RISK AND SECURITY CHALLENGES ON FURTHER AND HIGHER EDUCATION CAMPUSES

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For many years universities have been aware of the increasing demands on student security and safety on their campuses. The risks that are now posed through low-level crime or anti-social behaviour on campuses are many. This can undoubtedly affect their overall student experience while studying. More thought provoking; however, is the risk of a serious criminal or terrorist related incident on a campus. How is risk apportioned and assessed in a changing and challenging environment? Can risk be managed out at planning stage of building projects? Decisive decision making incorporating a strong understanding of risk intervention is needed to reduce risks on university campuses. With evidence to remind us that serious criminal activity as well as terrorist related crime is becoming more wide spread. Is it just a matter of when and not if a serious incident will occur on a university campus in the UK? The aim of this paper is to identify if staff and students perceive crime and security risks to be a relevant issue on campuses. To identify the type of serious incidents of crime that would affect campuses and how risk identification would minimise the impact on campuses   Staff and student survey indicates that that there is recognition of security related risks on campuses, however, clear distinctions can be drawn between student and staff groups. Evidence to suggest that security risks from external sources and students based activity is discussed and would form the basis for risk analysis progression. Only by understanding all security risk elements from building structure, policy and regulation and crime level indicators can a full risk assessment be authenticated. This paper reviews how crime orientated risks are assessed and fully incorporated into building design. It further argues that a coordinated approach between planners, architects and users of the estate should be instrumental in the health, safety and security of its users. This will also include how global events and political issues can manifest itself on our university campuses. It is thus proposed that evidential perception of risk be researched as a way of producing authentic risk assessment criteria, which fully identifies risks to users and to the educational establishment. With such research a concise index of risk can be applied at design stage. Hence, any risk identified could be aligned to post occupation thereby avoiding retrospective architectural realignment. This research adopts a web-based, crime and risk-based survey and analysis methodology. Identifying any resulting realignment of risk assessments and redesigning of estate will be an outcome which would have the potential to improve current practices which is solely based on construction project completion risk. It is intended that further work will include a risk matrix based on street level crime figures. From this format comparators can be extrapolated against actual campus crime and risk indices of wider scale security issues at the serious crime spectrum covering organised crime and terrorism.

Keywords: crime, risk assessment, risk perception, security, threat impact.

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INTRODUCTION

With over 2 million students registered in UK Higher educational establishments the very size and nature of this populous and the demands of learning environment will be something that a student remembers throughout their life. The opportunity to gain knowledge and study in renowned learning establishments is a driver for one's own progression and rewarding society as a whole. To enable student life on university campuses to flourish and to aid learning, campuses have evolved and are now a mix of rich architectural heritage and modern designs incorporating cutting edge technology. The functionality of the building or space will comply with the most stringent of building control regulations and will have been through deliberations at planning committees, applications will take in-to consideration impact on the local environment infrastructure and neighbours. There will be input from user groups on what the overall functionality will be delivering and there will be provision for compliance with security led functionality from the local architectural liaison officer from the police. Nutt (1988) argues that strategic "attitudes are the wisest way to set out for distant but successful results when the actual form of the end product cannot be anticipated in advance". This will imply that considerations of how the buildings will operate under use will have been gauged and planned for at design stage, occupancy, figures crunched and compliance to fire regulations and health and safety will be an underpinning element of the occupancy. Peng (1994) states that "further exploration of communication in collaborative design from the perspective of co-operative architectural modelling". From this it must be identified how a university campus can be brought into events that could be unfolding outside its perimeters but equally have a devastating effect on the campus itself.

