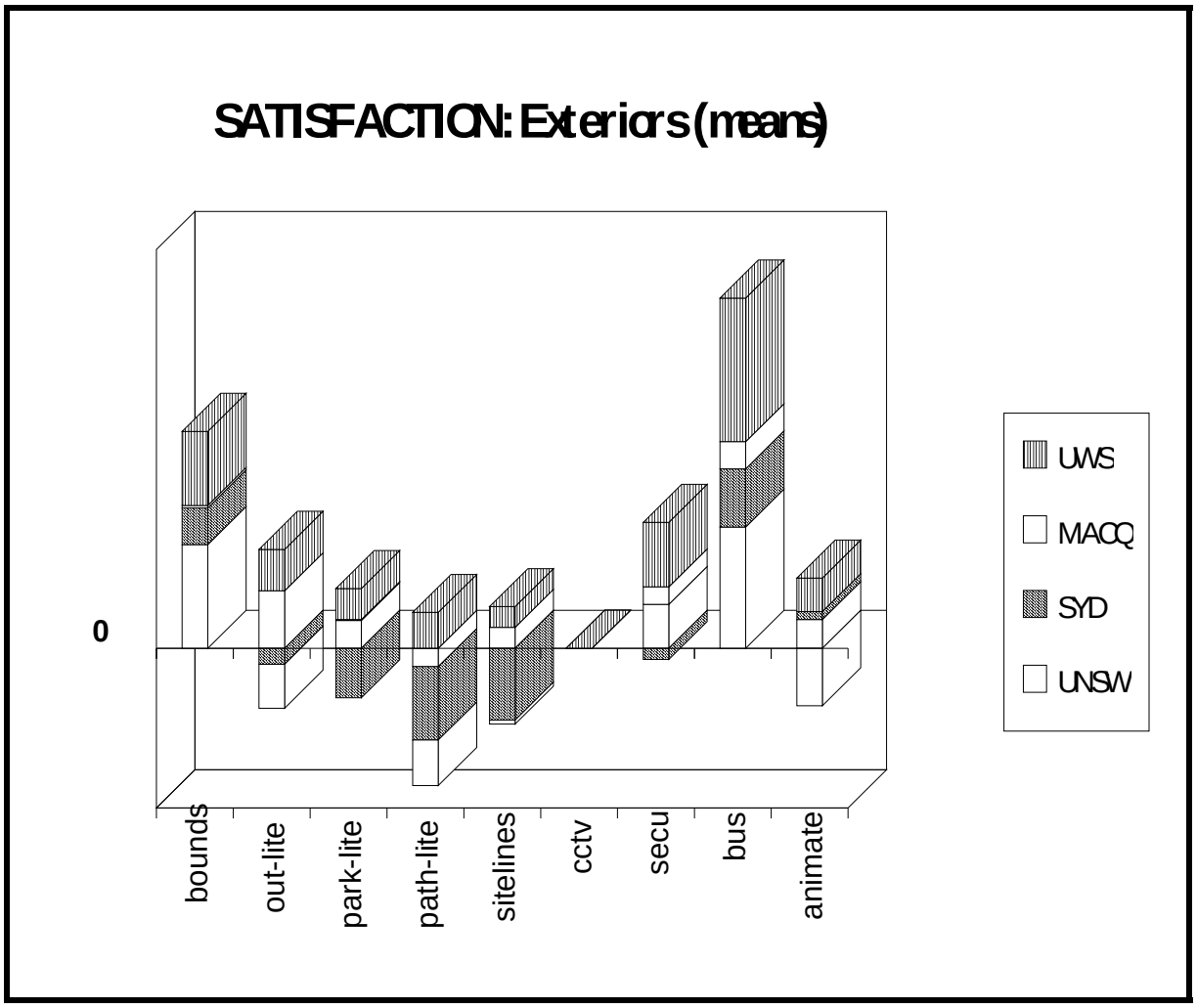


FIGURE 5.31: Mean Satisfaction with Campus Domains and Services, 4 Campuses

Discussion

a] Figure 5.31 indicates average satisfaction with exterior or campus domain characteristics and security service provisions.

b] Overall, satisfaction with the shuttle bus/escort service is rated highest ($\overline{sat}$ +1.09), despite the fact that respondents at Macquarie rated it only as $\overline{sat}$ +0.34 and Sydney as $\overline{sat}$ +0.73. The ratings at UWS/H and UNSW are +1.8 and +1.5 respectively.

c] Boundaries around colleges are perceived as satisfactory overall.

d] Satisfaction with security services generally is somewhat lower ($\overline{sat}$ +0.37) overall. Again, UWS/H and UNSW rate higher than Macquarie, and Sydney rates lowest, in the *dis*satisfaction range ($\overline{sat}$ - 0.14).

e] Dissatisfaction, in descending order of importance, was expressed with the following:

- path lighting at Sydney, Macquarie and UNSW (overall $\overline{sat}$ -0.31);
- sightlines along routes to colleges at Sydney (and Macquarie) (overall $\overline{sat}$ -0.01);
- outdoor lighting at Macquarie and Sydney;
- night animation at Macquarie;
- lighting in college parking areas at Sydney;
- security services at Sydney.

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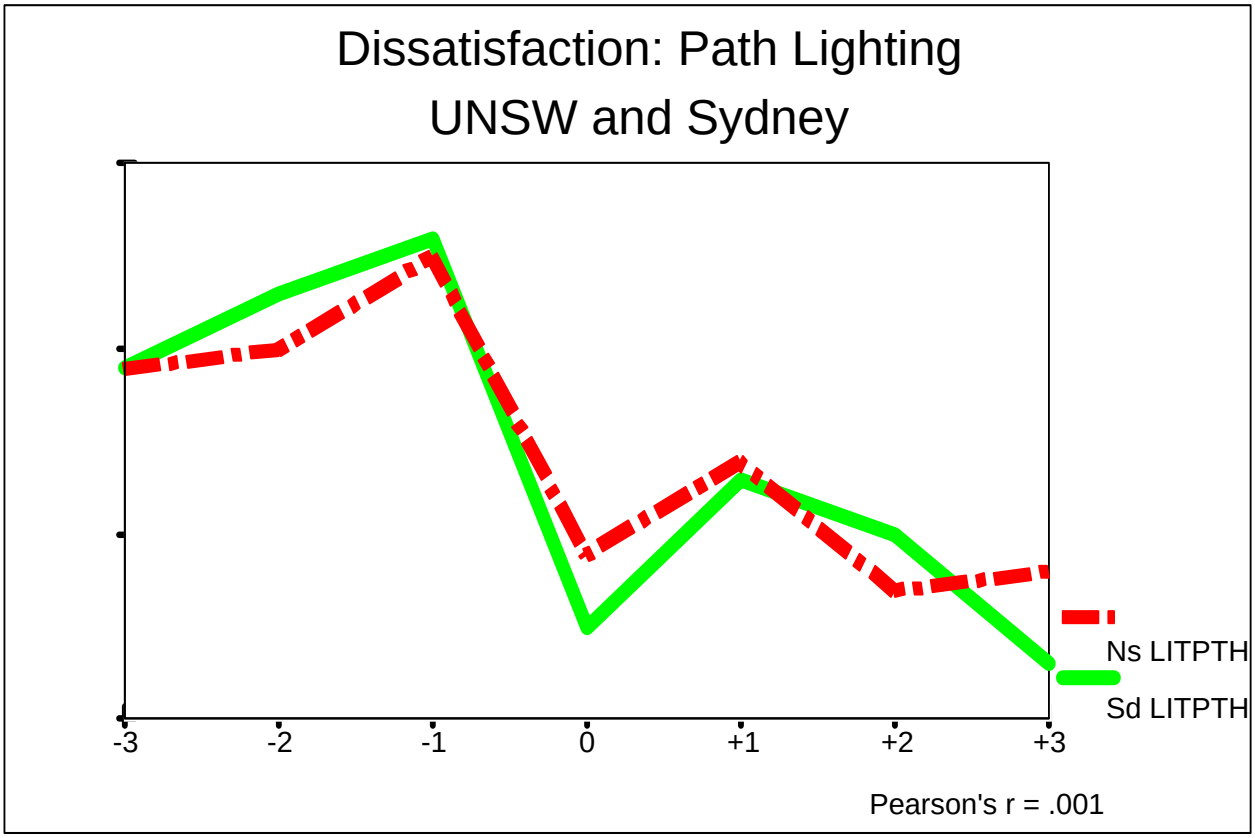

FIGURE 5.32: Sig. Correlations: Dissatisfaction with Path/Road Lighting, UNSW & Sydney

Discussion

Respondents at both universities expressed a similar pattern of dissatisfaction with the lighting on routes to colleges. These routes connect the residential domains with the library, academic, student and sporting domains and also with public transport nodes. Students expressly mentioned their dissatisfaction with having to use ill-lit paths to get to and from bus stops near their residences. Students at Sydney also have to get to Redfern station, which is another matter entirely - out of the hands of the university as far as lighting is concerned. Here, the shuttle bus and escort system can play a major role.

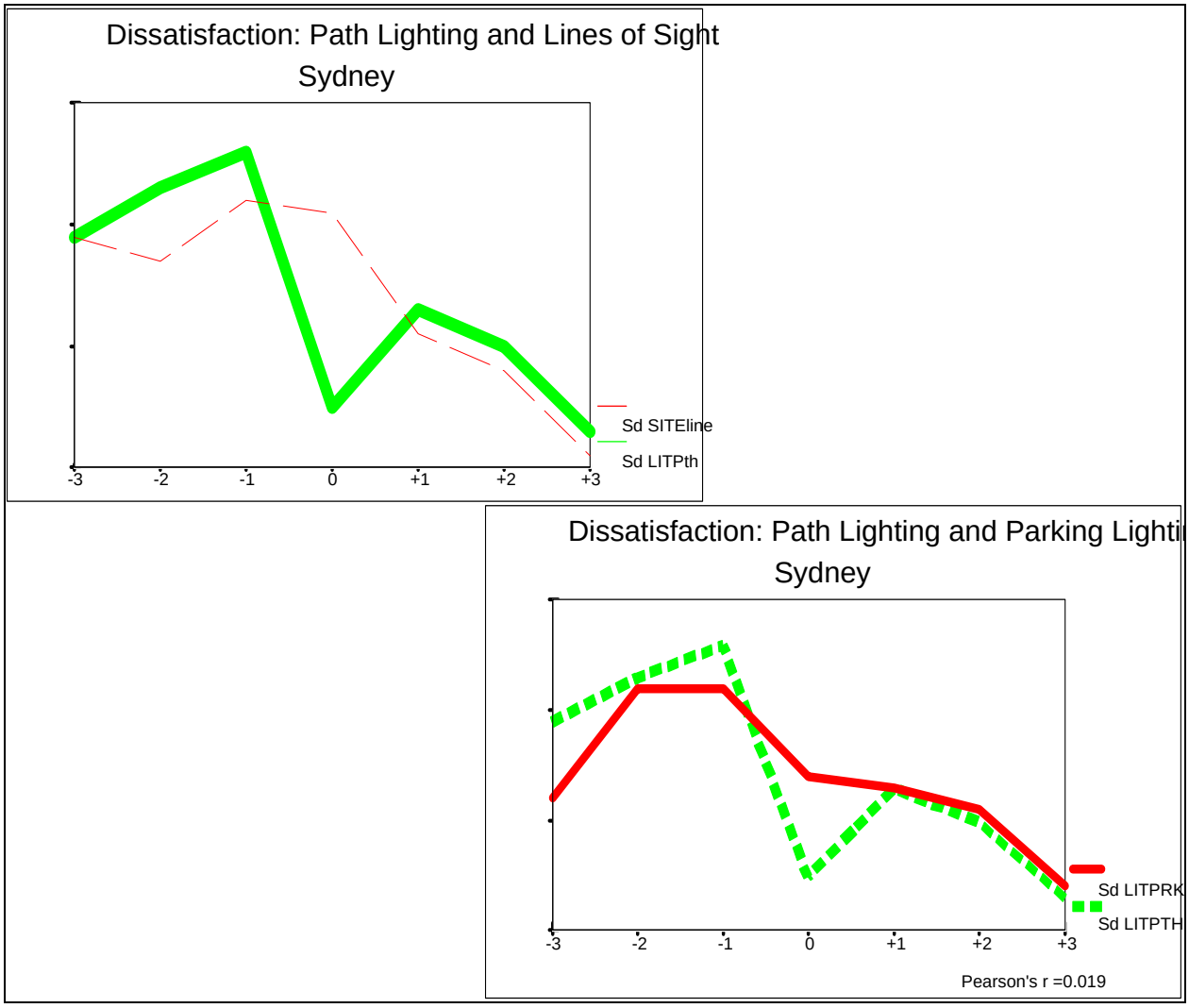

FIGURE 5.33: Mean Dissatisfaction, Lighting on Paths/Routes & Lines of Sight, Sydney

FIGURE 5.34: Sig. Correlations: Path Lighting and Parking Lighting, Sydney

Discussion

a] Dissatisfaction was expressed with both path lighting and lines of sight at Sydney, and the diagram above shows the two evaluations varying in line with one another, suggesting that a solution involving the common design of both would be appropriate.

b] Also related to dissatisfaction with path lighting at Sydney is lighting in the parking areas proximate to the colleges.

Here two separate issues are involved, but with one common solution - lighting.

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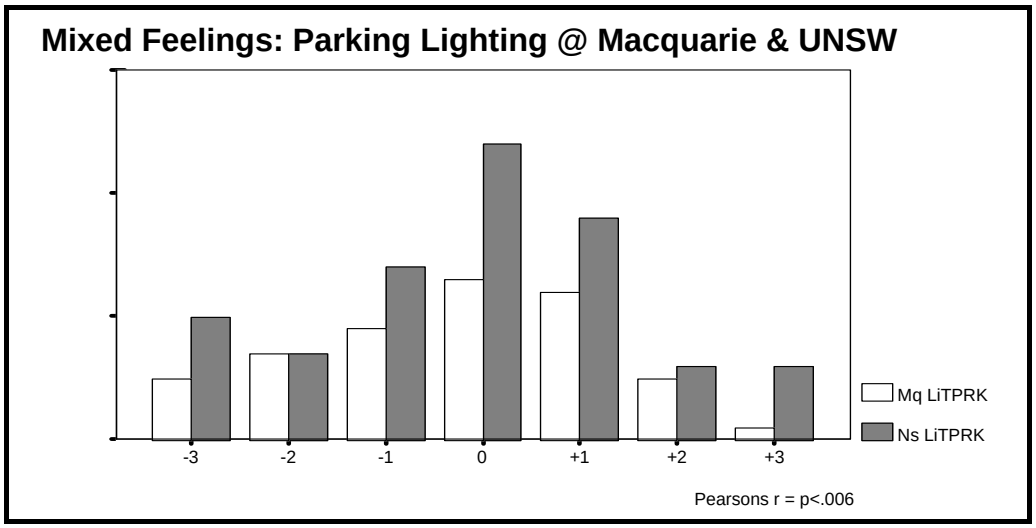

FIGURE 5.35: Significant Correlation: Neither/Nor Evaluation re Satisfaction with Lighting in Parking Near Colleges

Discussion

Respondents at UNSW and Macquarie showed a tendency to evaluate the adequacy of lighting in parking areas close to colleges as either neither satisfactory nor dissatisfactory, or to select the -1 and +1 categories adjacent to the central point. This indicates that the issue is

not of great concern for them. If staff opinions had been canvassed, a different pattern would be expected.

Students at Macquarie expressed dissatisfaction *walking past* parking garages, and that the closest of these were not close enough *ie* they still had to cross open and poorly lit spaces to get to colleges. The lighting inside the parking garages was assessed as good, however.

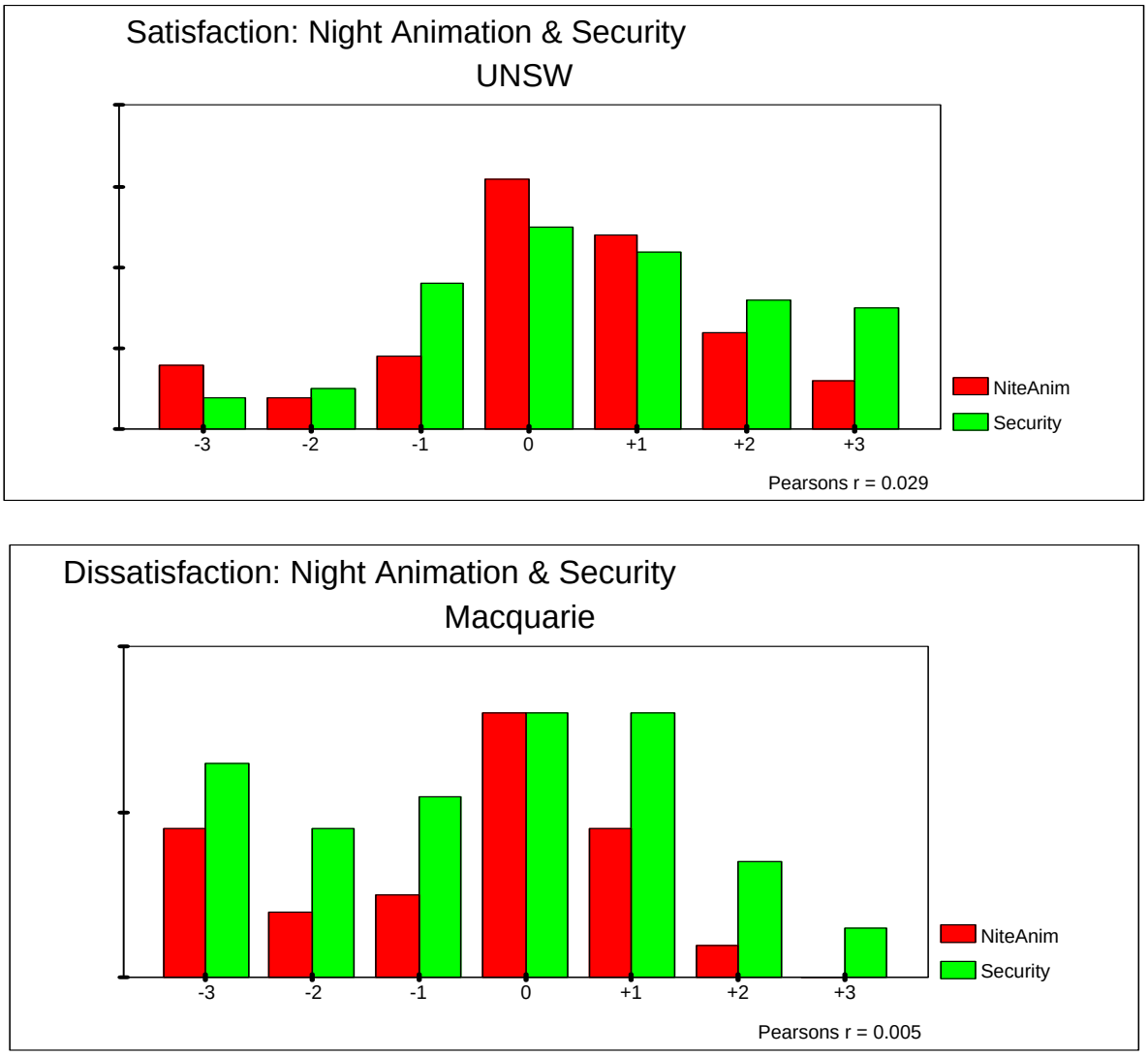

FIGURE 5.36: Sig. Correlations: Security Services and Night Animation Satisfaction @ UNSW & Dissatisfaction @ Macquarie

Discussion

Moderate satisfaction with animation of outdoors spaces (+.4) is associated with a similar degree of satisfaction with security provisions (+.6) @ UNSW; while dissatisfaction (-.72) is associated with a low degree of satisfaction (+.22) @ Macquarie.

