THE SECURITY CODEX - MAPPING A RESEARCH DOMAIN

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Abstract

The security domain is a multi-disciplinary field of study that in its current state exists across a diverse and wide ranging set of academic departments and disciplines. As such, emerging security research efforts are often shaped by their respective supporting departments, and in particular driven by department-centric research methodologies. While this approach is both practical and in alignment with existing pedagogy, it may limit the synergies of thought created when disparate disciplines are brought together to fulfil a societal function such as security. In this paper, we investigate PhD theses for 2009-2014 where the research title contains "security" or "secure" in an effort to identify the prevailing methodologies used by emerging researchers. From this data set, we organise the works into a taxonomy and present our findings. We then offer suggestions on how these results may be used as a guide to enable dedicated departments inclusive of academic units embrace broader security studies research fields and research further funding.

Keywords: Security, Studies, Research, Dissertation, Methodologies, Case, Survey, Interview, Artefact, Field Experiment, Lab Experiment, Meta-Analysis, Prescriptive, Pedagogy, PhD, Field.

1   INTRODUCTION

In principle, the goal of a field of study is to conduct a systematic review of its research; synthesise its approach to investigating prevailing questions or issues; and use specific pre-planned methods to investigate, assess and summarise its findings. These in turn form the guidelines that leads to a specific set of research-based recommendations for professional practice. In essence, an academic unit (micro-level) as a part of an academic field of study (macro-level) acts in this capacity. Currently, the security domain does not have this capability as the vast majority of its contributors are developed within, reside in, and contribute to their source field's environments and outlets. We propose that if security researchers are to be the nexus between academic research and applied professional practices, the security domain needs to be organised as a separate field of academic pursuit that includes specialised university departments, unified publishing outlets and formal channels that contribute towards this professional practice. This brings with it a series of issues for discussion that we will offer in later sections.

1.1   What is Security? What is Security Studies?

Security is important because more so than at any previous time in human history it is now able to be considered, identified and viewed by individuals, groups, and society beyond those immediate affected; we see it now in real time. Images of security and insecurity are available to us constantly thanks largely to technological advances and our insatiable appetite for such news and information. This 'real time' textbook - well at least in a visual sense - makes Security Studies an incredibly important subject of scholarly study in the contemporary world.

While Security Studies has its origins in the world of International Relations and Strategic Studies, and is usually thought of as a "relatively recent and largely European and American invention" that presented itself after World War II, it has seen some dramatic shifts in the last twenty years [1]. By 1999, scholars such as Steve Smith were writing about the evolution of the discipline and the impact from redefined 'non-traditional' security thinking presented by the likes of Barry Buzan and Ole Waever ('Copenhagen School') and Keith Krause and Michael Williams ('Critical Security Studies'). Smith concluded that: "The great achievement of the last 20 years of security studies is that the sub-field has succeeded in making the core concepts less secure and more a matter of debate…Questioning who security is for, how it is achieved, and what it means for whom are the kinds of questions that were not asked then, but which seem so obvious now" [2].

Many scholars note that Security Studies has most certainly undergone a 'broadening and a deepening' to enable us to also consider non-military security threats like environmental disasters,

health pandemics and population movements and terrorism, as well as thinking more about the security of individuals and communities, in addition to the external threats to states [3]. In 2003 Brower and Chalk wrote that by the end of the Cold War and the beginning of the 21st century, definitions of security needed to become "more diffuse and opaque" to take into account the emergence of security threats that were of a transnational nature – those that could now cross state boundaries, but might not immediately link to, or impact on, those same individual states [4]. They added that adequate understanding of such forces would need a further evolutionary shift in Security Studies, for both scholars and practitioners beyond familiar "spatial notions of security" in order to deal with security issues and challenges that were taking place on an increasingly "more complex geostrategic environment" that also increasingly took into account "consideration of quality of life" [4]. Because of the changing evolution of security threats, and expectations of freedom from security threats, contemporary scholars like Brower, Chalk, and van Lieshout et al tell us that "[F]or individual citizens, security is related to the absence of dangers with reference to the external environment but also relates to issues of social comfort (family life, health), financial certainties and personal deployment opportunities" [5].