The consequences of external security incidents that would reflect on a university's are well documented. The Lancaster University student that was shot dead in Salford Manchester December 2011 made international news. Not only did this bring Lancaster University in to the media spotlight but also Salford University which was in close proximity to where the shooting took place. In the case of Virginia Technical College the reputation and negative publicity as well as law suits against the University are still an ominous reminder of the tragic shooting of 2007. It must be recognised that no university campus is immune to the likelihood of criminal or a terrorist act taking place up their premises. Budget constraints within police and continuing close budget controls with Higher Education are similarly negating security on campuses. Whitehead (2012) reveals that Islamic extremist preached at more than 200 universities events raising fresh fears overs radicalisation on campuses. A dozen events featured speakers with links to Hizb ut Tahrir a controversial organisation banned by the National Union of Students. In 2011 the Home Secretary stated "I think for too long there's been complacency around universities. I don't think they have been sufficiently willing to recognise what can be happening on their campuses and the radicalisation that can take place. "I think there is more that universities can do."(May T 2011). Risk from general building occupation and usage could relate to a very low impact of any incident in that controlled environment. What is more relevant however, is how the campus determines the risk of major impact events. In some instances events that would seem highly unlikely, however, could be so severe that addressing and recovering from a single incident could take years and the cost of recovery could determine a university's future. The following study aims to provide rationale underpinning the challenges of maintaining a safe campus environment. The need to respond to incidents from low level antisocial activity to

terrorism is now more than a residual low level risk and must be addressed at an early design stage process.

Determining Risk

Risk is a familiar concept in many fields and activities including economics, business, sport, industry, also in everyday life, but it is not always referred to with exactly the same meaning. A strict definition is required, however, when the term is used in a professional environment.

Various definitions have been proposed, for example: "a situation which can lead to an unwanted negative consequence in a given event"; "the probability that a potential hazard occurs"; "the unwanted consequences of a given activity, in relation to their probability of occurrence"; or, more specifically, "a measure of human injury, environmental damage or economic loss in terms of both the incident likelihood and the magnitude of the loss or injury" (Joaquim, 2008). We define risk as representing any situation where some events are not known with certainty. This means that the prospects for risk are prevalent. In fact, it is hard to consider any situation where risk does not play a role (Chavas 2004).

It is sometimes understandable to look at buildings in isolation and not consider how one incident could impact on other areas of an estate or its surroundings. Security risks are not isolated in one area or one building as an incident can spread quite rapidly across areas and in this way affect other users and other buildings. In isolation a building can be deemed as relatively safe to occupy and warrant no specific attention. Already established security applications can be in place both in a technological format and in the form of human intervention.

Street level crime figures by post code are available from the police forces national web site; this would be an understandable point to start a risk assessment for crime related activities in the localised area. The information in Figure 1 is based on street level crime for the University of Wolverhampton Walsall Campus, Warwick University and Keele University.
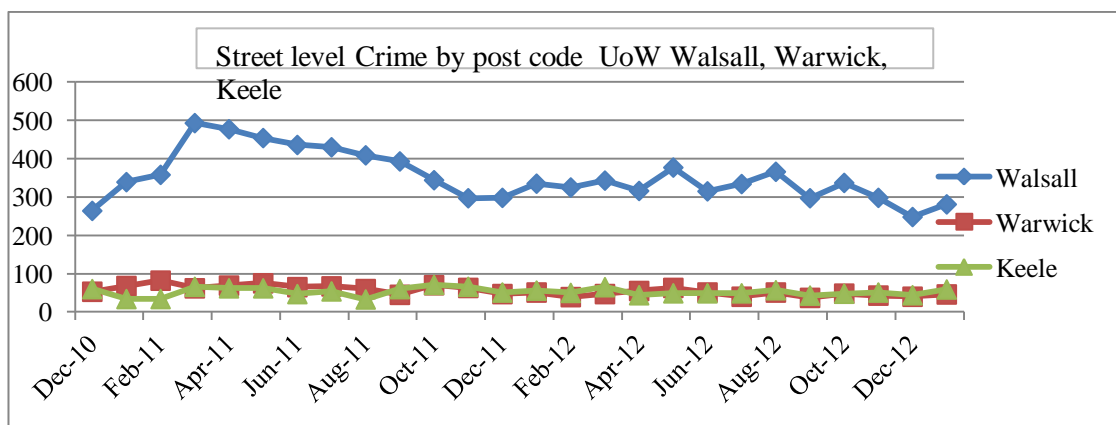

Figure 1 Street level crime by post code UoW Walsall Warwick Keel

From the figures contained in Figure 1 it would be relevant to assume that there is a far greater risk regarding crime surrounding Walsall Campus than Keele or Warwick Campuses.