Environmental Fit

TABLE 5.10: Rank Environmental Fit x All

											Rank		*Sans*	
		UNSW		***UTS***		***SYD***		***MACQ***		***UWS/H***	***OV-AV***	***Ov***	*UTS*	*rank*
												Rank		
corridor lighting	**2**	6.31	**2**	6.25	**1**	5.67	**1**	5.80		5.24	**5.85**	**1**	5.76	2
sightlines/interior	**1**	6.57	**3**	5.50	**1**	5.68	**3**	5.45	**3**	5.62	**5.76**	**2**	5.83	1
see out from in	**4**	6.00	**4**	5.00		5.30	**2**	5.58	**4**	5.58	**5.49**	**3**	5.62	3
pvcy. bathrooms	**3**	6.10	**1**	7.00	**3**	5.56	**4**	5.18	***-1***	3.62	**5.49**	**3**	*5.12*	
shuttle bus/escorts		5.92				5.18		4.67	**1**	6.00	**5.44**	**4**	5.44	4
boundaries around		5.83			**4**	5.49		4.57	**2**	5.77	**5.42**	**5**	5.42	5
access control/coll		5.81	**4**	5.00	**2**	5.63		4.97	***-2***	4.36	**5.15**		5.19	
night animation	***-4***	5.00				5.30	***-3***	4.46		5.16	**4.98**		4.98	
security services		5.06	***-3***	4.00		4.78		4.58		4.93	**4.67**	***-5***	4.84	-5
lighting/outside		5.33	***-2***	3.33	***-4***	4.37	***-3***	4.43		4.84	**4.46**	***-4***	4.74	-4
lighting/parking	***-3***	4.63	***-4***	4.30	***-3***	3.90	***-4***	4.51	***-5***	4.75	**4.42**	***-3***	4.45	-3
sightlines/outside	***-2***	4.40	***-5***	4.50	***-2***	3.76	***-2***	4.00	***-4***	4.72	**4.28**	***-2***	4.22	-2
lighting/paths	***-1***	4.17	***-1***	3.30	***-1***	3.41	***-1***	3.86	***-3***	4.50	**3.85**	***-1***	3.99	-1
Ov-Av		5.47		4.82		4.93		4.77		5.01	**5.00**		5.04	
range		*2.40*		*3.70*		*2.27*		*1.94*		*2.38*	*2.54*			

Discussion

a] Table 5.10 indicates individual *ranking,* by descending order of Environmental Fit, for each Environmental Experience item (corridor lighting eg), by campus, & overall (Ov Rank);
and individual item *mean* scores ($\overline{ef}$) by campus, and overall (*Rank OV-AV*).
b] Rank positions and item mean scores without UTS are also included (*sans UTS* & *rank*).

Rank positions of the two items ranked highest swap, but the differences are fractional. Otherwise, only the environmental fit of bathroom security/privacy drops noticeably, from 5.49 to 5.12, and from 3rd to 7th position.

c] The overall Environmental Fit *ratings* for each campus, ranging from $\overline{ef}$ 5.47 (UNSW) to 4.77 (Macquarie) can be read off the bottom of the chart (**Ov-Av**).

d] The variance between the highest and lowest $\overline{ef}$ *ratings,* by campus, is 10%, which is low (despite the impression given in the diagrams/see Fig. 5.38); *ie* the differences between the campuses are not great.

e] The overall $\overline{ef}$ score is 5. This score (and Ov-Av scores for individual campuses) can be assessed in two different ways:

As a Fit/Misfit score:-

- where the score can be related to the degree to which it is greater than a score of 4 - which represents a position of neither fit nor misfit, or in other terms, the absolute minimum before a campus begins to have a negative fit.

By this measure, the highest campus $\overline{ef}$ score (5.47) is about 20% higher than this point; and the lowest campus score (4.77) is about 10% higher. The score of 5.47 (say 5.5) is *half way between perfect fit and minimum fit.*

As a Congruency Ratio:-

- where the score is considered in terms of its relationship to 7, which is the maximum fit score. Here, the highest campus $\overline{ef}$ score represents a ratio of $5.47/7$ - a 78% congruency (or 22% incongruency); while the lowest fit score represents a 68% congruency (or 32% incongruency); and the overall average score, of 5, represents a congruency rate of 71% (or incongruency of 29%).

The midpoint score of 4, (ie $4/7$) represents a 57% congruency rate (or a 43% incongruency).

A score of 3, which is a misfit, would represent a 57% *in*congruency rate (or 43% congruency); 2 would be a 71% *in*congruency; 1 would be an *in*congruency of 86%.

We can thus interpret a score in terms of: congruency, incongruency, or by its position relative to a perfect and minimum fit. If the score were less than the midpoint, it would represent a misfit.

It seems appropriate to also represent fit/misfit scores as *congruency and incongruency ratios*, given that they represent *relative positions along a scale ie* they contain within them some elements which meet expectations well, and some which do not. In this sense, congruency ratios are representations of performance standards, and are <u>not</u> prescriptive rules *ie* the means to the end are not vital. It is the end that counts; and the degree to which congruency is attained, not whether or not it is attained.

f] Specific issues of concern are highlighted in Table 5.10, and these vary from campus to campus - *ie* they are *situational* (again reflecting the *degree of performance*). They can be discussed further in terms of their fit within the general profile of a campus - the degree to

which access control is congruent with students expectations, for instance. Ultimately, an in-depth **congruency audit** could be carried out for each campus, which, to use a medical metaphor, is a form of *diagnosis,* and therapeutic remedies could then be devised.

g] A Congruency Ratio Table is presented (over) which summarises the overall ratios or percentages of each item, and the overall campus ratios.

TABLE 5.11: Environmental Fit Congruency Ratios

sightlines/interior	83%
corridor lighting	82%
see out from in	80%
shuttle bus/escorts	78%
boundaries around college	77%
access control/college	74%
security/pvcy. bathrooms	73%
night animation nr. colleges	71%
security services	69%
lighting/outside	68%
lighting/parking	64%
sightlines/outside	60%
lighting/paths	57%
UNSW	78%
UWS/HAWKESBURY	72%
SYDNEY	70%
MACQUARIE	68%
Composite: 4 campuses	72%

Note: i) UTS scores are excluded

ii) Path lighting congruency ratio = 57% is equivalent to the minimum fit point of 4;

iii) Highest congruency ratio = 83%, equivalent to a fit of 5.76

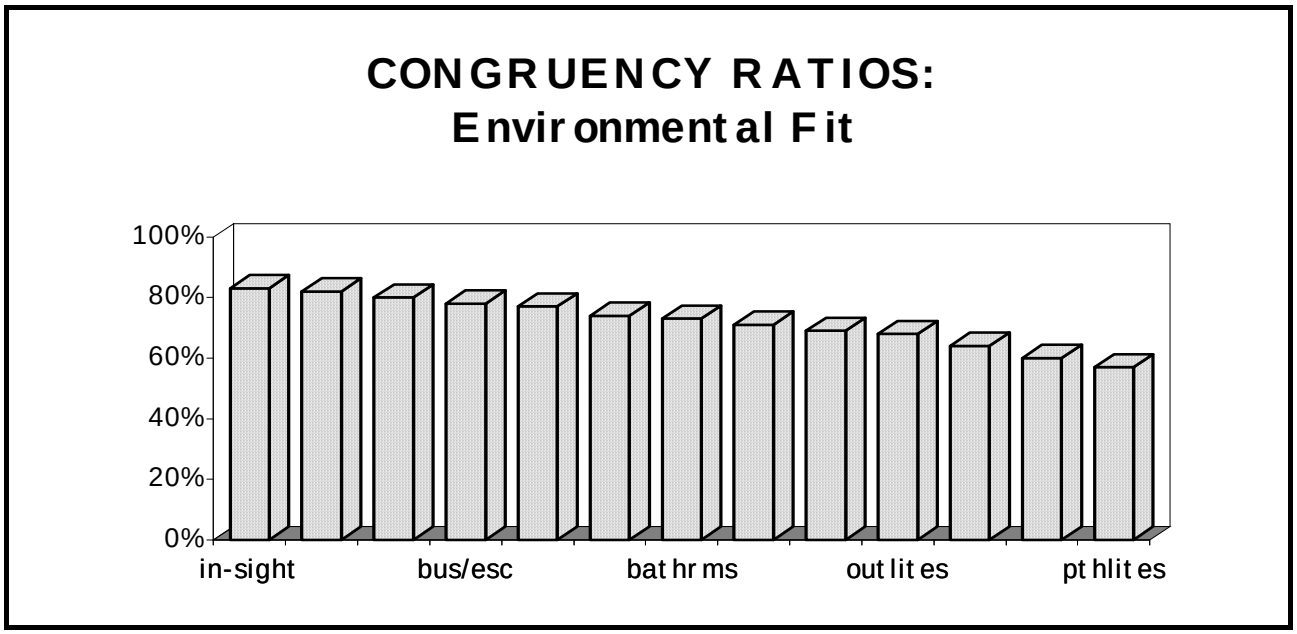

FIGURE 5.37: **Environmental Experience Evaluations: Congruency Ratios, 4 Campuses**

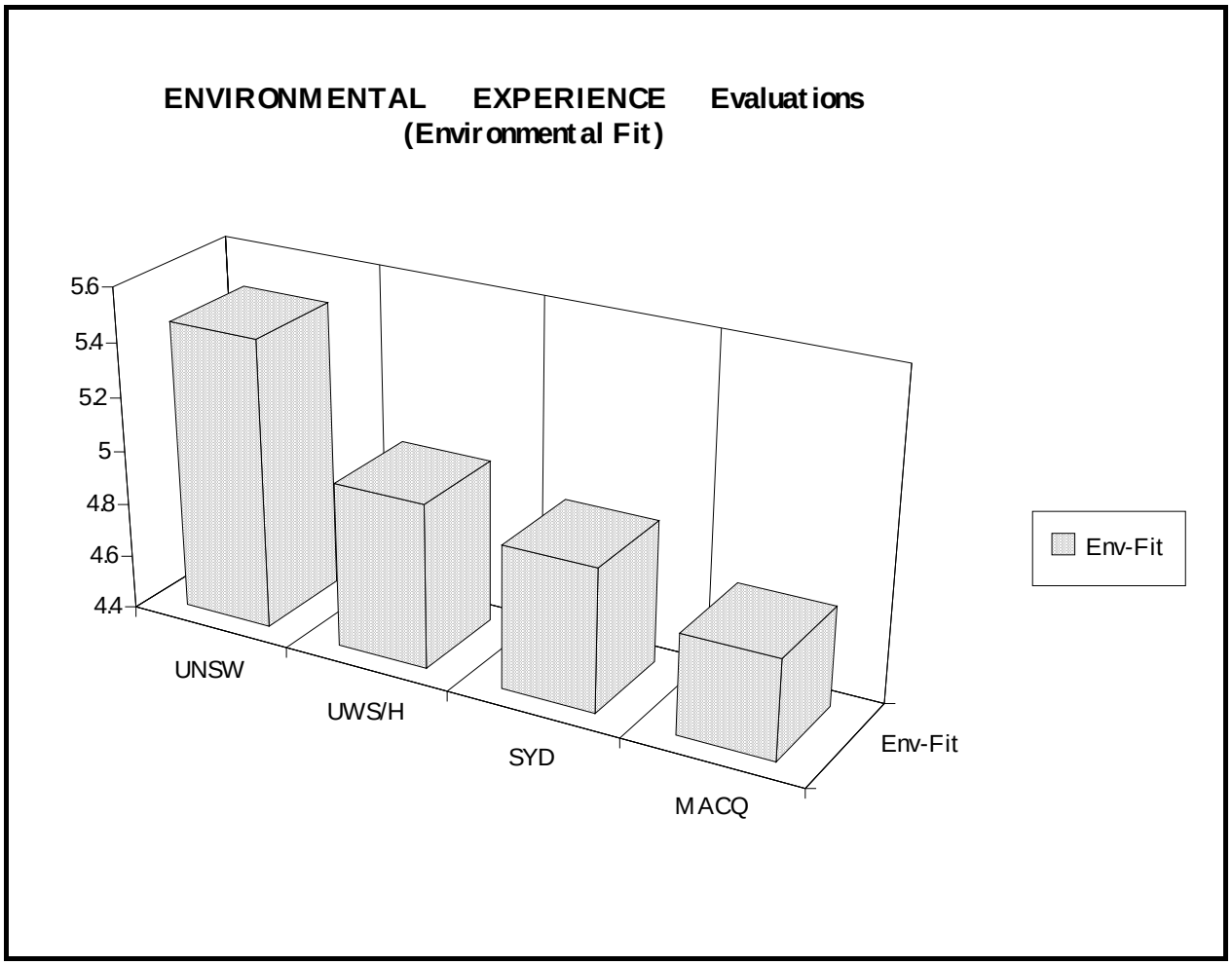

FIGURE 5.38: Environmental Experience Evaluations: Environmental Fit, 4 Campuses

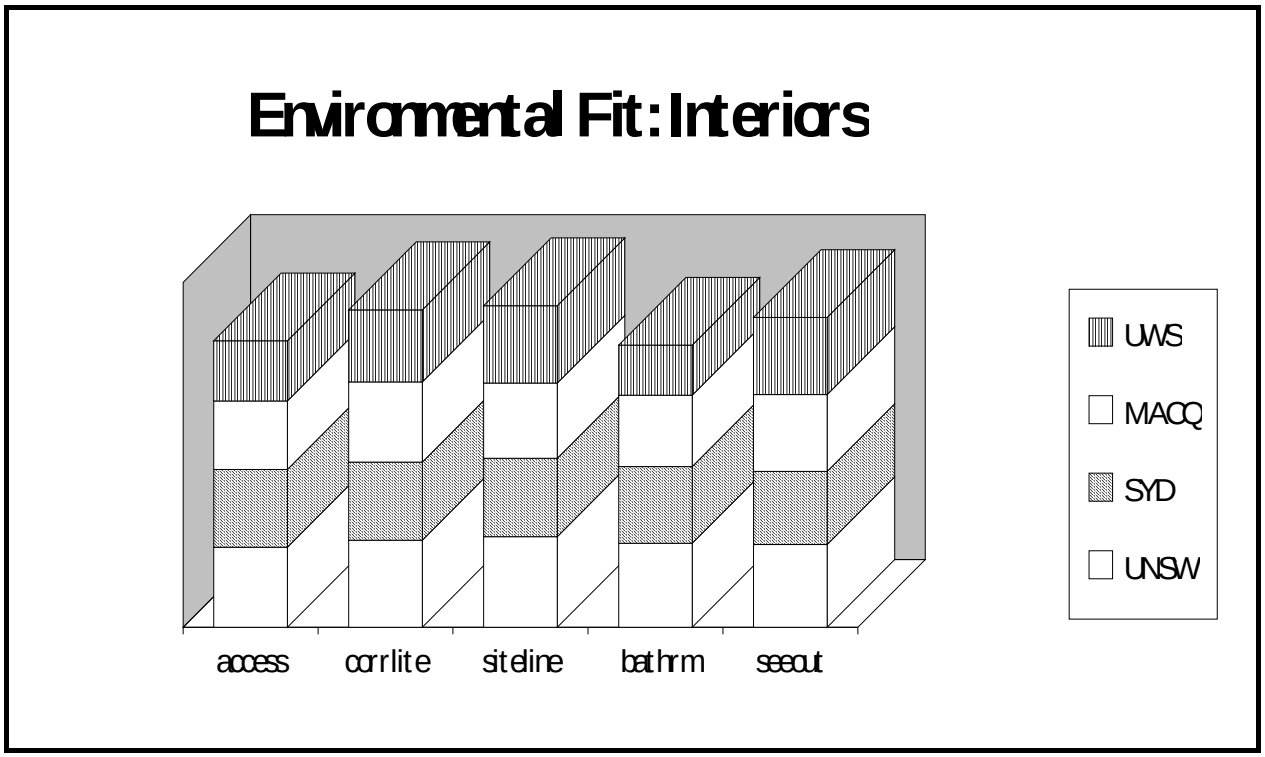

FIGURE 5.39: Mean Environmental Fit - College Building Factors (Interiors)

Discussion

a] Only fractional differences are evident in the $\overline{ef}$ ratings of the internal factors evaluated.

b] Overall, there is great similarity between the evaluations of the college buildings on all four campuses.

c] The highest $\overline{ef}$ ratings for each building factor were all at UNSW.

In descending rank order: internal sightlines ($\overline{ef}$ 6.57, or a congruency ratio of 94%); corridor lighting (6.31 or 90%); bathrooms ($\overline{ef}$ 6.09 or 87%); surveillability ($\overline{ef}$ 6.00 or 86%); and access control ($\overline{ef}$ 5.81 or 83%).

d] The lowest $\overline{ef}$ rating was for bathroom security/privacy at UWS/H ($\overline{ef}$ 3.62, or a congruency ratio of 52% *ie* a misfit).

Second lowest was access control at UWS/H ($\overline{ef}$ 4.36 or 62%); third lowest was access control at Macquarie ($\overline{ef}$ 4.97 or 71%); and fourth lowest was bathroom security/privacy at Macquarie ($\overline{ef}$ 5.18 or 74%).