The concept of security and Security Studies has always been difficult for scholars and educators to delineate and define. Since its emergence as a scholarly subject, security has often been referred to as an 'essentially contested concept', in the sense it means different things to different people [1]. Definitions of security have produced a wide and varied set of responses. Some, according to scholar Paul Williams, suggest that security "is like beauty; a subjective and elastic term, meaning exactly what the subject in question says it means; nothing more, nothing less" [1]. In its broadest sense, however, scholars within the Security Studies discipline work with definitions that suggest security is about the absence of, or freedom from, risks, dangers and threats to our 'cherished values,' comes in various guises, is applied in numerable instances and contexts, and concerns all – from the individual to the state [5].

1.2   Security Studies Research

The dissemination of a given field's research through its outlets is a critical component in advancing the overall knowledge, understanding and consensus of what constitutes the best practices in answering the questions that research seeks to resolve. Thus, a given field of study produces content for itself first and foremost and then seeks to disseminate its consensus of the problem and its solutions to the general public in order to contribute to the profession practice of its field. In terms of Security Studies, this dissemination occurs through outlets of established fields for the most part. In other words, computer security research is distributed to computer science and business outlets; security policy research is distributed in political science and law outlets; food safety is distributed through medical outlets; and the list goes on. While this approach is not absolute, we offer the vast majority of security research is disseminated through its governing field's source outlets. This has in turn proliferated the notion that 'whatever-type of' security is considered a subset of a larger field of study. It is this single observation that has prompted our investigation.

If we accept that Security Studies has moved beyond its historic one-dimensional focus of threat, use and control of military force by states, to one of globalised complexity, we can freely discuss security in the shape of not just policy, like national security strategy, but also in the shape of security support – like 'social security' – as well as security technology in the form of secure systems, information security and other forms physical security that enables or prevents access. Secure communications, add van Lieshout et al for example, need to operate as expected and must be "able to resist attacks on their functionality" [5]. In her 2010 article, Claudia Aradau begins to lead us on a journey that might invite, or encourage, Security Studies practitioners to embrace critical infrastructure protection, traditionally examined with a business studies (business management) or systems-thinking lens at the higher education level, as part of the collective research remit of Security Studies, where for so long "critical approaches have focused on social and cultural values, forms of life, technologies of risk or structures of neoliberal globalization"[6].

The biggest challenge for both traditional Security Studies scholars, and those from other well-established but largely until now independent disciplines, will be the effort required to acknowledge that all such disciplines can be accommodated within a much larger Security Studies domain without diluting the core tenets of why we study security in the first place. Infrastructure, whether critical or not (and there is an argument that all infrastructure is critical in one form or another), has evolved alongside technological developments; especially so in the 20th and 21st centuries. According to

some commentators, the field of Security Studies enjoyed a 'golden age' during the 1950s and 1960s. It was a time when researchers and academics began to develop credible expertise and substantive relationships with Western governments and their foreign policy, defence thinking and security strategy.

It was during this period that scholars claimed to be able to provide valid and credible security research with professional practical application; nuclear fighting and nuclear deterrence strategy was perhaps one of the best examples, but other Cold War-Super Power proxy conflicts equally necessitated developing security thinking for contemporary security issues. Stephen Collier and Andrew Lakoff write in their 2008 publication *Securing 'The Homeland': Critical Infrastructure, Risk and (In)Security* that "at pivotal moments in the 20th century, technological and political developments rendered prior security frameworks inadequate, and forced experts to invent new ways of identifying and intervening in security threats" [7]. Aradau suggests that while the destruction of infrastructure has always been part of military strategy to weaken an enemy in war, its importance from a security perspective has certainly gained additional 'national-security currency' during the Cold War and post 9/11 [6]. We can see that further Security Studies evolution presents itself with the likes of Brian Bennett and Collier and Lakoff who examine the vulnerabilities of critical infrastructure, and therefore the risk presented by such failure, either accidental (technical failure) or unintended (natural disaster) or deliberate (military or terrorist attack), potentially causing disruption to standards of living or significant physical, psychological, and financial damage; all things seen as vital to collective life in our contemporary society, and therefore worthy of examination within the Security Studies domain [7].