Controlling risk is fundamental to our day to day lives. Risks to human beings arise from an inherent characteristic to make plans and try to make them happen, while external forces resist and tend to move our endeavours away from the plan. Any such

"endeavour" is a complex ensemble of a bewildering variety of interacting elements which together form something that (Kirchsteiger,1999) Moskowitz, and Bunn, (1987) believes it is "the focus as much upon implementation as an analytical issues and particular attention is also given to issues of public sector risk evaluation and management". Trends in research are discussed within the standard decision analysis model of formulation, assessment and optimisation although it is recognised that this framework itself is a subject of research and change (Ward and Chapman 1991) to some degree, the level of detail incorporated in any risk analysis depends on the purpose of the analysis. In the early stages of project design, the emphasis may be on project evaluation in economic terms, involving the aggregation of project risks to determine the total impact on the project'. The circumstances of accidents may influence the seriousness, which makes it difficult to specify on a theoretical basis the type of injury to include in a risk analysis. Furthermore, risk assessment methods often do not provide a basis for assessing cumulative risk which may have more severe consequences than accidents emerging from contacting one hazardous product characteristic (Van Duijne et al, (2008)

When in the workplace or indeed planning ahead in terms of building or project development it is not always easy to simulate the overall impact of the development within a risk assessment. It is generally estimated that about 90 per cent of accidents can be attributed to human error (McKenna, 1983).

With regard to industrial-societal risks it is often recommended that risk acceptance decisions be based on a weighing of risks against benefits. Is this feasible in the case of complex and long-term activities? Or should one take a much more restricted view and rely on so-called norms for acceptable risk, which may either deal with the probability of a specified loss or with the magnitude of a just-credible accident? Vlek and Stallen (1981) and latterly (Jens) 1997 recognises that the socio-technical system involved in risk management includes several levels ranging from legislators, over managers and work planners, to system operators. This system is presently stressed by a fast pace of technological change, by an increasingly aggressive, competitive environment, and by changing regulatory practices and public pressure. Risk is an ever changing process which can be influenced by a number of factors.Waring and Glendon (2002) recognises that Security risk assessments tend to be an art and judgment approach based on analysis of hazards and threats and actual experience of criminal activity. In terms of assessing risk. O'Reilly (2010) refers to a Security Threat Matrix. This compiled data gathered post attack investigations with in-depth security audits of the relevant facility to calculate actuarially its vulnerability.

The purpose of risk analysis is to provide support in making correct management decisions. By evaluating the risk associated with a set of decision alternatives, the risk analysis helps to identify the alternative which maximises the expected utility for the stakeholders by complying with a set of specified criteria and constraints. Todinov (2007) states it is not if, but when"—how many times have we heard this mantra of every expert turned prophet, warning the viewer of the impending catastrophe of nuclear terrorism? The seemingly wise caution assumes that, by ruling out the conditional "if" from terrorists' evil minds, we are reaffirming our own unconditional certainty. The assertion of "when" invokes some real time.

The UK is generally a safe place when considering how to approach risk assessment for events that may or may not impact on a university campus. It can be seen in figure 1, that there is a need to monitor street level crime and how this could creep into what

could be deemed as safe havens of a campus by its users. Events have shown that that if anything, always expect the unexpected. With any event that results in the modification of a physical, operational or theory remodelling the following ultimately may be heard, "well I never expected that", or "I told you that would happen". Both statements equally as important as the other. Firstly there should not be any unexpected incidents only the assessment of severity of an unexpected incident. Secondly find the person who recognises the most unexpected risks.

Methodology

An individual's perception of risk is specific to that person. Any number factors could determine one's own thoughts on this. Age, physical ability, mental capacity and even location would be considered. It is therefore critical, that risk information is available for a decision to be made of one's own risk. The framework for research in this instance will be categorised as situation influences and types, risk associated, preventative measures information sources. This is based on the duty of care that is adopted by a university for all users of its estate. And not relying on an individual to be aware of all potential risks.