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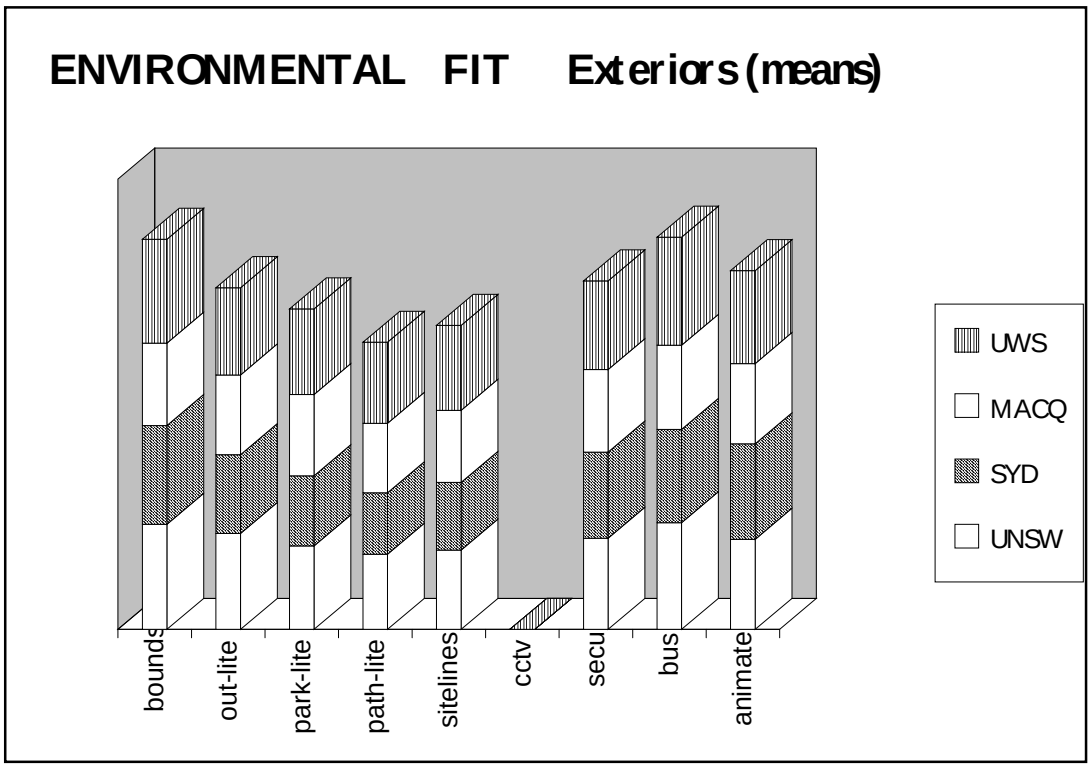

FIGURE 5.40: Mean Environmental Fit - Campus Domain and Security Service Factors (Exterior Factors)

Discussion

a] Quite substantial differences are evident in the campus domain and services chart.

b] The highest $\overline{ef}$ rating was for the shuttlebus service at UWS/H ($\overline{ef}$ 6.00 or 86% congruency); second highest was the shuttlebus/escort services at UNSW ($\overline{ef}$ 5.92 or 85%);

third highest was boundaries around colleges at UNSW ($\overline{ef}$ 5.83 or 83%); and fourth was boundaries at UWS/H ($\overline{ef}$ 5.77 or 82%).

c] Lowest $\overline{ef}$ ratings were for path lighting at Sydney ($\overline{ef}$ 3.41, or 49% congruency *ie* a misfit rating); and sightlines at Sydney ($\overline{ef}$ 3.76 or 54% congruency, also a misfit). Third lowest was path lighting at Macquarie ($\overline{ef}$ 3.86 or 55% congruency, also a negative rating). Lighting in parking areas around colleges at Sydney was fourth lowest ($\overline{ef}$ 3.90 or 56%, also a misfit). All of the above represent a negative fit; and sightlines at Macquarie, fifth lowest ($\overline{ef}$ 4 or 57%) are evaluated as at the minimum rating point.

These issues will be discussed in the Recommendations section.

Student Pilot Surveys

- 1 Residential Colleges/UNSW, June 1993
- 2 Darlington Campus/University of Sydney, June 1994

Two student surveys were conducted as part of the course Applied Environmental Psychology, School of Architecture, UNSW, in 1993 and 1994. These surveys were devised by the author, and groups of students undertook the field work. These students are too numerous to mention by name, but their work is acknowledged here.

A brief summary of findings is presented below. The methodologies employed ranged from Environmental Experience evaluations (NB, Sat, Env. Fit) and situational experience mapping, to interviews, questionnaires, observation and photography.

Colleges/The University of New South Wales (UNSW)

As previously mentioned, certain colleges on the UNSW campus declined to partake in the questionnaire, partially due to the unfortunate timing of the Student Guild survey. However, certain information can be gleaned from the student survey conducted at several colleges by members of the course given by the author.

A selection of findings suggests: a strong polarisation in the attitudes of male and female students, with men expressing no fear on campus at night, while the situation was considerably more threatening for the female students, who seemed to consider themselves as potential victims and targets. Lighting levels around residences were generally perceived as inadequate, but a mixed-use zone (where a sports complex is located adjacent to a residence, and is used after-hours) increased the sense of safety of women residents. An internal courtyard within one residence, with a high degree of visibility and frequency of use, was considered as a safety "oasis", while stairwell and bathroom areas of the same residence were considered to be unsafe by women residents.

Interestingly, despite the employment of a 6pm-6am security guard for three colleges, and an in-house security training procedure for students, there is apparently about one theft per week from student rooms. Management suggested that Neighbourhood Watch programs in surrounding suburbs might be resulting in a displacement of theft crimes to the university residences - which are possibly perceived as soft targets by offenders (given the ease of access and egress, the difficulty of distinguishing offenders from the legitimate residents, and the casual attitudes of many young students to issues of security). Also according to management, assaults around the colleges have diminished. Nonetheless, a poorly lit and little trafficked road was highlighted as an area where male students had been physically assaulted (now altered as a consequence of the new Quad building domain). It should be noted that none of the male respondents in that college expressed any fear about using the campus at night, yet at least a few had been harassed in the vicinity. It was not asked whether these incidents had been reported.

A flight of steps adjacent to these colleges was singled out as having a particularly unsavoury feeling about it. It has since been replaced as part of the new Quad domain and now has a totally different feel about it - an example of how design interventions can influence environmental cues.

Of the 20 respondents interviewed at a post-graduate students college 7 were aware of cases of physical assault within or around the residence, and 6 knew of verbal abuse incidents. The physical abuse incidents included several drunken brawls near the student bar and in the carpark (unreported), a girl bashed (reported), another assault (unknown if reported), a rape, in 1992 (unknown if reported) and another 'incident', the details of which a female student declined to disclose.

The composite Fear Map reproduced below relates to the area surrounding the college - which is not targeted here as being any different from the other colleges. It was simply in that college that fear map methods were trailed by the student researchers. The blackened circles indicate places respondents considered as "unsafe" after dark. The high frequency of unsafe places mentioned suggests that this domain is perceived as a high risk area; with, however, a lack of perceived threat around the sports centre (used after-hours & also a security shuttle-bus stop). Examination of the area indicates that path lighting is at ankle level; open grassed areas are abundant; an unlit path (indicated on the map with an arrow) appears to lead to an entrance to the college, which turns out to be a storage area for the adjacent canteen - unpopulated at night; no signs of appropriation or personalisation are evident; and no surveillance opportunities exist to the rear of the building.

Map 1: Source: Student Pilot Evaluation of Residential Security UNSW Campus, 1993

Darlington Campus, University of Sydney

Darlington campus is the southern part of Sydney campus bounded by City Rd, Cleveland st, Abercrombie st, Shepherd st and Golden Grove. It is an area that lies on the edge of Redfern, Newtown, Glebe, Camperdown, Chippendale and of course Darlington, with central railway in close proximity. It is thus in an area which has an inner-city characteristic without the Paddington-type aura.

A structured questionnaire survey specifically relating to the Darlington campus was answered by 128 respondents at the student union building. Again, females demonstrated a far greater concern for lighting levels, presence of security, lack of presence of other students at night, poor sightlines, and inability to see into parked cars at night.

In general the respondents regarded the boundary area of the campus on the Redfern side, and the route from the campus to Redfern station to be unsafe at night and even during the day. In particular, the intersection of Shepherd, Lander and Abercrombie streets was considered to be an insecure spot.

11 victimisation experiences were mentioned in the general Darlington campus area, ranging from assault, robbery, mugging, verbal and racial abuse.

Results of an observational 'expert' walkthrough highlighted: the 'porosity of the boundaries'; the sense of anonymity (the student researchers wandering around for several hours on the campus at night were never questioned by anyone as to their intentions); the low levels of lighting, and that there were no street lights along the length of the Maze Crescent, and the gatekeepers at the boom gate knock off at 8pm (this is an area with a proportionately high incidence of crimes: see Reported Data); and, *inter alia*, restricted surveillability possibilities because of window design in the Biochemistry building, and a small meter room in front of the building which was vandalised, littered with broken beer bottles, dark and isolated - an area the surveyors perceived as 'sinister', where a person could be 'dragged without being heard'.

Other insights were derived from discussions with the Shepherd St parking station attendant, who talked of gangs of youths (10-12 year olds) smashing car windows along Shepherd st.

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The research reported here cannot delve into any aspect of any campus in any depth. In-depth studies of individual campuses would be required before design and policy decisions could be made. However, these mini-studies are indicative of points of concern which ultimately will require remediation.

Overpage is a reproduction of a composite fear map derived from the Darlington study, which speaks for itself.

<u>Map 2:</u> <u>Source</u>: Student Survey of Darlington Campus, University of Sydney, 1994.

Plus 3/Minus 3 Survey

The +3/-3 survey is an open-ended survey which elicits responses from respondents, with minimal cuing, and thus requires content categorisation in order to analyse the data. Categories emerge during the analysis, although certain hypothetical groupings are presupposed, as well.

The prompt in this case was to focus respondent's minds on the issue of 'safety/security on campus'. An alternative technique, rejected here, would have been to simply ask respondents to comment on the three best and three worst features about their campus. This is an extremely valuable procedure since it elicits whatever factors are most salient to them, whether or not security is one of them. However, given that the covering page of the questionnaire had already stated the aim of the survey as 'determining where, and to what extent, students feel secure or insecure on campus, and the reasons why', it was not deemed appropriate to use the un-prompted technique.

TABLE 5.12: Factors Categorised as 'Best Aspects about Security on Campus'

BEST	*Cycle Escorts*	*Shuttle Bus*	*Security Patrols & escort*	*Manned Gates; Booms*	*Phones; Help Pts*	*Secu (gen)*	*College Access*	*Lighted Corridors*	*Lighting*	*People Animation Commune*	*Other*	*Total*
UNSW	66	58	25	4	11		13	30	12			219
% of T	30	26	11	2	5	0	6	14	5	0	0	
SYD		41	41			20	17		14		4	137
% of T	0	30	30	0	0	15	12	0	10	0	3	
MACQ			48			20	16	7	24	5	10	130
% of T	0	0	37	0	0	15	12	5	18	4	8	
UWS/H	0	23	36	1	1	16	7	7	24	33	4	152
% of T	0	15	24	1	1	11	5	5	16	22	3	
Total	66	122	150	5	12	56	53	44	74	38	18	638
% of T	10	19	24	1	2	9	8	7	12	6	3	
	⇒			*% security service related*		*64Ü*						

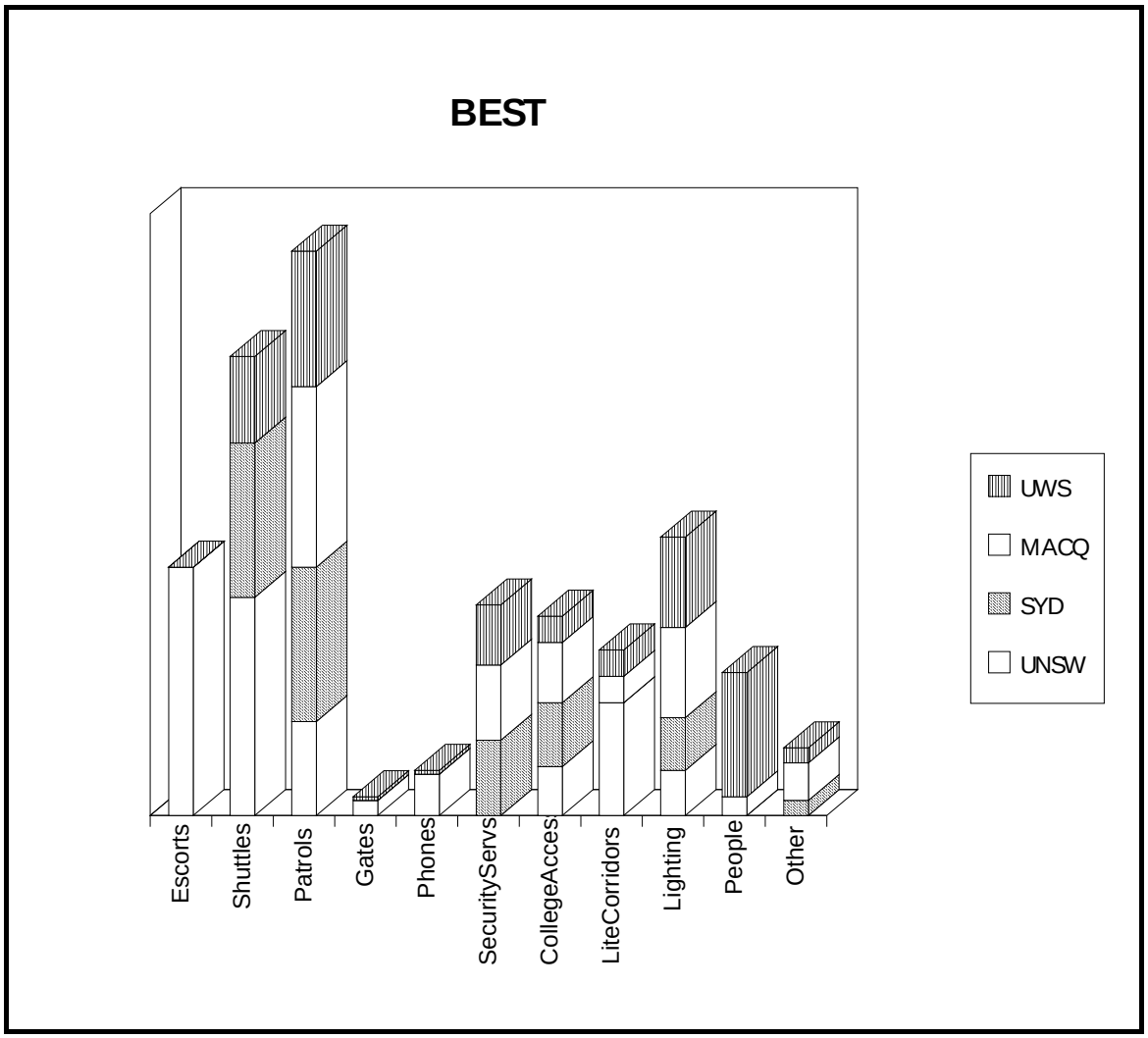

FIGURE 5.41: **Percentage Response :- 'Best Aspects about Security on Campus', 4 Campuses**
Note: volumes represent relative weights given to factors by respondents

Discussion

a] Security Service related aspects dominate the chart and diagram. 64% of 'Best' responses are security related.

Of particular relevance are the regular patrols by security personnel; and the escort service they provide (Macquarie, *eg*). Where a shuttlebus service is provided, it too is mentioned frequently, and where a 'student-bike' escort system is provided (UNSW), it is particularly well received.

Phone help points are appreciated, again on the UNSW campus, but this is not an major issue, either because relatively few are available, or possibly because they might be perceived as an emergency response system rather than a preventative one, such as escorts and shuttles. Some of the telecom callboxes on the UNSW campus also provide a direct-to-security free-call facility. This is something that should be available in every call box on all campuses. [14]

b] Lighting is also mentioned (12% of responses). Findings in the Environmental Experience section highlighted lighting as a major problem. This +3/-3 finding is not a contradiction, but a confirmation of the situational paradigm. Some lighting in some places is good, and is well appreciated. The lighted corridor at UNSW is an example in point (while such corridors at Sydney are conspicuous by their absence). Similarly, the lighting in certain domains at Macquarie at UWS/H are well appreciated.

c] Access to colleges, previously highlighted as an issue of concern, is mentioned here in 8% of responses, which is minimal but not zero. Colleges do have swipe card systems and coded pad systems, but there is concern about the lack of rigour displayed by residents in allowing other people to enter when they do, or about having to go to the back of certain colleges at night to gain legitimate entry. A general overhaul of systems and 'attitudes' is in order.

d] The category labelled 'people' includes other people on campus, colleagues and friends in colleges, and 'senior residents' at UWS/H.

Respondents at UWS/H in particular mention the people category. It appears that there is a sense of 'camaraderie' and community on that campus which is not evident on the others. This can possibly be related to the strong tradition of the all-male college which has persisted to this day (with some unfortunate side-effects already mentioned), or its geographical location - rural in comparison to the other campuses?

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[14] At the UWS/Macarthur Campbelltown campus Emergency Phones are installed at various locations around the campus. Above the phone is a map of the campus indicating where all emergency phones are located (*see photo/sketch in CPTED photographic record).

The senior residents are described in the UWS/H Students Residential Handbook as a hierarchy of senior students who help maintain socially acceptable codes of behaviour, and intervene in multicultural, sexual harassment, or other intimidating and humiliating behaviour issues. Colleges on other campuses also have seniors, but they were not mentioned by respondents.