2 RESEARCH APPROACH

The research conducted reflects a positivist approach to knowledge where information is derived from sensory experience and interpreted through reason and logic. Essentially, we sought to review a body of work in the security domain such that patterns and observations may emerge to shed some collective light upon this body of scholarly work. First, an investigation criterion was established to govern the acquisition of the data set. Second, a process was formulated as to how the data set contents would best be viewed, organised and understood. Both of these are detailed in the proceeding sections.

2.1 Investigation Criteria

Our initial investigation into the methodologies used by security researchers and scholars utilised several overarching criteria. The first of these was that the data set should include emerging security researchers in order to obtain a glimpse into the domain's development of capable academics and be as inclusive as possible to allow trends to emerge. To satisfy this requirement, we chose our data set from PhD theses where the title included the words "secure" or "security". This, in our opinion, would provide some insight into emerging research where the intent was to contribute to the security domain through the inclusion of the term(s). The second criterion was to acquire a data set that was accessible by academics and easily repeatable such that our observations and underlying process could be readily duplicated. For this requirement we used the ProQuest Dissertation & Theses A&I database and filtered the results to only include the availability of the full text of doctoral dissertations. The last criteria was that the entire process needed to be transparent such that it may form the foundation for a more in-depth and expansive investigation in the future. Therefore, we decided on the sample set to be restricted to a five year period for the years 2009-2014. The thought was that given the seminal events of 9/11 and its responses, enough time would have passed to allow those emerging researchers to have progressed through the PhD process and passed towards completion and dissemination of their research. Our search results yielded fifty-eight (58) theses published during this period and are presented in Figure 1.