By understanding the format of risk and developing an action plan each area of risk can be contained and residual risk analysed. To gather evidential data a survey of staff and students at Walsall University campus was carried out in March 2011staff and students had the opportunity to respond to questions relating to security and how they perceived their own security while on campus and within the surrounding areas. Staff side returns were favourable at a 60% return rate 232 respondents. Student figures in comparison were low with 30 responses. Significant findings are available in tables 1,2,3 of this paper.

The fear of crime is related incidents are prevalent within today society. Nasar et al (1993) refers to the fear of crime as a serious problem on university and college campuses. Although fear has many causes, one potential source of fear may arise from the design of the physical environment. A government white paper (Higher Education: at the Heart of the System June 2011) states, There is also clear evidence that some young people may be vulnerable to the influences of extremist organisations or individuals during their time at university. To assess the risk perceptions the following data has been collected regarding crime levels and the perception of crime on and around University of Wolverhampton Walsall Campus. Staff and students were surveyed and asked to comment on a number of questions relating to security both on and off campus.

From the information contained in Table 1 it can be seen that there is some differential in how students and staffs perception of crime levels on campus correlate. Student's responses being predominantly in the high to medium with 7% more responses than staff in the very higher section.

Table 1 level of crime on campus

	Staff side	Student Side
Very High	3.7%	10.71%
High	10.65%	57.14%
Medium	39.35%	21.43%
Low	37.04%	3.57%
Very Low	9.26%	7.14

The staff's response was notably at odds with students with medium to low being the largest percentiles. In considering these responses it is recognised that in many instances staff will be on campus to undertake specific tasks during set hours. Students, however who live on campus will have a full range of experiences and over a 24 hours cycle.

Table 2 Concern about crime impact on personal campus experience

	Staff Side	Student Side
Very Significant Impact	6.85%	58.62%
Significant Impact	10.96%	24.14%
Moderate Impact	21%	6.9%
Minimal Impact	31.05%	0%
Not at All	30.14	10.34

It can be seen in Table 2 that again there were significant differentials between staff and student responses. Staff felt that this was there was minimal impact or no impact at all both of these producing 61% of responses. It was however recognised that a total of 16% felt that they did have a concern regarding crime and the impact that this had on their experience while on campus. Students, however, who completed the survey, felt that concern regarding crime had a very significant impact on their experience. With over 82% responding within the significant or very significant field for this question. It is interesting to note that although staff assessed the overall risk of crime on campus to be medium to low.

Table 3 Need to address the risk of crime on campus

	Staff Side	Student Side
Yes	81.86%	89.29%
No	18.14%	10.71%

Table 3 responses from staff and student gives an indication of security improvements although not specifying what is needed. 82% of staff responded by agreeing to the question. This is somewhat contradictory to the majority of responses to table 1 and table 2. Students had already scored the level of crime and concerns about crime highly in table 1,2 so it was feasible that students would consider that more could be done on campus to address the risk of crime.

DISCUSSION

- High Impact Events

It is critical when assessing risk that all information should be considered. The following section will identify where events have occurred and if there is a risk that

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could be transposed to within a university campuses. On April 16, 2007, Virginia Tech in the United States of America suffered a significant high impact event. A student Seung Hui Cho, shot two fellow students in an accommodation block and subsequently went on to shoot a total of 32 students and staff on campus, with a number of other people injured both physically and mentally. A most traumatic event that would instantly link the name of Virginia Tech and the massacre of students for years to come. There is, however, indications that with a more robust risk evaluation mechanism the overall impact in terms of numbers of people killed or affected could have been reduced. Key findings and recommendations following the subsequent investigations were many. And the impact was felt amongst most of America's Universities. The following statement is taken from a report produced by Midwestern Higher Educational Compact, Rasmussen and Johnson (2008) "No amount of money, technology, and human resources can guarantee members of a university community that they will never fall victim to a crime. At the same time, colleges and universities are by their very nature open-access environments where people move between and among buildings and outdoor spaces in a manner akin to the free flow and exchange of ideas, discussion, and debate that is a raison d'etre of the academy" This report was specifically in relation to the investigation of the mass shootings at Virginia Tech by the student Seung Hui Cho. The findings and conclusions of the report were wide reaching and affected a number of colleges across the United States. This statement realises the students need to experience a full and free ranging educational experience yet concedes that there is a danger in students living the student experience. Within the United States constitution the law surrounding gun ownership and the amount of guns available is a far cry from legislation and gun ownership in the United Kingdom. Guns are not freely available within the UK; however, recent history would suggest that gun related crime and random or planned shootings are not uncommon. A further view and assessing the probability of risk relating to security manifestations would indicate that a significant risk of a high impact event on a university campus cannot be discounted. The events that occurred within central London 7th July 2005 saw buses and the underground infrastructure targeted, and resulted in fifty deaths including the four perpetrators of the crimes. In addition to this over seven hundred more were injured. This was an attack that hit at the heart of the capital of England. The outcome was that of wholesale infrastructure communication and commercial impact. This was of varying time lines and dependable on the type of business and or geographical location. Longer term impact was of reputation regarding safety within the City of London for premises infrastructure and commuters.