TABLE 5.13: Factors Categorised as 'Worst Aspects of Security on Campuses'

WORST	*Security Services*	*Building Campus Layout*	*Desolate Dark Domains*	*Open Space Light*	*Paths Road Light*	*Parking Light*	*Lighting (gen)*	*College Access Room Safety*	*Neigh hood; Locals*	*Alcohol Related & Males*	*Theft*	*Other*	*Total*
UNSW													
	38	10	17	3	14	1	44	4		4	6	11	152
% of T	25	7	11	2	9	1	29	3	0	3	4	7	
				% lighting related			52						
SYD													
	22	9	17	3	35	6	44	11	9	12		9	177
% of T	12	5	10	2	20	3	25	6	5	7	0	5	
				% lighting related			59						
MACQ													
	26	20	16		19	1	7	25	1		3	5	123
% of T	21	16	13	0	15	1	6	20	1	0	2	4	
				% lighting related			35						
UWS/h												Bathrm	
	30	21	1	2	21	1	13	41	5	11	8	10	164
% of T	18	13	1	1	13	1	8	25	3	7	5	6	
				% lighting related			23						
Total	116	60	51	8	89	9	108	81	15	27	17	35	616
% of T	19	10	8	1	14	1	18	13	2	4	3	6	
				% lighting related			*43*						
		% Environmental Design related ->					*66*						

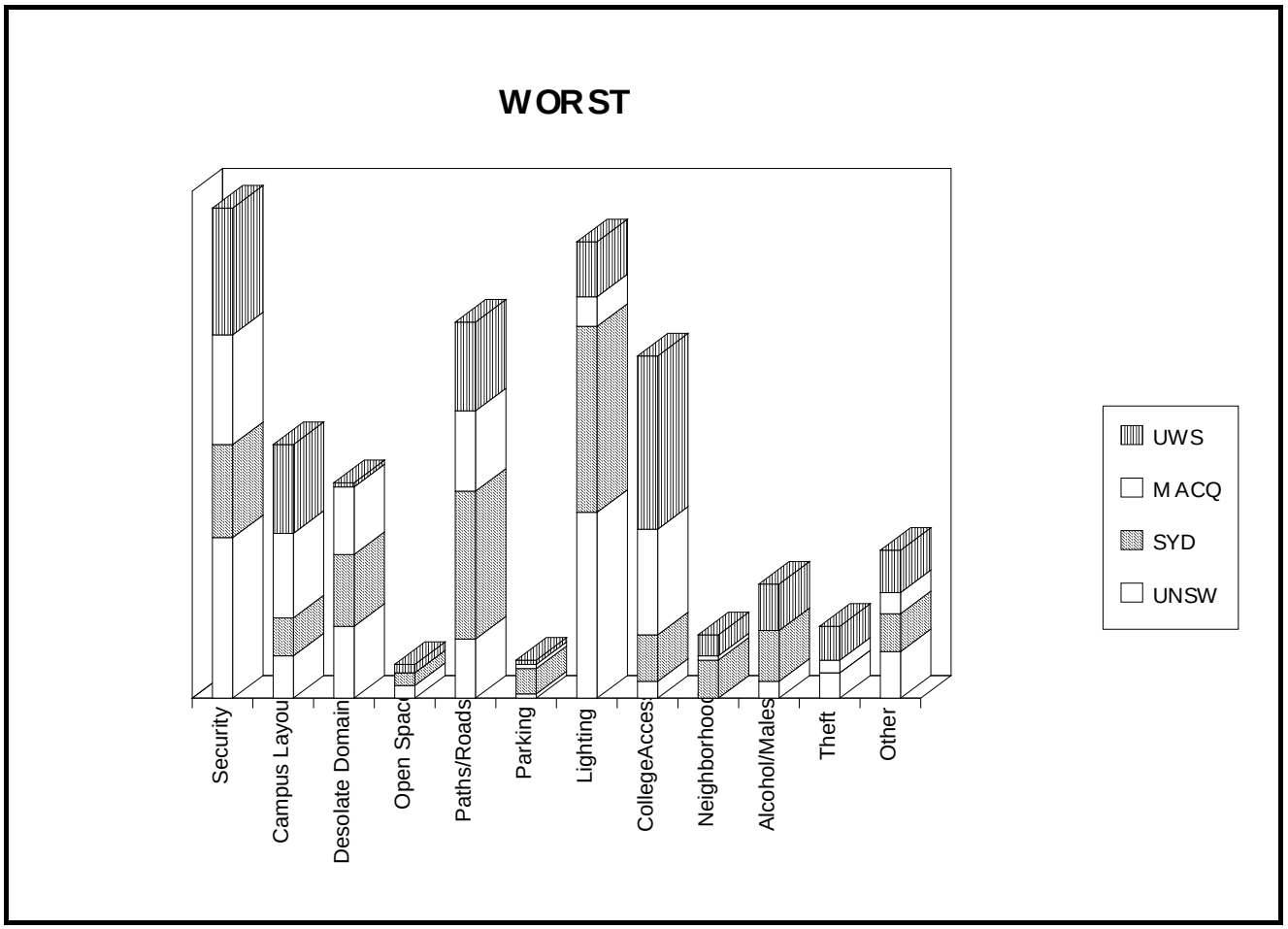

FIGURE 5.42: Percentage Responses : 'Worst Aspects about Security on Campus', 4 Campuses

Note: volumes represent relative weights given to factors by respondents

Discussion

a] Lighting related issues made up 43% of responses. If the categories 'buildings and campus domains' and 'college access/room safety' are added to this category, to form a composite ' environmental design' category, it represents 66% of the responses. These are issues which could be remedied by design strategies encompassing CPTED and defensible space principles, and management/policy strategies . Security services forms the next most important 'worst factor' category

b] Lighting was mentioned in particular at Sydney (59% of Syd responses) and UNSW (52% of responses), with Macquarie at 35% and UWS/H at 23%.

Other than 'lighting in general' (which represented 18% of overall responses), the lighting category of most relevance is 'poor lighting along paths and roads' (not related only to access to colleges, as highlighted in the Environmental Experience section), with respondents at Sydney in particular, but also at Macquarie and UWS/H, mentioning this issue (which also represents 14% of overall responses).

Desolate/dark domains were mentioned at Macquarie, UNSW and Sydney.

c] Security services were frequently mentioned as being the worst aspect about campus security (19% of overall responses).

Again, this is not a contradiction with findings in the Best category, given the situational paradigm. Some aspects of security are not well appreciated, and some are. This is evident at UNSW, where 25% of negative UNSW responses related to this factor, while at the same time UNSW has help points and the uni-beat cycle escorts and a long-standing shuttle bus system.

Generally, these issues relate to there not being enough security officers, and not enough personnel walking the campus, or their low presence, difficulty to contact when required, taking too long to respond to request for escort, inability to take action, or refusal to pick up students except at designated spots, or take them all the way to colleges, and in some cases their 'poor attitude' and arrogance.

Other issues relate to the lack of identity checks on campus at night, inadequate, irregular shuttle bus services, low presence of security in libraries and/or car parks, absence of patrols on week-ends, and not enough security phones.

d] Inadequate control over access to colleges represented 13% of overall responses, and was particularly mentioned at UWS/H and Macquarie.

e] Campus domains and buildings represented 10% of overall responses. These were mentioned particularly at Macquarie and UWS/H.

Generally, these issues related to the long distances between colleges and libraries, gyms, telephones, public transport nodes and car parks/parking stations, the size of campuses, the empty, desolate non-animated campuses at night (Sydney, eg) and on week-ends (Macquarie, eg), living near inappropriate mixed zone activities (the hospital and detoxification unit at Sydney, and the Pizza Hut/McDonald zone at UNSW), and inadequate lighting on the outskirts of the campus (Macquarie, eg).

Also of issue is the ease with which outsiders, strangers and non-students can gain access to campuses, particularly at night. This was mentioned at all campuses. Remediation would require more than physical boundaries and boom gates.

f] Respondents at Sydney mention the 'campus neighbourhood" as being a problem 5% of the time. In particular, the Redfern & Newtown areas were mentioned. The Richmond 'locals' and Kensington 'homeboy' subculture were also flagged as problematic at UWS/H and UNSW.
This issue is something that campuses located in potentially problematic areas, *eg* with crime prone areas adjacent, will have to begin to deal with in the future. It will only take one case of litigation to alert students and their parents to legislation (Occupational Health and Safety legislation) that expects universities to provide a reasonable duty-of-care. This issue of 'foreseeability and liability' is mentioned again in the Recommendations section.

g] The issue of drunk male students was also flagged at Sydney and UWS/H.

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It should be remembered, in conclusion, that respondents did not rate or rank their responses by importance. It would be possible, with the data to hand, to make a listing of issues mentioned first, second and third, and thereby derive some kind of preference score, but this would not necessarily be the case *ie* that a first mentioned factor was also the most important.

In other words, for example, although campus neighbourhoods were only mentioned 2% of the time overall, the significance of this as compared to, say, poor lighting in parking areas (1%) might be much more than twice as relevant to the day-to-day and *after dark* behaviour of students on campuses, or half as important.

Future surveys could build-in an importance rating system to the +3/-3 survey, which would be a major advance in this methodology.

Security Systems & Interviews with Security Managers [15]

Security managers responsible for the 5 universities were interviewed about the systems particular to their campuses and their experiences of security. The University of Western Sydney is a federation of UWS Hawkesbury, UWS Macarthur and UWS Nepean. Macarthur consists of two campuses, Milperra and Campbelltown, and Nepean consists of three campuses, Kingswood, Werrington and Westmead. The EEO co-ordinator was interviewed at UWS/Hawkesbury in lieu of the security manager. All of these campuses were visited by the researcher.

UNSW

The Kensington campus has about 28,000 students and 5,000 staff, 78 buildings; and a 38 ha. site.

The campus has a 24hr security service. It's security guards are unarmed but in radio contact. At night 12 guards are available until 10pm, thereafter 10 guards are on duty until midnight, and 8 are on duty all night. A roving motorcycle guard is now also on duty. Ground patrols are on foot, and in marked security cars, and 2 guards patrol the 'lighted corridor' exclusively. This corridor runs the length of the campus from the Anzac Parade pedestrian entrance to the Botany road entrance. Prior to the new Quad building development, this corridor did not serve any of the on-campus residences, but now has been extended through the Quad domain and thus includes the new Basser step precinct which gives onto the Kensington colleges. Other colleges on the campus are still not served by a lighted corridor - an oversight easily remedied.

Buildings are also patrolled, external doors checked, and where lights are on in offices afterhours or on weekends, guards often check the identity of the occupants (their IDs are swiped into a control pad).

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15 UNSW, Sydney, UTS, Macquarie and UWS

All gates are manned throughout the day, and vehicular access is strictly controlled. At night all gates are sealed off except for the main gate (Barker street entrance) which is manned 24hrs a day. However, vehicles are not challenged afterhours, presumably on the assumption that they contain college residents or staff or visitors attending functions. It is possible, thus, for illegitimate users to readily gain vehicular access to the campus all night long.

Three Unibeat bike escort teams ('manned' by students, both male and female, paid industry wages) are available from 6-12pm, Monday-Friday and weekends, and during vacation periods a skeleton service is still provided. The escorts serve two functions, escorting people on the campus, and acting as a further surveillance service; one team patrols the lighted corridor, and can often be seen proximate to the Library during evening opening hours; the other two roam the campus.

The Security Shuttle Bus runs a regular service around the campus, servicing the sports centre, library, and the student residences via the streets surrounding the campus, and includes the Randwick shopping centre, where buses to the Eastern suburbs depart. The service is advertised, and bus stops have timetables, and the bus runs from Monday to Thursday (5.30 to 10.30 pm), and Fridays until 8.30pm. During vacation periods it is not in service.

Several of the Telecom phone boxes located on the campus have a direct line to security. It would seem prudent to install this capacity in all public phones on campus, as well as to advertise the fact on the exterior of the phone booths, and to display maps around the campus with the location of phone boxes indicated on them. Four blue light help points (emergency phones) are now also located around the campus, with a warning that people using it might be recorded. CCTV cameras are positioned on distant buildings, well out of reach and sight, and are activated when someone uses the system, triggering an alarm at the central monitoring station. Conspicuously advertising the fact that cameras can record behaviour in a particular place can have a deterrent effect (see Poyner, 1992).

A sign at the main library entrance claims that it is surveyed by closed circuit cameras. Other than a camera focused on the entry/exit doors, no CCTV systems are in place throughout the library. A legal liability might arise in circumstances where there are actually no cameras but

people modify their behaviour (become less vigilant and attentive to environmental cues and/or to potential 'predators') because of a false belief that security is more extensive than it is. If an incident were to occur, it is possible that a university might find itself liable under duty-of-care legislation.

Cardax access control electronic systems monitor the entrances to most buildings on campus *ie* swipe card entries are recorded at the central monitoring station (24hrs). 7,000 sites on the campus are monitored, including fire escape doors, open door alarms, burglar alarms, cash handling points, etc. Secure areas such as laboratories and computer labs are also monitored by swipe card. An emergency phone is often provided; however, in at least one circumstance known to the researcher, the emergency phone for a computer lab is in the lift, outside the lab, which defeats the purpose of having instant access to security in case of personal harassment. 'Community policing' is the underlying philosophy at UNSW, as it is on all the campuses surveyed. All security managers expressed a concern that security and students enjoy a relaxed and amicable relationship, and that security does not become a 'policing' presence.

There is also a strong move towards encouraging students to *report* crimes and harassment experiences, or people acting suspiciously. A security awareness program is also run, *eg* during orientation week. This still appears to be low key. The researcher has suggested that a video be produced, which can be shown on all campuses during Orientation Week, and which addresses a wide range of personal security issues on campus, including the empowerment of women, and gender stereotyping (see Recommendations).

The main concern of security management is with property crime - vandalism and theft; but alcoholism on campus is also a concern. There are 'more injuries caused on campus by alcohol than any other cause, especially around the residential colleges' (Uniken, 18 Nov, 1994). Fights between drunk students is one issue here.

The Chief Inspector at Maroubra Police Station was also interviewed. UNSW falls within his jurisdiction, and since January 1993 a 'beat' constable has been liaising with UNSW

security.[16] This resulted in the production of a series of reports concerning crime prevention at the university. In particular, it became obvious that there was a high level of unreported crime relating to theft of office equipment below the value of $2500 - due to the high insurance excess of $5,000.

It is likely that all universities would have similarly high premiums, and that the practice of not recording (or reporting the loss of) university property below the excess-level would be commonplace. Given that theft was not the area of concern of the research reported here, this was not pursued further.

University of Sydney

There are about 35,000 students on the main campus, and about 7,000 staff; and 183 buildings. About 2,500 students live on campus.

A quality review was undertaken by an outside consultant, and recommendations were made to streamline and 'out-source ' security to a private company, but this has been resisted on the grounds that personalised, in-house knowledge would be forfeited, albeit cheaper to employ an outside security company.

However, the gatekeepers are now casual staff. Gates are open 24hrs, and are not manned at night. Furthermore, gatekeepers do not tend to challenge delivery vans (which might or might not be legitimate). Vehicular access to the campus afterhours is open to all.

16 security officers (down from 24) now patrol the campus during the day. At night, however, this is reduced to only three people, two of whom patrol in a vehicle, while a third maintains a presence at the central office and can be called upon in an emergency (with a second vehicle).

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[16] Police are only allowed on the campus with the permission of the Registrar (this is the case on most Australian campuses).

The security vehicle patrolling the campus and the perimeter of the residential zones at night can drive through the ovals if required. Colleges of residence are autonomous, however, and security has no control over what happens there. They are requested to intervene if/when required.

The ovals are controlled by the Sports Union (one oval is the home ground for a football club, thus bringing outsiders onto the campus, often on weekends when security presence is low, and few students are around *ie* natural policing potentials are correspondingly low). The St. John's Oval is also the landing pad for the transplant helicopter from the hospital. The ovals are a dominant land-use at Sydney, and impinge particularly on the residents of the colleges which are juxtaposed. A case in point is the Sancta Sophia women's college, which is located at the periphery of the campus, and from which paths to the main campus lead across several ovals and a hospital parking lot (see CPTED Evaluation).

The security shuttle bus carries about 150 passengers per night. It operates only during semester times, Monday to Friday (not on weekends - when residential students are still on campus). The service begins at 4.45pm and ceases a half hour after the Fisher Library closes. The route includes the campuses on both sides of City rd, and now also includes the residential colleges, The Graduate School of Business, The Faculty of Nursing, and Redfern Station.

Escort vehicles are available between 5-10pm (or other times if required), Monday to Friday. The service is not available on weekends and during vacation periods.

Intentions are to have one patrol person on a pushbike patrolling a defined zone.

There are 4 security phones, but they are located at the 4 main gateboxes, which reduces the capacity of people on the campus to rapidly contact security. However, many buildings are open at night, and have public phones in their lobbies, and there are other public phones on campus (none of which have a direct line to security).

There are many bars on campus, and the Grandstand bar is open most nights till late. There are no regular night activities on campus, other than the Seymour Theatre (on the campus edge). The Great Hall in the main Quad building is also hired out for functions Otherwise, the Student Union sometimes holds functions in the Wentworth building, Manning House or the Holmes building. These activities are advertised at off-campus locations, which attracts non-students to them at night. The Student Union employs its own security guards for these special occasions, and campus security is only brought in on request.

There are no CCTV cameras on campus (except for one directly outside the security services office).

Some buildings have swipe card access, and both entry and exits are monitored and recorded. Buildings are not checked by security at night unless there is a reason (an alarm activated, eg). Building attendants knockoff work after lectures have ceased. It would thus appear that buildings are not protected by security personnel afterhours. The security patrols open the buildings at about 4am, for the cleaning staff shift, and the building attendants start later.

The Shepherd st parking station is owned by the university but can be used by anyone. Since restricting access to one entry/exit which is 'manned' by an attendant, vandalism to cars has dropped dramatically. There is no student parking on campus. A new (open/single level) carparks is proposed for the corner of Darlington rd. and Codrington street. Security are aware that the location of this carpark might attract youths from the Redfern area, which could create problems, and which would extend their patrols even thinner.

If a car breaks down on campus, the NRMA will not come onto the campus, and insist on being met at the gate. This could create a major problem for a female student of staff member who might then have to walk across an area which they would not normally walk across. The issue of the liability of the University (under duty-of-care legislation) in the event of an incident occurring might be invoked in such a case.

There is not much theft of vehicles, or even theft from vehicles, but malicious damage to vehicles is a problem, especially on the Darlington campus. In fact, more cars are found

abandoned on campus than are stolen from it. The underground car park is the favourite dump for these cars. This car park has a particularly low ceiling height, only one access route (escape route), is located in an isolated position, and is poorly lit. It is potentially problematic. Given that no staff were interviewed, their perceptions and experiences relating to this (and other parking areas on campus) are not known.

Security personnel feel that the areas of most concern are the Darlington campus, the ovals and Western ave, which is felt to be poorly lit. Furthermore, the floodlighting on buildings is not sufficient, and there is no lighted corridor.

Other concerns relate to old equipment, too few staff and a massive campus which is easily accessed by outsiders and is thus very difficult to keep under control. The feeling was that security can react but not pre-empt. The juxtaposition of the hospital exacerbates this dilemma. The aim is to centralise building monitoring capacity as much as possible.

It is also maintained that the vast majority of crime on campus is committed by outsiders, and the location of the campus is critical in this respect.

Furthermore, the inside of the 'classic' buildings (so delightful to the eye on the exterior) are a maze of complex, winding corridors, with a mixture of locking systems...in other words, easy to access and difficult to survey. The Quad building is a case in point. Moreover, names on lecturers doors provide people intent-on-theft with an apparent rationale for being in a building: "looking for Dr X". Outsiders can pose as students or even academics and thus gain access to buildings.

It is felt that students don't really care about security. They don't claim lost property, not even when IDs are lost. A 1993 survey of crime experience on campus targeted 3,000 students but received only 30 returns, and minimal information was gleaned from these responses. They only reinforced what the security services already knew.

Media Reports

- On 16 August 1991, a report in the Sydney Morning Herald mentioned that there were about 1000 crimes at the University of Sydney in 1990, compared to about 800 in 1989. (The yearly crime synopses for 1992 and 1993 indicate rates between 1700 and 1800 recorded offences). The Deputy Bursar (Services) is quoted as saying that the relatively low socio-economic neighbourhoods surrounding the University put it at a disadvantage vis-⑦-vis other universities, where crime occurrences are lower. Also the open nature of the campus allows for outsiders to wander through. The Vice-Chancellor is also cited as saying (in an editorial of the university's newsletter) that universities are intrinsically hazardous places, and that the layout of the Sydney university campus prevents it from ever being a totally safe place to walk in at night. Women are discouraged from walking alone at night.

It would appear that better control over accessibility would be a major factor for the university to consider in term of crime management. There is an inevitable trade-off between priorities, and strong competition for funds, but issues such as control over vehicle access, pedestrian access and symbolic signs (of proprietary attitudes) should be given serious consideration, *as preventative measures.* Reactive measures such as increasing the numbers of security patrols would appear to be counter-intuitive in this regard.

- A report in the SMH on February 20, 1993 targeted the all-male colleges of residences, with their proud traditions and magnificent buildings, but now being accused of sexism and sexual harassment. The masculine culture, the drinking culture (which fosters vulgarity) and the 'mind-set contemptuous of women' have been challenged, since 1991, by women residents at the other colleges, feminist groups on campus, and the Women's Research Unit. Although the Wardens of the colleges are reported as having enlightened attitudes towards women, and believe that there has been an improvement in sexist attitudes and the language of sexual harassment of late, there still appears to be a way to go. An in-house magazine, run by a student club, has been slated as being pornographic and having offensive sexist, racist and homophobic content, and has even been rejected by some male students, but is still produced under the ambit of 'freedom of speech'.