Author	Year	Title
Amaio, T.	2009	Exploring and examining the business value of information security - Corporate executives' perceptions
Griffith, R.	2009	Information security - A study of decision-making factors
Hulitt, E.	2009	Information processing system to security standard compliance measurement - A quantitative approach using pathfinder networks (PFNETS)
Popoveniuc, S.	2009	A framework for secure mixnet-based electronic voting
Raniwala, A.	2009	Architecture and protocols for a high-performance, secure IEEE 802.11-based wireless mesh network
Reis, C.	2009	Web browsers as operating systems - Supporting robust and secure web programs
Silver, D.	2009	National security and transparency - The legal frameworks and factors federal courts use to balance competing democratic values
Spracher, W.	2009	National security intelligence professional education - A map of U.S. civilian university programs and competencies
Wood, R.	2009	A security risk analysis of the data communications network proposed in the NextGen air traffic control system
Anderson, C.	2010	It is risky business - Three essays on ensuring reliability, security and privacy in technology-mediated settings
Bitzer, E.	2010	An exploratory investigation of organizational security climate in a highly regulated environment
Chicone, R.	2010	An exploration of security implementations for mobile wireless software applications within organizations
El Defrawy, K.	2010	Security and privacy in location-based mobile ad-hoc networks
Krueger, R.	2010	Technology transfer and U.S. national security policy - The Joint Strike Fighter
Leesombatpiboon, P.	2010	Thailand's energy security - Strategic Petroleum Reserve and its economic impacts
Park, I.	2010	Essays on information assurance - Examination of detrimental consequences of information security, privacy, and extreme event concerns on individual and organizational use of systems
Shyne-Turner, S.	2010	Developing first-level supervisors in the Air Force Security Assistance Center - An examination of core supervisory competencies for job effectiveness and performance
Simonsen, A.	2010	Risk and resilience - Girls' experiences navigating space and relationships in a secure residential facility
Tintamusik, Y.	2010	Examining the relationship between organization systems and information security awareness
Torres, E.	2010	We know who you are! Connecting education, identity, and national security
Braziel, C.	2011	Analysis of cross-cultural leadership competencies for United States military leaders - A study of United States military Security Assistance Officers in Cairo, Egypt
Ko, M.	2011	User-centric secure cross-site interaction framework for online social networking services
Pope, B.	2011	Maternal health policy - Nursing's legacy and the Social Security Act of 1935
Thaw, D.	2011	Characterizing, Classifying, and Understanding Information Security Laws and Regulations - Considerations for Policymakers and Organizations Protecting Sensitive Information Assets
Chang, J.	2012	Flexible Architectures for Enhanced Security
de los Santos Lozano, G.	2012	An exploratory study of contracted security officers' retention
Gibb, A.	2012	Implementing U.S. security strategy in the 21st century - A three-part examination of the evolving role of the military in American foreign and security policy
Han, J.	2012	Novel Techniques of Using Diversity in Software Security and Information Hiding
Hess, D.	2012	Governing National Programs in a Federal System - Household Food Security and Food and Nutrition Service Programs
Hou, L.	2012	Soil degradation in China - Implications for agricultural sustainability, food security and the environment
Kaiser, M.	2012	Cultivating a landscape for food justice - An exploratory study of community food security measurement to inform community-based intervention strategies
King, S.	2012	The impact of geographic information systems on emergency management decision making at the U.S. Department of Homeland Security
Kirschner, C.	2012	Estimating the Fiscal Impacts of the Homeland Security Grants on State and Local Public Safety Spending
Pettigrew, J.	2012	Decision-Making by Effective Information Security Managers
Shaw, R.	2012	The influence of organizational culture on employee attitudes towards information security policy
Stupica, B.	2012	The effects of experimentally induced attachment security on children's fear reactions
Toevs, B.	2012	The influence of written information security policy on digital forensic data analysis - A case study of law enforcement and private investigative operations
Abuzainab, N.	2013	Energy and security aspects of wireless networks - Performance and tradeoffs
Al Zibideh, W.	2013	Adaptive Encryption Techniques in Wireless Communication Channels with Tradeoffs between Communication Reliability and Security
Chowdhury, O.	2013	Formally ensuring the permissibility of obligations in security and privacy policies
Edwards, C.	2013	A framework for the governance of information security
Ehrhart, R.	2013	Scaling food security - a political ecology of agricultural policies and practices in Bukidnon, Philippines
Noah, P.	2013	A qualitative meta-analysis of the diffusion of mandated and subsidized technology - United States energy security and independence
Szefer, J.	2013	Architectures for secure cloud computing servers
Weller, C.	2013	Statutory Response to Court Security Concerns
Yan, Q.	2013	Towards Secure and Usable Leakage-Resilient Password Entry
Barta, B.	2014	An analysis of open source security software products downloads
Berg, C.	2014	Impact of Microfinance on Food Security, Informal Credit, and Agricultural Wages - The Case of Bangladesh
Bitonti, A.	2014	Assessing the relationship between demographic attributes with the acceptance of biometric security devices
Bravo-Lillo, C.	2014	Improving Computer Security Dialogs - An Exploration of Attention and Habituation
Burkhead, R.	2014	A phenomenological study of information security incidents experienced by information security professionals providing corporate information security incident management
Conrad, A.	2014	We are farmers - Agriculture, food security, and adaptive capacity among permaculture and conventional farmers in central Malawi
Corris, A.	2014	Secure Mobile Deployment of NFL Training Materials
Hosking, J.	2014	Campus security director perceptions concerning the influence of concealed carry firearms on safety at Wyoming public community colleges - A phenomenological study
Hwang, J.	2014	Improving the Quality of Security Policies
Kelley, T.	2014	Systemic effects of human factors in information security
LaBarge, R.	2014	An Automated System for Rapid and Secure Device Sanitization
Lickiss, S.	2014	Pre-Employment Integrity Testing with Law Enforcement and Security Applicants - A Closer Look at the Law Enforcement Applicant Inventory (LEAI)

Fig. 1

2.2 Investigation Process

Once the data set was acquired, we embarked on an initial review of the dissertations and their respective research methodologies. Our initial review revealed that the theses contained a wide variation of methods, approaches and interpretations in applying the methodologies. The data was then recorded and categorised based on the following definitions:

- Case Study: A study that is bounded by a focus on a particular person, event, group, organisation, a town or a unit of any kind. Case studies are often described as having descriptive, exploratory or hypothesis-testing purposes [8].

- Interview: A conversation between the researcher and interviewee often carried out in order to gain an understanding of attitudes, beliefs and behaviour [8].

- Survey: The systematic collection of data from a survey population. Most survey work deals primarily with quantitative data [8]. This category included questionnaires as a new source of data.

- Design/Artefact: The design and/or creation of something tangible used for further analysis. While this category varies from programming code to detailed system designs, the artefact or design was offered as the focus of expanded and continuing research [9].

- Field Experiment: An experiment conducted in open, natural settings to examine an intervention in the real world [10].