On 3rd June 2012 a car was stopped by police on the M1 motorway in Yorkshire. The reason behind the stop was no insurance. On investigation ammunition and firearms were discovered in the boot of the car. This particular vehicular stop resulted in the arrest of six people accused of preparing acts of terrorism. It is noted that in a recent report there is a claim that 500 hundred terror suspects have been de-radicalised. This is from a total of 2500 referrals between 2007 and 2012. This particular report refers to the work of multi-agency in the recognising of vulnerable people and engaging in support mechanisms. One such group that uses the skills of multi-agency collaboration is Channel. This was set up as a direct result of the Prevent Strategy and links to Contest the UK Governments strategy document for counterterrorism. Recognising that there have been atrocities within England either by terrorist cells or by lone individuals the result will always be for maximum devastation and impact.

Levels of crime can be monitored against national statistics, police street level crime figures will help specific campuses bench mark against the wider area. The overall impact of crime on campuses can be evaluated and dealt with as and when crimes are committed. This can be done as simply as adding extra physical security provision. What becomes more problematic is overall change to layout and use of campuses and building on the campus. Campuses are in general a safe and secure environment to work and study. Petty crime amongst users is a possibility, as well as low level anti-social behaviour. Social levels of drug related incidents would be no more out of place than in any town or domestic environment. The high impact areas of a crime will, however, be open to interpretation. That is, as with all high impact events it is only the post mortem that will identify the failings. No matter how stressful the event the review of actions both from an individual or corporate perspective will be laid bare for experts to debate. Security features within Virginia Technical College USA were as prominent as any other college within the USA at the time. As the events of the day unfolded actions of police and security were in line with what would be expected with the information at hand. The outcome of the mass shootings on that day have been reviewed and scrutinized over many years since the event. As late as April 2013 there is still continuing debate regarding the fine imposed on Virginia Technical College. The main claims made are that after the first shootings a call to Virginia Tech police was made, this was at 07.15 am, within 15 minutes of that call police officers were on the scene of the first shootings they identified one body and one seriously injured student. It was at this point that a number of meetings between senior administrators took place. At 09.26 am a warning regarding a shooting incident was issued. By this time the gunman had chained the doors to an academic area and continued the massacre of students and staff. The communication time lapses are critical to the outcome. Continuing assessment must also include the response from emergency services to any critical incidents. Police restructuring could result in delays to responses. The risk of delayed attendance would be critical in evaluating time laps, and if this would then increase severity of risk.

Campuses across the United Kingdom will be of various designs, age and be situated in any number of socio demographic areas, university campuses can be forged in historical background with age of construction dating back hundreds of years. As Campuses evolve and the technology changes in the way that controls can be administered to the use of the campuses, the surrounding landscapes are also changing. Not only from a physical spectrum but also from a social, political and economic one. This will drive the security mechanisms that will be needed to maintain a safe and secure campus for its users.