> Mention is made in the SMH article of events which reflect those mentioned in the questionnaire survey undertaken in the research reported here (being sprayed with urine, colleges being invaded at night, women chased across ovals, etc). These issues include "moll"-calling; allegedly humiliating posters depicting girlfriends of sporting team members; and being tackled by college men when crossing an oval and sexually harassed (denied by the men).

Clearly, these antiquated fraternity-type systems, a legacy of the old private school culture - a colonial inheritance - are immoral, anomalous and obnoxious in contemporary culture - if not illegal.

It is contended here that unless attitudes are addressed, behaviour will not change. Furthermore, given that all university administrations already enshrine equality and non-discrimination in their EEO policies, the strictest compliance with the spirit of these rules regarding women students on campus and living in residential colleges (and minorities of whatever ilk) should be expected and enforced.

Macquarie University

About 15,000 students (part-time and full-time) attend Macquarie University, and there are about 1,800 employees.

The MSS security service is now responsible (with the university-employed Security Manager) for providing security on the campus. Savings of about $150,000 a year have apparently been made as a result.

5 security guards are on duty at night, one of whom monitors the CCTV cameras and maintains a presence in the security office in the Council building, while the 4 other guards patrol the campus, and are in radio contact with the central office. Both male and female security staff are on duty. Three of these guards each monitor one region (East, Central and

West campus) and one patrols the perimeter in a security vehicle. The entry gates are 'manned' until 10.30 pm.

There are also undercover police who patrol the campus on bikes, and police are encouraged to come onto the campus, particularly to help patrol the carparks.

Buildings are locked at night. A new Sylox system is installed on new buildings, with in/out PIN systems which are computer monitored. Afterhours, post-graduate students have access to buildings while undergraduate students require written permission. Staff log-in, but this is not appreciated by women staff members, whose presence in the building is thus advertised. It is hoped that an electronic system will replace this antiquated system in all buildings when funding is made available. The dilemma posed by the old system is that it is necessary to know who is in a building afterhours, in the event of a fire, or if someone should require medical assistance.

During the semester a security vehicle (an estate car, not a bus) is available to transport individuals to their cars in car parks, the on-campus bus stops, the gymnasium, and to points relatively close to the student housing domains. The vehicle operates from nightfall or *after dark* until 10.30pm, and departs from building F9C (on the north-western edge of the campus) every 20 minutes, on a predetermined route. Because the service operates *after dark*, the times of service would vary depending on the time of the year, which could be confusing; but more importantly, there could be a period of several hours after day-lectures have terminated and during which time few students are still around on campus (natural policing potentials are low), before the service becomes available. The University also has a large number of part-time students (some 6,000 of the 15,000 students) who use the campus in the evening and at night. On the one hand, this might enhance animation and surveillance potentials; on the other, these students are not part of the campus culture and are independent individuals with little if any binding reason to act in a 'protectionist/defensible' manner towards other individuals on the grounds. If anything, their needs for protection would be even greater than those of the regular campus users.

The escort service is both constrained by the size of the vehicle, and because it cannot go off the campus. In consequence, students using the service to get to the colleges of residence are dropped off at paths which lead through forested and open land to the colleges. This is not appreciated by students, and responses to the questionnaire made this clear. Given the limited escort service and the juxtaposition of the parking garages and colleges of residence on the south-eastern flank of the university, the route between the central campus domain and the colleges frequently involves walking through dormant and isolated parking domains and poorly lit open land at night (see CPTED Evaluation). Furthermore, the 20 minute trip around the campus is not appreciated either, and some students commented that it better to 'take a chance and walk'.

Indeed, the relatively poor rating (in terms of environmental fit) of the university vis-⑦-vis the other universities surveyed - remembering that only college students were surveyed - is a result, almost exclusively, of this particular mix of land-uses and the limited escort service.

The central campus domain is well lit, and is generally considered to be safe by day students answering the questionnaire. However, several part-time students known to the researcher have commented about feeling ill-at-ease when leaving deserted buildings after night classes, and walking to and from the car-parks. They were not aware that an escort system was available at all.

The campus is also used during vacation periods, for summer school activities, and for conferences etc. No escort system is available during these off-semester periods.
The university also has a few cottages on Herring Rd, which are not serviced by the escort system; neither is the sports domain, located off Talavera Rd.

Many buildings on the campus have a blue telephone system from which security can be contacted if required. The Library has a similar service. Buildings are locked after 10.30 at night, however.

New buildings have an anti-graffiti paint that makes it easy to remove graffiti, and this helps provide a general impression of a well maintained campus. Some graffiti is in evidence at

busstops, and apparently there is some problem with graffiti in the toilets (a problem in all public toilets wherever they are situated).

Two CCTV cameras are placed outside the Library entrance, and can be monitored (24hrs) from the central office. Recordings are not made, but the presence of the cameras is advertised. The cameras and monitors are outdated and provide a low quality image, and security is hopeful that the system will be upgraded soon.

There is an extensive system of service tunnels beneath the campus, but it is likely that few if any people know about it, and commonsense would dictate that people using the campus would keep away from such areas in any event.

The campus has been designed in such a way that the buildings are grouped and clustered, and thus form a dense central core. This core is well lit with floodlights, and generally visibility levels are high. The location of huge parking areas on the periphery (whether covered and multi-storey or open lots) has the effect of separating the campus into two distinct domains, and isolating the one from the other. People are required to move between the two, and the parking domain has a distinctly *dormant* feeling about it *ie* there is little animation and there are large tracts of parked cars with very few people around. The lighting in the parking garages is on high power until later at night, when the power is reduced - a trade-off between energy efficiency and security.

Security concerns on the campus are almost exclusively to do with vehicles, car theft in particular. Also of concern is the peripheral location of parking areas, since people are reported to 'roam around' there. It is easy for organised gangs of car thieves to penetrate these car parking domains. Security feels that installing CCTV systems in the parking areas would be very expensive, and that funds are not available for such expenditure.

The Security Manager believes that the system of 'manning' the gates is obsolete, and that it would be better to install Pay and Display machines, and for staff to patrol the parking areas checking on vehicles, thus simultaneously increasing security presence there. These machines

could be alarmed, and even have an integrated personal distress alarm which could be used in the event of an harassment.

The juxtaposition of the huge parking areas at the Macquarie Shopping centre (about 10,000 cars) with those of the campus (about 5,000) means that the area is targeted by car thieves. The Ivanhoe Place public housing domain is also within the immediate neighbourhood, and it is possible that residents could perceive the thousands of cars parked in the adjacent areas as being soft targets.

Macquarie University is considering installing a sophisticated electronic Emergency Distress System (EDS) designed by the Guardian Angel Research and Development company in Queensland.

This is a solar-powered, remote-controlled safety zone system, which could include the walkways, carparks, or wherever there is a concern for people's safety. The system has a capacity of 35,000 users, so that students and staff and other employees can each carry a miniature coded unit attached to a key ring or as a neck pendant. In the event of an emergency a user depresses the switch and the unit immediately activates an emergency distress system in the specific safety zone, which relays a message back to two-way pager systems carried by security staff, identifying the particular user and their exact location. Simultaneously an audible voice/siren/flashing blue light system is activated at the nearest safety zone monitor. A testing system is also installed, where users can check that their alarm units are operating properly.

The system is thus active 24hrs a day, can be installed over large areas, and can be a user-pays, cost neutral system, given that most students and staff would be happy to pay a small fee to enjoy the benefits of a constant vigilance system without imposition on their lifestyles.

This safety levy could be incorporated in Student Union fees. It is estimated that if 20,000 students each paid $10 a year and 25c/week as a rental fee for the equipment, the $200,000 total cost (including installation equipment for 30 safety zones or 3kms of walkways, and

remote units) could be rapidly recovered; and income during subsequent years could be used to expand and upgrade the system and other security requirements.

The system has already been successfully installed at the Royal Brisbane Hospital in Queensland, where 70 acres of safety zones are installed, including carparks, walkways, secluded alleys, boosts, tunnel walkways, sporting areas and at the two main entrance gates. Signs are posted indicating that the area is a safety zone - again, the idea of conspicuous advertising as a deterrent.

Such a system would appear to have numerous advantages over a CCTV system, or the blue light zones so prevalent on American university campuses.

Nonetheless, it would be extremely unwise to rely on such systems and simply ignore the in-built potentialities of the built environment and the power of community responsibility. Any electronic system can fail, or could even be sabotaged, and people intent on crime have proven themselves capable of overcoming and outwitting every system yet devised. It would also be unwise to generate an electronic surveillance culture that permeates university life where everyone comes to be totally dependant upon a Big Brother system for their personal security.

A multi-dimensional approach is required for a multi-dimensional situation.

A combination of electronic surveillance systems, wise design and planning, good lighting and clear sightlines, mix-use zoning that animates and populates, friendly and frequent escort systems, regular campus patrols by security officers and last, but not least, the inculcation of street-wise behaviour patterns (picking up on environmental cues), self-affirmation and self-defence for women, and the education of male students concerning date and acquaintance sexual harassment, could ensure that our campuses are the safest in the world.

Interviews were held with security managers on the Kingswood campus (Nepean) and the Milperra and Campbelltown campuses (Macarthur), and with the EEO director at the Hawkesbury campus (who acts on behalf of all UWS campuses).

Reported crime data were not made available to the researcher from any of the UWS campuses, the questionnaire was not distributed to college students at the Kingswood campus, and other than at the Hawkesbury campus there are no other on-campus student residences at the time of writing (Campbelltown expects to build about 75 on-campus units within the next two years).

Given the limited resources and time available to undertake the research, it was decided to report here only on the security systems and interview undertaken at the Hawkesbury campus, where on-campus students did answer the questionnaire, which thus permits comparable analyses to be made with UNSW, Sydney and Macquarie universities.

Briefly, issues of interest at UWS generally, relate to a recent move by the Student Representative Council at Nepean, who are seeking to be more involved in sexual harassment issues; the dilemma of sexual harassment occurring between railway stations and certain campuses (does a university have any jurisdiction/responsibility over events happening to students while *en route* to a campus ?); the influence of installing boom gates which are locked at night on diminishing car theft, the perceived need for dedicated security-escort vehicles, and the sophisticated emergency phone system deployed - on one campus; the difficulties associated with the trend towards employing contract security services rather than in-house personnel (new people requiring re-briefing, for instance) but acknowledgment of in-house inadequacies too (militant unions, sick day replacements, salary on-costs etc); and the need for a better balance *ie* more female security staff.

UWS/Hawkesbury

All residential colleges at UWS/H are mixed sex, and accommodation is provided for about 500 students (of a total campus population of about 4,000). The small number of students helps generate a sense of campus community (previously discussed) not found at the larger universities, and students are empowered to deal with many issues relating to campus life.

There is also a peer education program in sexual assault which has been run during the past several years, and some 30 students and 18 senior residents have been accredited under the program to date.

A survey on personal safety on campus was administered by EEO personnel about 5 years ago, but this information was not made available to the researcher. Apparently, it is not only women who are the targets of sexual harassment. Some men have also been sexually assaulted.

There are apparently few serious assaults on campus, and tenancy agreements can be cancelled if/when such an event constitutes a serious assault.

In general, apparently 100% of disciplinary hearings are associated with alcohol abuse, and EEO personnel intend to focus the next peer education program on the issue of alcohol.

The on-campus bar is located in Stable Square, a student area. This area was frequently identified by students answering the questionnaire as an area of concern.

Nonetheless, there has apparently been a major shift in attitudes over the past 5 years or so, when for the first time a male student was expelled for rape. Previous to this time, all incidents were apparently dealt with amongst the students themselves. It is still an uphill battle to encourage women students to report sexual harassment to the police, and changes are slow to materialise. EEO personnel are now also active (pro-active) during Orientation Week, disseminating information about harassment, vilification and support systems, and trying to inculcate a culture of reporting amongst the student body. The Residential Handbook also carries this information.

Moreover, the EEO director is now developing a policy on how to deal with sexual assault (which includes the new crime of stalking). Similar policies are apparently only available at few campuses around the country, although all universities have a sexual harassment policy, and most have a grievance policy.

As previously mentioned, remnants of the 'boys culture' which grew from the all-male agricultural college ethos are still prevalent, and the issue of bathroom privacy has also been discussed. Women are still called 'sevens' by some students *ie* they come seventh in line after one's mates, one's ute, beer etc.

Theft of bikes is apparently so common that it is called 'borrowing'.

A new security shuttle bus is now in place (previously discussed). Otherwise, staff and students can call on security who will escort them in a security car.

Three security personnel patrol between 8am and 4pm, one between 4pm and midnight with a backup of one during the daylight hours who also acts in a managerial sense, and does banking etc, and two patrol between midnight and 8am.

There is no CCTV on campus, and no buildings have swipe card access control.

Problem areas considered by EEO personnel: the male/female attitudinal issue still requires attention and resolution; the bar area is problematic as are parties in residences (also mentioned by several women respondents to the questionnaire); "kegs in bushes" parties after rugby wins are now considered to be outlawed on campus, since attempts at regulating them failed (underwear is ripped off people while they still have their jeans on, for instance); the lighting on the rear drive (Vines Drive) is considered to be totally inadequate, as is lighting in the carpark outside the Nursing Education buildings, and on the route to the adjacent TAFE college, whose students often walk to use the university Library.

Lighting audits have been undertaken of late, which include cognitive maps of which routes students actually use, and lighting upgrades have resulted. Carparks are now better lit, and lighting in residential areas has been improved.

Apparently there was no lighting between the library and residential colleges until 2 years ago, and the impression is now that a 'lighted corridor' exists between the two. This issue is taken up specifically in the CPTED evaluation, since respondents indicated the pedestrian routes to the library (and the lighting along College Drive and Vines Drive) as still major issues of concern (see Fear Map).

Finally, residential students are now insisting that college security be upgraded. Many of the colleges are old-style halls, with a door at either end, which are not locked. Bathrooms are often at the end of outside corridors. Bedrooms can be locked but access by windows is easy (window locks are now being mooted). Common rooms are now locked, after raids in which food was stolen from refrigerators. Bathroom privacy issues have already been discussed.

University of Technology, Sydney (UTS)

Although responses to the questionnaire were too few to be included in the analyses, and reported crime data were not received from UTS, the extensive use of CCTV systems is of interest (on the positive side), as is the cavernous and intimidating underground areas (Level 1) at the Broadway Campus Building No.1.

UTS has 5 campuses, the Broadway Campus (buildings 1-4), the Haymarket Campus (cnr. Ultimo rd, Quay st and Hay st - building 5), the Kuring-Gai Campus, the Balmain Campus and the St. Leonards Campus. About 21,000 students are enrolled, overall, many of whom are part-time and use campuses afterhours (5-9.30pm). Broadway is staffed 24hrs a day, Haymarket 16hrs a day (7am -11pm).

UTS has an extensive, integrated CCTV system, called a DVST system (digital video sign transmission) which is PC based, retains permanent records, a snapshot is taken every time staff or students enter their PIN afterhours on remote campuses, and the system can produce a photograph in 2-3 seconds if required. Cameras are visible, no signs are posted. In 1994 this system was upgraded to allow for microwave connections between all campuses. CCTV is also installed in the underground parking area at the Broadway campus, but is still to be installed in the Haymarket Library. Computer labs are covered, and cameras monitor all fire escapes. Such a system makes determination of the extent of a fire, or of an intruder problem less dangerous for security.

Over and above this system, PIN number access and egress is monitored. Afterhour access requires approval, and everyone has to check in after 10.30pm. Only one door is open to the Broadway campus at night, proximate to the security office.

Generally: part of the security is contracted out at UTS; the Kuring-Gai campus has a security bus which shuttles between the car parking areas and the campus, every 10 mins, until 10pm; the student residence in Mountain st, Glebe is not patrolled by security (considered to be off campus). Respondents who did reply to the questionnaire indicated as an issue of concern: the necessity to use public streets in a far from salubrious area to get to the campus, and consequent interactions with local drunks etc. The security manager also mentioned the neighbourhood issue (the proximity of the Broadway campus to Redfern) and the occasional 'targeting' of the Broadway building during vacation periods.

Security indicated that very little personal crime is recorded at UTS. No validating data were forthcoming, and student responses were too poor to comment on the reported *vs*. unreported incidence.

The basement of the Broadway building is a labyrinth, a maze of dark tunnels and spaces, around which it is impossible to navigate unless one has a conceptual map firmly in mind as a consequence of having used the area many times. It is an extreme example of poor legibility, and non-existent wayfinding. Internal surveillability is impossible, although the area is CCTV

monitored. Security personnel indicated that it is extremely difficult to monitor this area, given the above.

Many fire-exit doors lead into and out of the area, connecting it with the other levels of the building. Multiple escape routes are, thus, available, while at the same time the feeling of potential entrapment is very evident. There is also access to the area from the street at the rear. A gatehouse is manned during the day, but pedestrians can easily pass by, and all deliveries are made to Central Stores in this basement area, thus vans of all kind could penetrate.

The basement area is also used by several schools/departments which have workshop space down there. It is difficult to imagine a more intimidating place, particularly at night, particularly if one is female.

It is also difficult to concede that nothing untoward has occurred in this area, although given no validification data no further comment can be made.

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Unreported Harassment

Phenomenological Write-In: Unreported personal harassment experiences on campus

An innovative but unconventional methodology was devised in an attempt to unearth unreported incidences of personal harassment on campuses. Criminologists, police and campus security staff all recognise this area as being of concern (since until some reasonable measure of *actual incidence* is established, preventative measures will continue to seem to be 'unjustified').

The methodology is termed 'phenomenological' in the sense that it is aimed at, and reflects everyday, routine behaviours and experiences.

To this end, Editors of university staff and student newspapers were contacted, and asked to publish a standardised letter. Similarly, managers at campus Overseas Student Organisations were contacted, and they also agreed to publish the letter in their newspapers (posted to the homes of 3,000 overseas students at UNSW, for example).

The letter stated the general aims of the research, and called for individuals who had experienced harassment on a campus and had not reported it, to contact the Project Director, anonymously (in writing), with details of the event and the situation in which it occurred.

Results from the phenomenological write-in are the following:

Staff: Only 2 women staff members responded, describing minor incidents - an unexpectedly low response.

Students: The major unexpected outcome was that *not a single student responded*.

Initially this was interpreted as a methodological shortcoming by the researcher, (or evidence of a lack of trust in how the information would be handled) but following an intensive literature search and consultation with criminologists and others involved in the area of personal safety, it became evident that some rationale for the unexpected results could be found.

It is in the area of victimisation that this explanation is deemed to lie. In brief, the rationale for the lack of response is thought to be a consequence of a victim's reluctance to see themselves as a victim. By whatever means are found appropriate, a person who has been victimised attempts to rid themselves of the stigma and agony associated with the event - via anger, denial, transference or other rationalisations.

In the present scenario, it is proposed that people who have been victimised are unwilling to 're-live' the experience, or to again see themselves as victims, as a result of recounting or recalling the traumatic situation, however anonymously.

Professor Ross Homel's interpretation of the unexpected result was based on research into victimisation with which he is involved in Queensland, and which could be indicating a similar reluctance of victims to report incidents - despite the use of standard survey methodologies (only 78 incidents of domestic violence were mentioned during 6,500 interviews).

Unreported Sexual Harassment: 1,150 Victims

Suzanne Daley's Self Defence For Women Centre, in Melbourne, has provided data on more than one thousand sexual abuse/rape survivors whom they counselled between 1990 and 1994. This data is unique. It is an expert evaluation based on empirical experience.

The information was provided at the request of the researcher, on the understanding that copyright remains with the SDSDFW.

The 1,150 victims were all women, between the ages of 16-64 (victims under 16 have been excluded from the calculations), and all offenders were males. The crimes committed were defined as Attempted Rape, Rape and Indecent Sexual Assault.

TABLE 5.14: Relationship between the offender and the victim

	No.	*%*
Live-in partner	138	12%
Boyfriend	10	0.9%
Friend	244	21.2%
Immediate Family	7	0.6%
Other Relative	26	2.3%
Work Colleague	92	8%
Acquaintance	426	**37%**
Stranger	207	18%

TABLE 5.15 :Where Crime Took Place

Victim's home	425	37%
Offender's home	218	19%
Familiar Area	276	24% (*ie* work place, a campus...)
Car	57	5%
Public Area	162	14%
Public Transport	12	1% (on, or waiting for)

Percentage of Crimes Reported to Police	
78	**6.8%**

The 6.8% reporting rate is an empirical confirmation of reporting rates for sexual offences discussed in the Literature Review section. Sexual harassment is the unreported crime *par excellence*.

This information also validates the researcher's attempt to canvass the extent of unreported sexual harassment events occurring in college residences, and reflects on the reluctance of college authorities to allow the pertinent question to be asked in the questionnaire; and on the apparent reluctance of authorities to provide data on the incidence of sexual assaults found in a prior survey. One of the reasons why the Student Guild at UNSW undertook their survey (the results of which are not yet available) was because of the response to the date and acquaintance rape videos shown in the colleges.

In any event, the research reported here has unearthed few reports of sexual harassment in colleges, and inferences can only be made regarding the references made to fear and bad recollections relating to bedroom and bathrooms.

Of further interest in the user experience data is the 37% of incidents in which an acquaintance was involved, and the 21% in which a friend was involved. If work colleagues are included, it could be said that 'acquaintances' were responsible for some 66%, or two thirds of the sexual assaults. This implicates the attitudinal problem mentioned frequently throughout this report - the attitude that males have towards the sexuality of females. This is not an issue in which CPTED can play a role. It concerns the management of interrelationships, a motivational, educational and social issue.

The 18% of events attributed to strangers can, however, be related to CPTED principles.

Public areas accounted for 15% of the assaults, and a certain proportion of the so-called 'familiar' areas would also include non-private areas, including campuses. It is not clear from the data whether these campus assaults were of students, of on-campus residential students, or neither. Similarly, it is unclear whether the 5% of events occurring in cars were related to car parking areas, or to the offender's or victim's car.

The vast majority of events occurred in either the victim's or the offender's home (over 50%), and a certain proportion of the familiar area offences took place in homes of other people and at work places. Considered together as one category, these findings again implicate the 'known sexual offender' category, which the Australian victimisation surveys, referred to in the Literature Review section, estimated to be about 50-60%.

Unreported offences continue to be the unknown factor in our understanding of criminalisation, and of preventative remedies - environmental or social.

Situational Experience Mapping

The situational experience maps shown (over) are composite renderings of individual responses to the Fear, Victimisation and Safety Maps in the questionnaire. Three maps are thus presented for each of the 4 campuses evaluated. The questions asked in the survey related to both campus domains and colleges.

In the first instance, it should be noted that the walkthrough photographic survey highlights certain areas indicated on the Fear maps. Furthermore, user experiences of victimisation will be seen to frequently overlap the Fear maps (which is not surprising, given that the aftermath of any victimisation experience is to cast a certain 'shadow' over the place where it happened). In all cases (UWS/H excepted: no recorded data available) many aspects of the recorded crime/place profiles also overlap these maps and the walkthrough sequence.

The intention of the situational mapping exercise is that the maps should speak for themselves. Minimal discussion/interpretation is offered.
In sum, it will be noticed that paths, open spaces, car parking areas (and sometimes surrounding neighbourhood streets) are highlighted on both Fear and Victimisation maps; and

that respondent's own colleges of residence, lighted pathways, the library, central teaching domains and student domains are generally highlighted on the Safety/Security maps.

It will also be noted that some areas are experienced as both safe and unsafe. This is not surprising, given the varying experiences of individuals, their personal reactions to and interpretations of the same places, their differences in gender, age, self-affirmation, in familiarity, even ethnicity, whether they drive or walk, etc etc.

This is yet another confirmation of the salience of situational analysis: that individuality and personal proclivities are at least as important as the uniqueness of each socio-spatial setting.

***PROVISO**: The maps are derivatives from the experiences of college residents, not of general campus users or staff. They are not representative of the entire campus community.*

MAP 1: UNSW/FEAR

MAP 2: UNSW/VICTIMISATION

MAP 3: UNSW/SAFETY

MAP 4: SYDNEY/FEAR

MAP 5: SYDNEY/VICTIMISATION

MAP 6: SYDNEY/SAFETY

MAP 7: MACQUARIE/FEAR

MAP 8: MACQUARIE/VICTIMISATION

MAP 9 : MACQUARIE/SAFETY

MAP 10: UWS/H (FEAR)

MAP 11: UWS/H (VICTIMISATION)

MAP 12: UWS/H (SAFETY)

CPTED Safety Audit/Evaluation

The CPTED evaluation was carried out *after* the completion of the environmental evaluation rating analyses and the situational experience mapping evaluation. This procedural tactic allows for user experiences to guide the expert assessment, which is both rational and efficient.

Based on these prior evaluations (and on reported campus crime statistics - minimal as they are), 4 domains were selected for the final CPTED walkthrough, and photographs were taken of the selected domains.

As previously explained, time constraints did not allow each campus to be subjected to a full CPTED analysis. One domain was selected from each of the 4 campuses (UNSW, Sydney, Macquarie and UWS/H) for deeper analysis. Given that the respondents selected in this research were on-campus residential students (potentially the highest risk group) the domains selected for further analysis correspond to areas which they highlighted as problematic, and in which they feel fearful and insecure.

The areas selected are all of the same type: *the pathways between the residential colleges and other facilities on campus.* Night-time use of these pedestrian routes is a major issue unearthed by this research.

The photographic record (converted to line drawings here, due to publicationconstraints) is designed to give the impression of walking through each of these areas (albeit during the day, by necessity). *The reader is asked to imagine the scene at night*.

At UNSW, this corresponds to tracing a path between the residential enclave on the south-western edge of the campus (New College, Warrane, Shalom Colleges) to the student areas (Roundhouse, Blockhouse and Square House) and towards the educational facilities on the lower campus (past the Architecture and Optometry buildings).

At Sydney university, the path leads from the colleges on the north-western edge of the campus (Sancta Sophia and St John's), across the Ovals to Western avenue, and up Western ave towards Wesley and Women's Colleges.

At Macquarie University, the path leads from the rear of the Robert Menzies and Dunmore Lang Colleges, across the forested area and the footbridge, between the parking garages C2 and E1, and on towards the educational core.

At the University of Western Sydney/Hawkesbury the path begins on College Drive, and the trail is then taken up on Science rd. between the main cluster of residential colleges (F. Troop, Potts Lodge, Valder and Thompson) and the Library/Computing Centre, returning along Poultry lane, towards the SRC offices, student bar etc (Building K4).

All of these routes are those which residential students fear (see corresponding Maps, Situational Experience Mapping).

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General CPTED principles underlying the safety audit and taken into account during the walkthrough are the following: surveillability, accessibility and territoriality. The major issues relating to these path systems are concerned with surveillability (and accessibility).

Within each factor is a range of elements, each with their own sub-elements.

The Surveillability Potential factor includes issues of *Seeing*, including Sight (*ie* seeing from, seeing down, and ability to see) and Light, and issues of *Being Seen* (Animation).
Interiors of buildings are excluded from the present checklist, as are complicating factors such as Privacy.

The Accessibility Potential factor concentrates on issues of Access and Egress (Public-Private Domains are not relevant here).

Territoriality/Suggestibility includes issues such as Attractors (bars etc) and signs of Neighbourhood Malaise (vandalism/graffiti) - if any.

- The CPTED evaluations of the 4 selected domains are inevitably similar, and should be read together to gain a full picture of the issues discussed.

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It is re-iterated here that the safety audits that follow are specifically related to college student's perceptions and experiences of specific paths at night. Many other areas of any of the campuses could also have been subjected to a safety audit of this nature, and many of these areas would not be perceived or experienced as unsafe. In other words, the emphasis on fear at night is not to be generalised to whole campuses. The situational experience maps indicate that certain areas are unsatisfactory, while others are not. And if staff and day-students had been the respondents, a different pattern would have emerged.

The walkthrough evaluation begins at the foot of the Architecture and Optometry buildings, leads to the footpath around the perimeter of the Oval, continues on to the cricket net area, and past New College and Warrane Colleges. The imaginary itinerant then returns to the cricket nets, veers left past the Grounds Maintenance depots and around the tennis courts to the Anzac Gate, and then continues on towards the Square House (student building, also housing the bar). This is the route which residential students take, at night, to/from the lower campus and to/from the student domain and Sports & Recreation Centre.

[17] Photo/Sketch 1: Architecture, Optometry & Science Theatre domain and carparks; and Science rd. intersection with Main Walkway from Anzac Parade Gate

This particular stretch is part of the 'lighted walkway'. A street light illuminates the intersection, another the edge of the parking lot, and floodlights on both buildings light up the car park, but inevitably parked cars tend to give the impression of a dormant, little-used, domain. This area is a route which thousands of students use during the day, but at night,

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17 All sketches are by Saffron Samuels, Bachelor of Design student, College of Fine Arts, UNSW

afterhours and *after dark* few people use it. Natural surveillability potentials are low at these times, while at the same time access to this area is open to all - be they legitimate campus users or no. There is only symbolic restriction (the gatekeeper in the gatehouse) at the Barker st. gatehouse after hours, and cars are not challenged (as they are during the day) - a curious inversion of priorities.

The Western end of the Architecture building and the northern end of Optometry are 'blind' - no windows look out over the area, thus reducing visibility potentials from the inside of buildings onto this area (*ie* overlook) to virtually nil.

The large fig trees in the Science Theatre square have low canopies and with cars parked under them sightlines are poor. This area is not lit at all but is now on the route to and through the Quad domain and on to the Kensington Colleges, and to the library as well.

Photo/Sketch 2: **The walled walk around the perimeter of the sports Oval.**

The walkway with its ivy-covered wall, benches and nooks, and ancient and monumental pillars is both aesthetic and a practical barrier enclosing the sports Oval from the main walkway. Certainly, during the daylight hours the area is unproblematic. At night it is almost

totally dark and deserted, on one flank the isolated Oval (only floodlit when in use), on the other the tall brick wall blanketing the view of/from the lighted walkway. Anyone could suddenly enter the walkway, at any moment and without any warning, from any one of the 'gaps' along the entire length of the wall.

This is the path college students use when they go to/from the campus proper and main library, day and night. Why students do not 'breach' the wall and walk along the lighted pathway may seem on first thought to be somewhat curious, even given their possible apprehension about who might be on the other side. But, one way or another, they will *have to* use the Oval pathway - and wind their way past the frequently deserted sports pavilion and Oval, the cricket nets, tennis courts and grounds maintenance depots.

Photo/Sketch 3: Path leading between cricket nets, tennis courts, Grounds Maintenance buildings

The area above has to be negotiated either at the beginning of the outward journey, or at the end of the inward journey. A path also leads off at right angles between the bushes and garage door, joining up with the lighted walkway; another (not visible in the sketch) runs between the maintenance building and the tennis courts (on the right); and there is also access to/from

the Oval in front of the cricket nets. This area is thus an intersection of 5 paths, but with virtually no lighting and absolutely no 'sense of place' - it is a nodal point without definition as such. Visibility is very low, accessibility very high. A sense of isolation and of potential entrapment between the wire fencing and the two 'blind' buildings is present. It is possible to see through the cricket fencing - a minor advantage in these circumstances, given that the hedge along the tennis court boundary blocks out sightlines at eye-level, and there is unlikely to be anyone around to see what is happening anyway.

Photo/Sketch 4: **The Grounds Maintenance depots, rear of the shed; and the path around the tennis courts, leading to the Anzac Gate area (right-angle turn).**

Sand, woodchips, grass clippings etc are stored in this area behind the maintenance building seen in the previous sketch. This is the path from the edge of the residential domain (on the left in the picture) to the student areas, Anzac Parade Gate, and student domain (Square, Block and Round Houses). It also leads to the busstops in Anzac Parade - which can also be accessed along Anzac Parade if students use the street side entrances to their colleges.

Sightlines are totally blocked along the length of the path, due to the high foliage alongside the tennis courts, and the right-angled turn at the end of the path which leads to the Anzac Gate area. At night the area is very dark, some diffuse lighting from Anzac Parade filtering through. An array of potential hiding places are evident. Animation levels are zero. There is no overlook potential from adjacent buildings, lines of sight are non-existent.

Photo/Sketch 5: **The pathway along the bottom edge of the tennis courts, with the continuation of the brick wall seen in Photo/Sketch 2, giving onto the Anzac Gate area**

The continuation of the path to the student domain. Yet another empty space.

There is also a narrow alley-type area which runs the length of the tennis courts between them and the brick wall, which could be a zone of potential entrapment at night, when the courts are not in use and are in darkness.

There is no alternative route to the residential domain - other than going off-campus and walking along Anzac Parade.

The same critique applies here as in the other segments of the path. No overlook, poor lighting, dormant open space, no animation, potential entrapment, etc.

Photo/Sketch 6: **The path from the Anzac Gate entrance to the Squarehouse (in the distance)**
Aesthetic during the daylight hours, intimidating at night. The path to/from the Square House, which houses the student bar, and on to the Sports Complex at the north-western edge of the campus (High st) has similar CPTED features to the other segments of the path already mentioned.

Overall, the path system in this region of the campus requires a total upgrade and re-think. Lighting and sightlines are two areas which can be readily ameliorated; the re-location of Grounds Maintenance depots should also be considered, but will prove more difficult. The total removal of the brick wall is also a design solution, although some aesthetic amenity will be foregone with such a solution. It would, however, include the Oval domain in the lighted walkway domain, and remove a major sightline impediment with one stroke.

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University of Sydney

The itinerary for the walkthrough is the following: from Sancta Sophia (women's college), across the St. John's Oval, and *either* through the Royal Prince Alfred Hospital Psychiatric Unit parking lot, past the gym and down the path between No.1 and No.2 Ovals, entering Western avenue near the Sports Centre, *or* through pathways leading onto Regimental Crescent; and finally down Western ave towards Wesley and Women's Colleges.

The route from Sancta Sophia to the campus proper takes one of these two pathways (unless one exits the campus, walks down Parramatta rd, and re-enters at the Ross st gate). Accessing the Library, on the opposite edge of the campus, almost 1km away, requires negotiating large tracts of open space, 3 Ovals and (possibly) The Square - the sports fields behind the Sports Centre.

Photo/Sketch 7: **Sancta Sophia, St. John's College, heavy landscaping, and the open space leading onto the St. John's Oval.**

Sancta Sophia can be seen in the background, with dense foliage between it and the open space, and the wing of the St. John's College Chapel is on the left in the sketch. The area is both open and desolate at night, and sightlines when approaching of departing from Sancta are restricted by the intense landscaping. The area is in virtual darkness at night.

Photo/Sketch 8: **St. John's Oval, with trees and fence at its base; and the track across it used by pedestrians.**

The route across the oval to the pathway running between the CSIRO and McGunn buildings is clearly visible (this is called a 'trace'). Students from both colleges use this path to connect to the campus proper. There is no permanent lighting on the Oval, and at night it is dark, open and isolated. No buildings overlook it; animation is restricted to informal ball games (see sketch) or formal daytime activities - there are no floodlights over this Oval.

To expect residential students to cross such a space at night in order to access the campus, sports facilities and Library is a clear indication that the original planners of the university gave little thought to security - possibly not an issue at the time.

The second of the two routes across the Oval leads off to the right in the sketch, passes through a hospital parking lot. ascends a short set of stairs which gives on the blank back wall of the gym, before turning right or left around the back of the gym, and joining up with the path between Ovals 1 and 2.

Photo/Sketch 9: **Rear of Gym, at top of stairs leading from hospital carpark and St. John's Oval.**

Blank facade on reaching the top of the stairs leading from the carpark and Oval. The area is actually better lit than many other areas, but nonetheless totally isolated, and there is no overlook from the inside of the gym. The entrance to the gym is around the corner to the right.

Tall foliage blocks any view to/from the area - before arrival at the top of the stairs, and there is no way of knowing if anyone might be (waiting) there.

There is no other choice of path for students from this residential domain intending to use the Gym at night.

All areas traversed are isolated, and dark, and do not have windows from adjoining buildings overlooking them.

Photo/Sketch 10: **The path between the Gym and Sports Centre, and between Ovals No.1 & No.2**

Intermittent lighting is insufficient to overcome the shadows thrown by the trees, and the hiding places they provide. The path is open on both sides to the Ovals; cars can be parked at either end of the path. Even if the lighting were to be upgraded, there is still a sense of 'nowhere to go' to get away, no-one around to hear, or see. Quite obviously, no buildings are adjacent. In the daylight hours, the path is a joy to behold, a park-like atmosphere, sightlines are reasonable but for the trees - generally, one can see well ahead. At night, this becomes sinister and foreboding, with vision reduced to the pool of light surrounding each street lamp. Emerging from the path onto Western ave, the itinerant is confronted with a dimly lit street, with ineffectual waist-high bollard lighting (see Photo/Sketch 11) and a wire-fence encircling the Ovals. Openings in the fence give onto the Oval - obvious weak spots. The street is lined with parked cars into which one cannot see, and large trees throw deep shadows and block out lines of sight. The road also curves around the Oval, thereby shortening sightlines to a minimum. The transparency of the fence helps during daylight hours. At night there is no possibility of looking ahead.

Having negotiated Western ave, one approaches Wesley College with a sense of relief - only broken by the enclosed and dark alleys (see Photo/Sketch 12, over) which intersect Western

ave and lead down to the sports Pavilion (and bar) on the edge of the Oval - and also connect with the Hospital grounds via a back alley alongside the Blackburn building.

Photo/Sketch 11: Western Ave, waist-high bollard lighting, very short sightlines, 'dormant' cars

Photo/Sketch 12: **'Alleys' leading from Western ave to the sports Pavilion in the oval.**

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Overall, this path system obliges college residents to cross huge areas of dark open space, negotiate ill-lit paths and a curvilinear road with ineffectual lighting and short sightlines. Solutions are few. Even an upgraded lighting system cannot remove the sense of isolation and desertion at night - the impact of the huge number of Ovals at Sydney University. Vastly expanded security shuttle services and bike patrols would be part of the solution.

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Macquarie University

The imaginary itinerary starts at the back of the Dunmore Lang and Robert Menzies Colleges at the south -eastern edge of the campus, traverses the open and wooded land and crosses over the footbridge, passes between two parking stations (C2 and E1), and then heads off in the direction of the central core area, passing the open car parking zone E3.