It is recognised that in assessing risk the likelihood of a terrorist attack or an event such as unfolded at Virginia Technical College is low. With this in mind the likelihood of what would have been the assessment for colleges within the USA and risks assessments for London transport, most users of the mass transport system would have been comfortable in the belief that a safe and secure system was in place to carry them. It was only after the event that considerations to risk and its vulnerability were made or the mitigation of such events of this nature "Mitigation is defined as any sustained effort undertaken to reduce a hazard risk through the reduction of the likelihood and/or the consequence component of that hazard's risk (Coppola, 2012) Structural mitigation includes resistant construction, building codes and regulatory measures, relocation, construction of community shelters, physical modification, and construction of barrier, deflection, or retention systems. To contextualise this sort of

high impact event it must be recognised modifications and the resilience planning has been modified since the 2005 July bombings. However, up until this time the risk assessments and day to day safe working process would have been felt to be robust enough to cope with most things. It is also recognised that risk assessments should identify any time laps responses from the emergency services. This is highlighted with the current police reorganisations. The following statement is in response to an estimated loss of 40,000 police officers "In reviewing risk and the impact on maintaining a safe environment we must consider external factors that could increase our response to incidents and therefore increase risk" BBC news (2010)

CONCLUSIONS AND RECOMMENDATIONS

This study highlights the crime and associated risks to university campuses. The envelope of security is not all about keys and locks. The development of more advanced types of technological controls will undoubtedly enhance security systems and procedures. However, the most challenging aspect is how best to identify all risk elements and have the preventable measures in place. It may be the case that as with lone wolf type tactics that is one individual's determination to cause loss, either against the university or fellow students. The risk associated with controlling this may be to put other people at risk. The question is how to negate the risk not only to students but also the staff who are employed to control the risks. What is apparent from the data collected from the staff and student survey is that there is some apathy toward the student's perception of risk. The returns from this particular cohort were extremely low. Most of the students, who did respond, had witnessed crime personally and therefore had a greater understanding of the issues. From staff side there was a greater understanding of the risks, however, they felt that this was not significant to the campuses overall security status. It is therefore unclear why such a large group of respondent felt that more could be done to enhance security on the campus. Further research will be undertaken to establish how both staff and students perceive security and risk while on the campus. Technology will play a major part in the prevention of incidents occurring, this coupled with information from all sources across a wide range of spectrums. Architects, building design experts, planning officers, law enforcement, government agencies, students themselves, as well as staff user departments. The emphasis of how we use technology will have to be reviewed and more so, how to deploy the technology into working campuses. The provision of security officers is an accepted part of university life. Will the perception of risk from users of the campuses change the mind-set of expectations of human intervention to technology based framework?

Collaborative work is needed to work with planners, architects to identify a recognised format of assessing risk at early stage planning and incorporating recommendations in to the overall scheme of work. A numerical plan of risk can be identified which will give a stronger statistical element of risk. By using a numerical format the option for a personal view or perception will not cloud the overall risk. The Bayesian method of risk through probability would be a preferred system of assessment. What should be asked across all sectors is how their organisation would stand up against the intense scrutiny of dealing with an event of a critical nature. This could be of any nature ranging from fire, terrorist attacks, lone wolf attacks, or in house sabotage of estate or estate infrastructure. Building design is a significant factor in the resilience of estate as well as the occupation of these buildings or estate. It is not always enough to rely on the users or visitors to campuses with the education sector

for instance to be aware of the vulnerabilities. Users will arrive at campuses fully expecting to be safe within the confines of buildings and grounds. This will also be the case for staff who undertake their day today work within the grounds of a university campus. The response and deployment of staff to a violent or criminal activity could then put the onus of risk on to the member of staff as well as any users caught up in the incident. This is not an ideal situation and is somewhat difficult to allow for when assessing the risk and appropriate response to incidents that may occur. As any building design the brief will be direct from the client side stipulating what the building will be used for. Following the RIBA plan of Works and Office of Government and Commerce Gateways a clear path of progression is visible. The RIBA plan of works 2013 is modified from its original linear system to show a grid reference point. There has been much discussion regarding this major change, after 50 years of using the RIBA plan of works there is always going to be the for and against lobbyists . Will this change, however, hinder or enhance the profile of the client understanding of significant of impact assessment of security within the overall project scope. Usage of buildings and estate from such diverse groups as the student body staffing both academic and support services will be at pains to give opinions on what levels of security is needed and the best use of resources available.

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