Photo/Sketch 13: **Paths leading to/from Dunmore Lang and Robert Menzies Colleges**

The path system which leads to/from the Dunmore Lang and Robert Menzies Colleges starts at the rear of the buildings, and crosses the open wooded land visible in the sketch. Minimal lighting is provided, and given the dense landscaping, what is provided is distorted by the tree-scape. The track leading off to the right in the sketch is not lit at all, but is the short-cut, the most direct path to the front of the Dunmore Lang building. Not visible in the sketch is the virtually 'blind' side of the Dunmore Lang college building, with hardly any windows overlooking the area. Potential visibility/surveillability is very low, and there is no animation in the area, but accessibility is open to all - the colleges give directly onto Herring rd, and are only about 150 metres away from the huge Macquarie Shopping Centre.

Photo/Sketch 14: **The footbridge on the path from the colleges to University Avenue, the bus stands, parking garages and open air parking area (S).**

The heavily wooded and bushy landscape at the junction of the path and the footbridge is the area which was highlighted *as least safe* by a majority of respondents in the situational mapping exercise.

The lighting is minimal, and is distorted by the landscaping, throwing odd shadows. In the distance, the double-storey concrete parking garages loom. Just over the bridge, on the right of the student crossing the bridge, is a vacant piece of land, open and deserted, bordering the vast open-air parking lot (S). On his left, more bush and trees and empty open land.

This is the path which students take when returning to their colleges at night, afterhours and *after dark*, from the educational core, the library, the gym. Similarly, people alight from public transportation near this intersection. The fact that public transport comes right onto the campus is, in itself, a good solution, but the weak link in the chain is the path to the colleges. Similarly, security escorts terminate at the intersection of the path and University ave.

Photo/Sketch 15: **The path between parking stations C2 and E1**

On either side of the path are parked cars, two levels high, dormant, mute, providing a multitude of hiding places. Parked cars are potential assault sites. The concrete buildings add to the strong sense of the 'inanimate'. Lighting is inadequate, and ineffectual waist-high bollards guard the entrance to the path. The ceilings of the garages are covered in single fluorescent lighting, which provides a quite light atmosphere inside the garages, but leaves the pathway falling betwixt and between.

Photo/Sketch 16 gives the impression looking back at the two garages and the path between them. No external lighting (other than the bollards) is visible in the sketch. The photo was taken during the day and although the lighting was actually on in the garages at the time, from a distance the interiors were dark - and ominous. Anyone could enter the path at any moment from any point along its length, either from behind a parked car, or from either end of the path, which cannot be seen until one is embarked upon it. A sense of entrapment prevails.

Photo/Sketch 16: **Looking back at the parking stations, and the path between them**

Photo/Sketch 17: **The view from the intersection of Macquarie Drive and the path between the parking stations C2 and E1. Parking areas E3, E4, F3 and F5 are off to the right (East).**

The vast parking areas on the southern, eastern and western edges of the campus generate a sense of isolation and desertion, where there is virtually no human movement - other than people interacting with their cars, or behind the wheel of them. The accessibility potentials in these parking zones are enormous. Anyone could be in them, at any time, whether or not they have driven a car. Notice the lighting system in Photo/Sketch 17. One huge floodlight is visible in the sketch. Although it can throw light over great distances, and even light up the interior of cars, to some extent, the areas between parked cars are always in shadow.

Because it is difficult to see into parked cars - which are lower than one's line of sight, have dark interiors and even tinted glazing - or to see past them, or between them, parking areas *always* represent a situation where lines of sight are reduced to an absolute minimum, and where potential hiding places are ubiquitous. The entire southern domain of the campus, stretching from east to west, is covered in parking garages and open parking areas.
The feeling of isolation is very prevalent here. No buildings overlook the parked cars, escape for agressors would be exceedingly easy, and the vastness of the area makes it impossible for a security vehicle to patrol adequately - there would be large time periods between any patrols.

Photo/Sketch 18: The path leading to the educational core; parking area E3 on the right

Photo/Sketch 18 shows the continuation of the path from the garages. One traverses Macquarie Drive (where there are more bus stands - with graffiti - indicative of the sense of isolation in the area *ie* vandals do not work in public) and heads off towards the central teaching core. The raised parking area cuts off sightlines from the path while simultaneously opening up the possibility of being easily 'watched' from a parked car. The heavily wooded area up ahead is aesthetic in daylight hours, hiding the buildings from view, but at night gives a different perspective. Again, providing potential hiding places, again distorting light and casting shadows.

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The separation of facilities evident in the design of this campus facilitates the sense of the centralisation of teaching activities - which is enviable, but simultaneously creates isolated and inanimate domains - particularly at night (*ie* parking areas, large tracts of open and wooded land, *and* residential domains).

Enhancing lighting is a partial solution, but overcoming the separation of facilities is possibly only achievable by expanded on-campus transportation. Students and staff can already be dropped off at the parking stations, but the service needs to be considerably expanded, and a number of buses put on duty. And, most importantly, students must be dropped off at their colleges of residence.

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University of Western Sydney/Hawkesbury

The itinerary begins in College Drive, the main entrance and route from the township of Richmond (and its railway station). The trail picks up again on Science rd, between the main residential college centre and the Library/Computing centre, and encircles the sports oval. The path returns from the Library down Poultry lane, and terminates at the student building, K4.

Photo/Sketch 19: **View down College Drive to the campus in the distance**

The pedestrian pathway can be seen on the left of College Drive. Lighting along the path is minimal, and intermittent, and the road is lined with double rows of tall, bushy trees, which cast shadows and distort the light, as well as shortening sightlines to a minimum. On the opposite side of the road there is no lighting at all. Another pathway intersects this path at right angles, and leads off between open fields to distant buildings. It is better lit, but no less isolated. The distance one has to walk from the front gates to the nearest campus building (the residences) is about 1km. The only sense of relief is eventually passing by the little security hut located just before the residences, hopefully with the security vehicle parked outside (indicating that it is occupied).

There is no lighting on the roadway itself, and all around are vast tracts of open and agricultural land. This is a distinguishing feature of the entire campus.

Photo/Sketch 20: The road and path between the main residential colleges, the oval, and the Library.

One street light illuminates this area at the intersection of Castle rd and Science rd. Large trees and parked cars intervene, casting shadows, shortening sightlines and creating potential hiding places. The colleges themselves are virtually covered by trees (on this aspect), which creates an impenetrable visual barrier between them and the oval. Overlook is reduced to a minimum. Only two windows can be seen out of. The cricket hut at the edge of the oval creates yet another potential hiding place. During the day, the scene is one of aesthetic buildings in parklike surroundings. At night, the entire feeling is different - isolated, dormant, dark.

Photo/Sketch 21 (over) shows the view from the intersection of Castle rd and along Science rd. Note the great distance between the two street lights (about 80 - 100 metres) - albeit their great height casts light over large distances. There is an area half-way between them which is particularly ill-lit. Behind is the open rugby field, lit with floodlights only when an activity is happening. On the opposite side of the road are large trees and minimal lighting.

This is the route which most respondents indicated as being of greatest concern to them - the route they must use to get to/from the Library from many of the colleges of residence.

Photo/Sketch 21: **The view along Science Rd, street lighting widely spaced, the oval on the right**

The quadrangle area between the library and computing centre (Photo/Sketch 22, over) is an area indicated by respondents on their situational maps as being unsafe. The lighting system is reasonable, but the computing centre shuts in the early afternoon (around 4.30pm) and the attached multi-purpose hall presents a 'blank' face onto this quadrangle area. On hot days (and possibly other times as well) the blinds in the centre are drawn, and outlook potential is further removed. In other words, there is no sense of surveillability in this area, with the library turned in on itself on one flank and the closed-down building evident in the sketch on the other. At one edge of this little enclave are wide open spaces and fields, at the other open scrubby land leading past the Nursing Education facility and the Faculty of Management and on down Science rd to parked cars and beyond to open lands in the distance.

This is the edge of the campus, and it feels that way. Not a sense of the library at the core of a campus at all.

Photo/Sketch 22: **The area in-between the Library and Computing Centre**

Photo/Sketch 23: **Poultry Lane - the route to/from the Library, encircling the oval.**

Photo/Sketch 23 shows the blank face of the Library wing on the left, the open fields on the right, the oval behind on the left (not visible in the sketch). A sense of aloneness, desertion, dormancy. There is no lighting visible in the sketch at all. This is the top of the 'lighted walkway' (see Photo/Sketch 24, over) but has escaped the attention given to that path.

The path shown in Photo/Sketch 24 has lamp posts every 25 metres along the one side of the road. There are low canopy trees on the left, bordering the oval, with all the concomitant perceptions mentioned previously, but on the right a teaching building with potential outlook onto the road and path (should someone be inside, and take the trouble to look out).

Interestingly, respondents singled this route out for criticism almost as much as the Science rd side of the Oval - possibly as a result of it terminating at the student building, itself singled out as fearful - largely because of it housing the student bar, and the consequent behaviours associated with young men drinking.

Photo/Sketch 24: **The 'lighted walkway' between the SRC building and the Library complex.**

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An upgraded lighting system could go some of the way towards ameliorating the night-path system on this campus, given its small size relative to the other campuses evaluated in this research. Overcoming the issue of the campus being surrounded by huge tracts of open land is intractable - although expanding the new security shuttle bus service could help.

Further Discussion : CPTED Evaluation

The walkthrough is a form of video simulation.

The initial research methodology included a proposal to videotape behaviour in different places, particularly those experienced by the respondents as lacking in a sense of security. Some dissent was voiced about the potential ethical conflict which might arise if an illegal or illegitimate act was observed and recorded, and if any privacy invasions were called into issue. The argument for videotaping activity is that non-private behaviour in semi-public or public places does not represent an invasion of privacy. CCTV cameras record activity in spaces such as these. A campus is not a private space, and use of its grounds and buildings is subject to security controls in any event - *because* it is not a private space, by definition.

Nonetheless, the issues were not raised since videorecording was foregone as a methodology. In any event, the technique is only intended as an aid to research, which would enable the examination and re-examination of a sequence of events or a situation occurring in a place. It is a very powerful tool, and will undoubtedly be used in future research.

The walkthrough thus simulates a moving camera. It records a sequence of events, of places, of buildings along a route between places, the interactions of the landscape, the window `location, the lighting, the nodes where paths intersect.

The 4 micro-evaluations are unique, given that each situational setting is unique. Each resolution of the specific situation is unique. Yet all contain similar elements, and have embedded within them the fundamental principles deriving from CPTED analysis.

No attempt is made to derive design guidelines here. Only after the repetition of several similar studies will it becomes feasible to begin to establish a framework relating to defensible campus design.
The comments made in the previous section, after evaluation of each of the situations, are only milestones on the path towards that framework.

Interestingly, each resolution is different. What is constant, in every case, is the importance of lighting. Enough is never enough.

The issue of the walled Oval walk at UNSW suggests one resolution which involves the removal of the wall, and the integration of the Oval domain with the Anzac lighted walkway domain, with appropriate upgrading of the lighting. This would also obviate the need to walk between the Maintenance depots and tennis courts in order to access the student domain, and to rely on activity on the courts or Oval for floodlighting to be activated.

The specificity inherent in situational evaluations is evident when considering the relative context of each of the three colleges in this domain vis-↑-vis the *un*lighted pathway. New College has only two eye-height bollard lamps to illuminate the path, Warrane faces its 'blind' side onto the path and has no lighting at all, while Shalom has numerous streetlights on its section - and residents here have the superior choice of using the lighted roadway to access the campus proper. Different resolutions are inherently applicable.

At Sydney, the issue seems to relate more to the porosity of the campus and its location in neighbourhoods which impinge upon it, on the one hand, and the inappropriate mix of uses on the other. The juxtaposition of the Hospital and the inter-connectivity of the two generates a situation that impinges upon the night-time use of the campus. The location of a detox unit

and a psychiatric unit in close proximity to residential colleges requires closer scrutiny. A better definition of boundaries both in this area and generally, with particular attention to the border of the Darlington campus, would be prudent. Other concerns relate to the escorting of students across dark and isolated domains - unibeat type bike patrols could help resolve this issue.

At Macquarie an issue of concern is the juxtaposition of vast parking domains and residential domains, and the open and forested nature of the perimeter landscape. Lighting and an upgraded security escort system, including both buses and bike patrols could go a long way towards a resolution. Since the security escort service cannot leave the campus grounds, it would be a simple solution to re-construct the bridge, with appropriately sized timber (to preserve the rural atmosphere as much as possible) and drive the mini-buses across it, delivering students to the colleges discussed in this research.

UWS/Hawkesbury is a small campus, surrounded by vast tracts of agricultural and rural land (the opposite end of the spectrum to a university like UTS, in inner Sydney). Lighting could be upgraded on approaches to the campus and on the walkways between the Library and the residential and educational domains. The recent introduction of a shuttle bus has enormously improved the sense of security experienced by residential students. Again, a unibeat bike escort system would be an invaluable addition to the preventative potential, and to the enhancement of students' sense of security - thus amenity and lifestyle quality - which is the ultimate goal of CPTED analysis anyway. Internal issues such as bathroom privacy/security is a specific issue that involves management policy, rather than design.

The sense of community which seems to be present amongst the students on this campus - and which is not anywhere as strong on any of the other campuses evaluated, should be cherished and developed.

Other universities should be attempting to engender a greater sense of community amongst their student bodies and staff. Natural policing, and the territorial appropriation of places *ie* people taking responsibility - is probably the ultimate force which could ensure a safe and quality environment for everyone.

The use of an electronic emergency distress systems would be a rational response on any campus, and its use should then be encouraged amongst students and staff, but it should never be totally relied upon. Building-in safer-by-design systems and managing a campus in such a way as to limit rewards and opportunities for people to commit crimes and perpetrate harassments - are indispensable elements in any security equation. Similarly, a sense of community is vital, as is a sense of self-affirmation and also, realistically, training in environmental-cue awareness and self-defensibility for women as part of their daily repertoire for dealing with a social reality not of their making.

Neighbourhood Impact

Evidence suggests that accessibility to campuses from surrounding neighbourhoods can influence the events on those campus.

At the Campbelltown campus of the University of Western Sydney, for instance, the installation of gates on the two major vehicle entrances, which are locked at night after a certain hour, has discouraged the penetration of the campus at night by non-university members of the local community. Because the campus is relatively isolated from the surrounding commercial and residential areas, less motivated individuals are discouraged from penetrating the campus since a long journey on foot is required, and transport for bulky (stolen) goods is denied.

At Sydney University, the proximity of the southern campus (The Darlington Campus) to Redfern - an area with a known socio-economic and particular ethnic profile - increases the likelihood that certain elements of the resident population will penetrate the campus domain with criminal intentions in mind. As stated in the EIP 8554 Progress Report/31 December, 1993 to DEET, the Darlington campus *does* appear, from the recorded rates, to be prone to incidents of malicious damage to and theft from vehicles, and assaults and robbery. A visual evaluation of the boundaries between the campus and its immediate neighbourhood clearly indicates the facility with which the campus can be penetrated/accessed, and the low

opportunities for surveillance of areas, such as the Crescent, which suffer high rates of interference with parked vehicles.

A Victimisation survey in the areas surrounding campuses would allow numbers to be put to these observations. Further EIP funding for such a survey was not approved. The proposal was to investigate a 1km radius around each campus via a telephone survey aimed at experiences of personal harassment. The statistics held by the NSW Bureau of Crime Statistics relate only to reported crimes, and only at postcode level. Randwick, for example, stretches well beyond the UNSW campus, and is included in the table below because no finer gradation is possible. For the purposes of investigating the hypothesis that neighbourhood character will be reflected in crime experience on campus - to whatever limited extent - Bureau data were obtained for the postcode areas around 3 of the campuses (UWS campuses are many and far between - and were not included).

The table below indicates the *average* figures extracted from this source, for the 4-year period, 1990 -1993. Number of crimes is not, however, a rate *ie* these figures are not proportional to population. Given the lack of definition inherent in the use of these postcode data, it was not deemed useful to spend valuable time researching population numbers and deriving rates.

TABLE 5.16 : Average No. & % of Crimes in Campus Neighbourhoods/*Year*, 1990-1993

MACQ	*Against the Person*	*Against Property*	*Ov/AvTotal*
Macquarie Park Marsfield S.Turramurra	76 *ie* 6.6%	800 *ie* 69%	1155
(Highest: Marsfield	7.6%)		
UNSW			
Kingsford Kensington Randwick	112 *ie* 8%	1065 *ie* 76%	1408
(Highest: Kingsford	10%)		
SYDNEY			
Darlington Chippendale			

Glebe	232 *ie* 11.6%	1412 *ie* 71%	1999
Camperdown			
Newtown			
Redfern	(Highest: Redfern 15.3%)		

The Macquarie University neighbourhood appears to have the lowest overall average number of crimes committed per year, UNSW follows, and Sydney has the highest number. Property crimes are highest in the UNSW region.

The issue of concern in the research reported here is crime against the person. Again, the Macquarie neighbourhood has the lowest average number and percentage personal crime (as a proportion of the average yearly total for all crimes - including drug offences, which are not included in the figures given in the table) ie 6.6%. Incidences of reported crime on the Macquarie campus are also low.

The UNSW neighbourhood ranks second, with 112 or 8%; and reported crimes on campus are higher than at Macquarie and lower than at Sydney.

Sydney University is in the least envious position, with an average neighbourhood frequency of 232/year, or 11.6% of the total. It also has the highest reported crimes rates (of the universities surveyed here) by far.

The Redfern area has the highest average frequency of crimes against the person of all postcodes evaluated: 479 or 15.3%; Newtown has 11.5%.

The hypothesis seems to be validated in these figures, although they are not proportional to population.

Ultimately, a victimisation survey could be conducted, and rates established, which would help rationalise why some campuses suffer higher rates of crime than others. At the same time, once information like this is disseminated, it might then become the duty of a university located in a relatively high crime rate area to take extra precautions to ensure the safety of the users of their campus.

Campus Crime - Reported

The intention in this research was to systematically analyse reported and recorded crime data for each campus, and ultimately determine a crime rate per year, based on the number of students and staff on the campus.

To this end, security managers at all the campuses were contacted, and interviewed, and each agreed to either pass on the data, or allow the researcher access to the data. In the event, data for only UNSW, Sydney and Macquarie were obtained, despite continued requests.

The data obtained is also of limited utility. The systems currently available at the 3 universities which did cooperate are not computerised. A data-base system which would allow for keyword searches is required before a valid place/time/crime profile can be generated. As it is, the search through the written records cannot establish this pattern with surety, since the intention when recording the event was not to categorise it into discrete spatial categories. Mention of place of occurrence is not consistent, or is general, while situational opportunity analysis is reliant on *fine detail* place/occurrence and place/time data.

Furthermore, different ways of categorising crime data on different campuses, and the inclusion of items such as Miscellaneous and Other, means that the information is not comparable. Footnote 18 (over) is indicative of the difficulty of categorising, hence correlating, reported figures.

Computerisation is inevitable. UTS is apparently in the process of computerising. Until that time, the epidemiology of reported campus crimes cannot be established with confidence. The

lack of data for all campuses, and the unreliability of the search methodology has determined that this information - originally hoped to be one of the central elements of the research - has had to be relegated to a marginal position.

The data that was extracted is presented in Tables 5.17, and 5.18.1 - 5.18.3 (over).

TABLE 5.17: Reported Crimes on Campus: UNSW, Sydney, Macquarie , 1992 & 1993

Year	***PERSON***	***PROPERTY***	***Other***	***TOTAL*** [18]
UNSW				
1992	5 (assaults)	234 (theft) 35 (vand)	123	397
1993 (Jan-Aug)	4 (assaults)	287 (theft) 34 (vand)	161	486
1994 (Jan-June)		90 (theft) 5 (vand)		
SYD	**PERSON**	**PROPERTY**	**Misc&Other**	**TOTAL**
1992	42 (18 assaults)	970 (722 theft)	714	1726
1993	64 36 (assaults)	908 715 (theft)	501	1473
MACQ	**PERSON**	**PROPERTY** **Mal.Dam.only**	**Misc&Other**	**TOTAL**

18 * A category labeled 'Apprehension' in Sydney University's figures is included as Other; and an average estimate is made for all Dec 1993 figures on that campus. Figures for Theft include attempted theft; and 'Assault' is against both males and females - the only category vaguely approximating 'sexual offences' (not listed otherwise). Figures for PERSON include 'suspicious activities'.
* 1993 figures for UNSW are for Jan-Aug only.
* Figures for Macquarie University do not include Theft. No Total is given consequently.

1992	11	10		N/Av
1993	7	27		N/Av

TABLE 5.18.1 [19]

Interpretations of Harassment Situations and Property Offences by Spatial Context

1991 - 1993: UNSW

Person	***Place***		***Property***	***Place***
Sexual Harassment (8/92) (9/93)	Student/Sports Domains (6); Colleges (4) Library (2)		Vandalism and Graffiti (8/93)	Student Area (3/92; 3/93); Gatehouse/Busstop Colleges (3/92) Carparks (5/92)
Physical (Assault) (5/92) (8/93)	Student Domain Colleges Upper Campus		Theft	Library Bike racks Carparks
Verbal (3/92) (3/93)	Overseas Student Centre; Gatehouses Carparks Library			

19 The figures in Tables 5.18 are derived from a perusal of *reported* campus statististics which are noted in the Security Services books. However, they are not necessarily *recorded* as a crime. Hence it is evident that harassments of a sexual nature are more prevalent in the reports than in the recorded statistics. These could include being approached, or followed, for instance, which until late in 1994 has not been considered as a crime, but can now be categorised as stalking.
* The (8/93) notation indicates 8 occurrences in 1993, etc
* 'Student Domain' = West-end of campus (Square, Block and RoundHouses).

Suspicious Behav. (4/92) (3/93)	Student Domain Colleges			

TABLE 5.18.2

Interpretations of Harassment Situations and Property Offences by Spatial Context

1992 - 1993: SYDNEY

Person	***Place***		***Property***	***Place***
Sexual Harassment & Indecent Assault	Library (9/93)		Vandalism and Graffiti	Gatehouses Quad Building
Physical (Assault, Robbery) Assaults	Lower Darlington Campus; Student Bars (Holmes/Manning)		Theft from Vehicle & Malic. Damage to Vehicle	Darlington Campus:- Maze Crescent & Rose St areas (20/92); Western Ave Underground Carpark
Misconduct	Quad building (3/92); Student Bars (Holmes / Manning)		Theft	Library Colleges Quad Building (16/92)
Altercations	Gatehouses			

TABLE 5.18.3

Interpretations of Harassment Situations and Property Offences by Spatial Context

1992 - 1993: MACQUARIE

Person	***Place***		***Property***	***Place***
Sexual Harassment	Library (1/92) Carparks (1/93) Christie Park (1/93) (contiguous but off-campus)		Malicious Damage (including Arson & M/D to vehicle)	Carparks (2/92) Carpark W4 (3/93) Boomgates (4/93) Central Zone:- (C5A: 2) (C3B: 2)
Physical (Assault)	Carparks (2/92) Library (1/93; 2/92)			
Verbal	Gatehouses			

Table 5.18.3.1: Overall Incidents by Place: 1992 & 1993 (Recorded Crime)

No.	***Place***
9	Carparks
7	Central Zone
5	Boomgates/Gatehouses
5	Library
3	East Zone
3	West Zone
2	Macquarie Theatre
2	Student Zone
1	Colleges
1	Gym

Discussion

Overall, even given the incompleteness of the data, patterns are still discernible. Certain places are repeated in the recorded crime data for the three campuses:

- **carparks**
- **libraries**
- **student buildings/domains**
- **gatehouses and boundary locations (edges)**
- **colleges**

It is interesting to note the total *lack* of mention of events occurring on paths and in open spaces, while the user experience evaluations (both fear perceptions and victimisation experiences) are focused on paths and roads to/from colleges, and on open spaces.

Respondents at UWS/H and Macquarie *did* highlight carparking areas as places where a sense of insecurity is prevalent; while libraries are generally perceived as safe places.

This discrepancy is yet further reason for undertaking user surveys. Until the reality of the situation is understood, remedies cannot be appropriate. Because harassment events are generally not reported, and if reported, generally not recorded as a crime, they tend to slip through the net.

It should also be noted that none of the recorded crime listings actually has a separate category to record sexual offences. In consequence there are none. The closest that any category comes is the Sydney university listing of 'Assaults - female', which might be physical rather than of a sexual nature. And, of course, there is no mention at all of issues such as date/acquaintance sexual harassment.

We note, however, from the user experience data that some women do report being chased across ovals, followed in cars, or subjected to verbal insults related to their gender; and/or of being afraid in their bedrooms, or in bathrooms, and/or of having memories of bad experiences in colleges, etc.

*This is **not** to say that these experiences are very prevalent, at all*. But, at very least, it is confirmation that such situations *do occur*, despite their total lack of reporting and recording.

Towards a Guideline Framework and Design - Management Recommendations

Each campus is a distinct entity, with multiple interacting functions and facilities, and a unique character. Before any remedial action could be warranted, an in-depth study would be required to elaborate on any *tendencies* unearthed in this research. Both environmental psychological paradigms and CPTED or situational opportunity models explicitly flag the understanding that places are unique, crime has distinct spatial and temporal patterns, fear is specific to experiences and personalities, and lifestyle and motivation play important roles in victimisation. It would be spurious to attempt to devise solutions, or better, resolutions, across the board.

In any event, security guideline resolutions should be performance not prescriptive standards *ie* campuses should be able to attain the end by any number of means. It should eventually be possible to establish a 'security accreditation' after a POE safety audit (conducted by accredited assessors) based on a standardised checklist of performance criteria. Complementary safety audits should also be conducted by regular users of campuses. Ultimately, a composite and comparable security rating could be obtained, and campuses ranked by the degree to which they meet security accreditation requirements (a 5✪ security rating system).

If a general statement about campus design is to be made as a consequence of the research reported here, it would have to be, first, the importance of the relationship between *walking to/from colleges after dark and lighting*, which accounted for almost half the responses. The issue of illumination in parking areas and on the paths to them is also of great importance. The focus of remedial attention should be on developing campuses as *pedestrian precincts* - which are used day and night, and on week-ends; and recognising their *multi-dimensional natures*, including, most importantly, their residential functions.

Strategies to enliven campuses in off-peak periods and animate and populate them at night would also appear to be an important aspect of a safer-by-design framework. It is vital, in this regard, not to locate activities near colleges which would be associated with the consumption of alcohol. It is true of night animation strategies in any urban or residential or educational situation, that the juxtaposition of inappropriate activities would lead to the opposite of what was intended.

Of special interest is the significance of the variable 'clear sightlines' which figured prominently in evaluations on all the campuses, and which is an environmental design issue which should be seriously considered in any remedial action and in the design of new campuses. The value of being able to see ahead, and discern who might also be on a path before encountering them, could be a powerful, *in-built*, situational deterrent.

Ameliorating the *path lighting/sightlines* issue is more complex than merely adding more lighting. Landscaping is bound to be involved - with concomitant ecological and aesthetic considerations constraining the re-design of streetscapes. Design resolutions could include the creation of nodes, where paths interact and lines of sight change direction. Such nodal points should be convex in shape *ie* allow anyone standing at any point on the perimeter to see anyone else in the space.

Given that overlook from windows and good lighting are both essential ingredients of surveillability, and both are totally reliant on glass to function, all potentially vulnerable glazing should be vandal-proofed.

Shuttle-bus and security escort services are indispensable on any campus - whether they are located in the inner city or in rural hinterlands. The bike escort system now in use at UNSW and the University of Queensland is a people-friendly, non-invasive and highly mobile response system, and is to be highly recommended.

Within colleges of residence, some 60% of circumstances cited as problematic were 'personal' - suggesting that remedial action should focus more on management and community type solutions - including, most importantly, access control - than on architectural design remedies (although internal lighting and other privacy issues relating to bedrooms and bathrooms are also of concern, and can be design-related).

The items 'memory of a bad previous experience' and 'rumours of bad experiences' in colleges were mentioned in 15% of responses, in roughly equal proportions on all the campuses. This cannot be assumed to be simply a repeat of circumstances mentioned relating to residents and *strangers*, which was twice as prevalent, and which implicates access control. The possible relationship of these 'past experiences' to sexual harassment by acquaintances remains indeterminate. More research is required.

On-campus colleges should be designed as courtyard-clusters, to multiply opportunities for natural surveillability, and to define spaces as semi-private, thus helping engender a sense of proprietary responsibility and territoriality. Furthermore, the colleges should be clustered to form a *neighbourhood or domain,* thus helping impart to residents a sense of being part of a residential *community.* The 'senior resident' culture - a hierarchy of senior students who help maintain socially acceptable codes of behaviour, should be encouraged.

A residential domain, with control over access to both buildings and neighbourhood could help eliminate the penetration of non-residents into such buildings and areas. Gatekeepers and gates are part of a fortress type mentality, and design and management of this kind must be handled sensitively. More relevant is inculcating a sense of responsibility for place, and allowing students a greater role in decision-making concerning both the design and management of their colleges. There is a growing understanding among environmental

criminologists that allowing users to decorate their environments helps inculcate a sense of responsibility for place - rather than relying on vandal-proofing to protect places. Soft architecture - community painting of building murals under the guidance of urban artists, for instance, personalises places (and is dynamic - changing with users over time).

The electronic monitoring of campus areas is a possibility previously discussed. It is the ultimate failsafe resolution, and if installed in a sensitive and low-key fashion, could provide a security net that would be a formidable deterrent. It is maintained that the 'conspicuous advertisement' of CCTV and Emergency Distress Systems are powerful deterrents in their own right.

Reliance on such systems would be foolhardy, and could also engender a sense of risk and vigilance which would be incongruous with campus culture - witness the blue-light zones on American campuses. Nevertheless, electronic swipe-card access for all buildings, residential and educational, is a necessary prerequisite to begin to reduce the incidence of theft - the most prevalent crime committed on all campuses.

If a campus is located in potentially problematic areas, *eg* with crime prone areas adjacent, and if universities are expected to provide a reasonable duty-of-care, the issue of 'foreseeability and liability' is something that will have to be resolved by university administrators and the Federal government Department of Education. Environmental design issues relating to boundary control are a beginning, but it is management procedures which will ultimately delimit the 'porosity' of campuses.

A mixed-zone domain could be centred around a facility such as an all-night computing centre, with appropriate electronic surveillance equipment, regular policing by security services and servicing by shuttle buses and bike escorts, and with clusters of public phone booths (with direct lines to security) strategically located around the domain. Blue-light zones are to be avoided except where absolutely necessary.

All things being equal *ie* if it is possible to have input before a campus is designed, such a mixed-use zone could be based on a cluster design (which affords the best overlook onto places) and be focused around a central library, 24hr computing centre, residential 'neighbourhood', sports facilities, student union/guild domains, staff clubs, student canteens, conference centres, and urban nightlife activities such as a theatre, movie house, pavement cafes, and all-night convenience stores. Public transport nodes and taxi ranks would play an indispensable role in such a zone, as would proximate and well lit parking areas and secure bike racks.

Bars, pubs and clubs should not be included in this mix.

Furthermore, rigorous identity checks at gatehouses at night are a necessity.

The successful interrelationship of such a mixed-zone with the educational and research functions of universities will be reliant, ultimately, on the quality of the pedestrian path network, in particular lighting and sightlines.

An educational video shown during Orientation Week could give general clues to campus users about safety ("never walk alone at night", "be aware of the 'messages' embodied in places") although the ultimate aim would be 'empowerment' *ie* to help communicate self-affirmation messages and self-defence/coping strategies, particularly to women students and staff. Another objective would be to address gender-stereotyping (*ie* of women students by men students), and the potential role such attitudes may play in the perpetration of date and acquaintance sexual harassment on campuses.

It is an extreme privilege to be part of university life, and have the opportunity to share in a lifestyle that is the envy of most people, while simultaneously being allowed the opportunity to prepare for a professional career which could last a lifetime.

Relationships based on mutual respect and equality should be the absolute minimum expected of all campus participants.

Conclusion

A Defensible Territory is an environment in which in-built environmental and situational cues (urban design characteristics, access control, natural observation/surveillability, animated spaces, territorial markers, community-oriented policing) and the latent sense of community (via participation, appropriation and involvement) are translated into a sense of responsibility and security on the part of the users/residents/occupants. This is as true for campuses as it is for cities.

The potential criminal or delinquent perceives such a space as controlled by its residents, leaving him an intruder easily recognised and increasing the likelihood that he could be apprehended. It is not a fortress environment that deters, but a sense of community.

Soft architecture is the antithesis of the image of the fortress environment which security hardware and hard materials convey. It is grounded in the notion that where local community or campus members are involved in the decoration and adornment of their neighbourhood they are more likely to develop a sense of belonging, of caring and preserving, and of defensibility - since they are actively included in the user-environment interaction..

Understanding the interaction between environmental design and the psychology of community management *can* result in deterrence and prevention.

In order to understand this interaction, it must also be appreciated that the epidemiological patterns of reported rates of crime against the person, and sexual harassment in particular, are phenomenologically invalid. Only micro-victimisation surveys can begin to suggest the reality on the ground, the real user experience.

Expertise in environmental criminology is necessary but not sufficient in itself. User experience is the other necessary input.
An interactional, multi-dimensional and inter-agency approach to environmental criminology, however complex and intricate to understand and manage - which takes into consideration the physical and psychical potentials, probabilities and possibilities inherent in person-place transactions -is suggested here as the appropriate model to pursue and develop.

It seems appropriate to conclude with a diagram drawn from the victimisation experiences noted by respondents in the situational experience mapping exercise. The underlying theme throughout this research, and in many ways, the underlying rationale for undertaking the research in the first place, is the critical issue of under-reporting and non-reporting of crimes and harassment against people, campus users included. Until the reality of the situation can be appreciated, resolutions will always be partial, if not mis-guided. The epitome of the issue is the non-reporting of sexual harassment. This is the case in society generally and on campuses.

Figure 6 (over)indicates the proportional distribution of various offences and harassments mentioned by college respondents. Quite evidently sexual and verbal harassments predominate. It is likely that such harassments would never be reported officially. User experience research is a technique whereby such impositions on life quality can be unearthed, and situational contingency research is a technique which can help find a resolution.

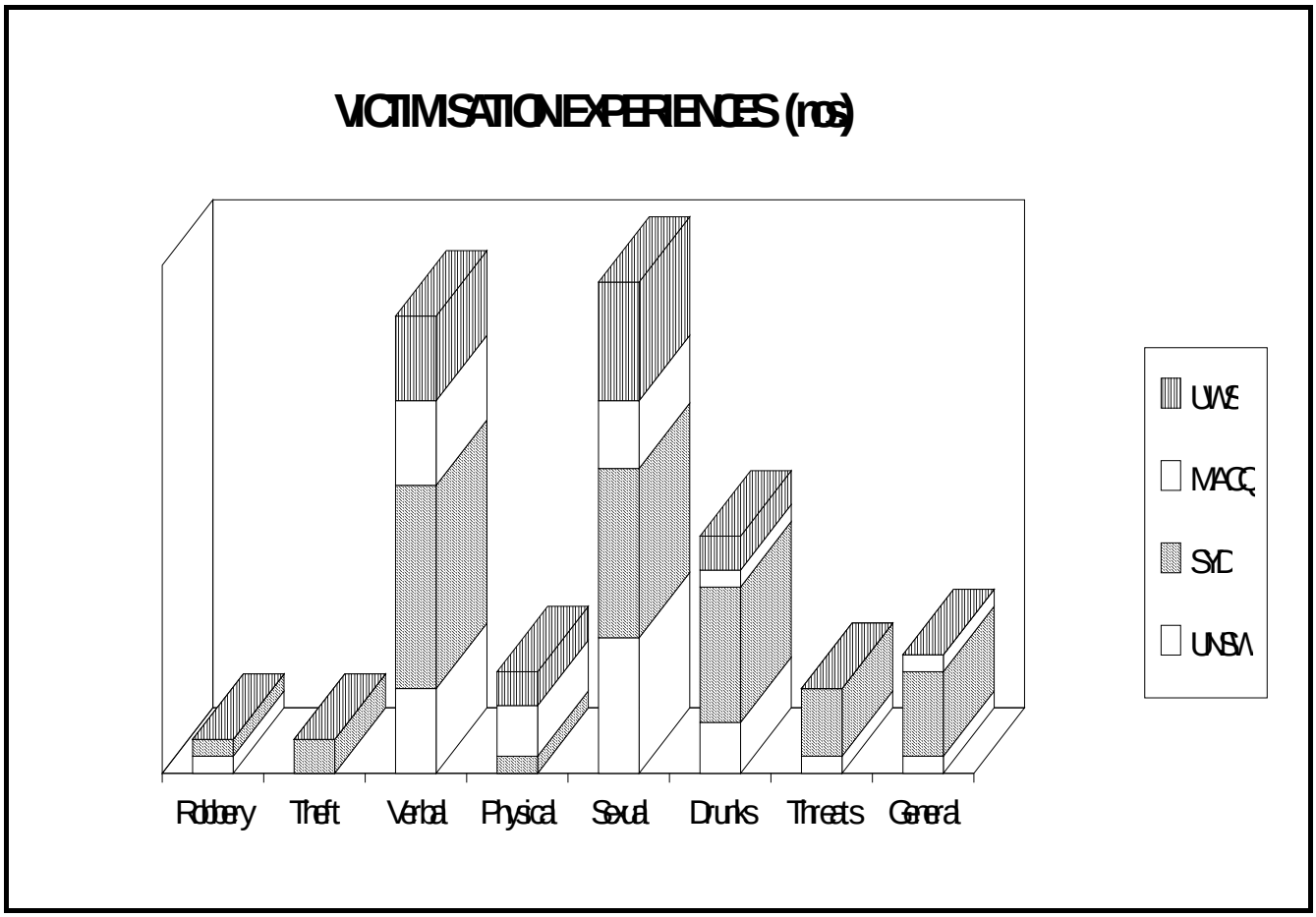

Figure 6: Frequency of Victimisation Experiences - on the 4 Campuses Evaluated.

Source: Situational Experience Mapping

A multi-dimensional approach is required for a multi-dimensional situation.

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