- Laboratory Experiment: An experiment conducted in highly constrained laboratory settings. The researcher generally has control over all of the external forces that may affect the participant [10].

- Meta-Analysis: Statistical analysis and synthesis of the results of two or more primary studies that address the same hypothesis in the same way – common in systematic reviews [11].

- Other: Methods not previously identified without prejudice.

We would like to be explicit in our understanding that there are many field-specific variances in the development and implementation of existing methodologies. Therefore, the definitions used were simply for aggregating the diversity of application. In fact, we reason that if the security domain becomes an independent academic field of study of equal standing, variances are likely to be developed specifically for security research.

3   RESULTS

The data set surveyed yielded fifty-eight (58) theses from a wide diversity of disciplines. In a 2012 article, Rowley and Weldes impressed that those within Security Studies scholarship accept that the discipline is indeed "diffusely present on a broader discursive field, as a terrain on which multiple identities are performed and relationships played out," but rather than challenge this 'essentially contested subject' in "endless disputes about [its] proper use on the part of [its] users," scholars should in fact embrace its profound multiplicity and contestability [12]. The two authors concluded that acknowledging the expanse of the domain will enable and/or necessitate a much more accepted diversity in Security Studies research methods that is equally inclusive of 'non-traditional' security studies research topics. We have identified in our data set sample this very occurrence. It is perhaps this opportunity to change the 'pedagogical mind-set' of Security Studies that our examination of the data set points to. This could avoid the limitations of the currently presented, 'neatly packaged' and 'definition-limiting' Security Studies research [12].

The results of our investigation also revealed some interesting observations regarding methodologies. These varied from singular methods usage, multi-methods and mixed methodologies. Again, we wish to assert that no prejudice was used in this analysis but instead an objective, best fit approach based exclusively on the researchers' claims of use. See Figure 2 for the methodologies presented.

Author	Case Study	Survey	Interview	Artifact / Design	Field Experiment	Meta Analysis	Other (Prescriptive)	Lab Experiment
Amaio, T.		X						
Griffith, R.		X						
Hulitt, E.				X				
Popoveniuc, S.	X			X				
Raniwala, A.	X			X				
Reis, C.				X				
Silver, D.	X							
Spracher, W.		X	X					
Wood, R.			X					
Anderson, C.	X	X						
Bitzer, E.	X	X	X					
Chicone, R.	X	X	X					
El Defrawy, K.				X				
Krueger, R.	X		X					
Leesombatpiboon, P.	X			X				
Park, I.					X			
Shyne-Turner, S.		X						
Simonsen, A.			X					
Tintamusik, Y.		X						
Torres, E.							X	
Braziel, C.		X	X					
Ko, M.		X		X				
Pope, B.	X							
Thaw, D.	X		X					
Chang, J.				X				
de los Santos Lozano, G.			X					
Gibb, A.	X							
Han, J.	X			X				
Hess, D.	X							
Hou, L.	X					X		
Kaiser, M.						X		
King, S.	X							
Kirschner, C.	X							
Pettigrew, J.			X					
Shaw, R.		X						
Stupica, B.		X						X
Toevs, B.	X		X					
Abuzainab, N.				X				
Al Zibideh, W.				X				
Chowdhury, O.				X				
Edwards, C.		X						
Ehrhart, R.			X					
Noah, P.						X		
Szefer, J.	X			X				
Weller, C.							X	
Yan, Q.				X				
Barta, B.	X	X						
Berg, C.		X						
Bitonti, A.		X						
Bravo-Lillo, C.		X	X		X			
Burkhead, R.		X	X					
Conrad, A.		X	X					
Corris, A.		X						
Hosking, J.			X					
Hwang, J.	X							
Kelley, T.	X	X		X	X			
LaBarge, R.	X			X				
Lickiss, S.		X						

Fig. 2

In total, case studies and surveys were the preferred methods at twenty-two (22) each, followed by interviews and artefact/design at sixteen (16) each. This constituted the bulk of work presented. In the minority of methods, field experiment (3), lab experiment (1) and 'prescriptive' (2) were presented. This last category was assigned to Other as 'prescriptive' was the best way to describe the

methodology used. For purposes of this paper, 'prescriptive' can be considered "giving exact rules, directions, or instructions about how you should do something" [13]. See Figure 3 for details.
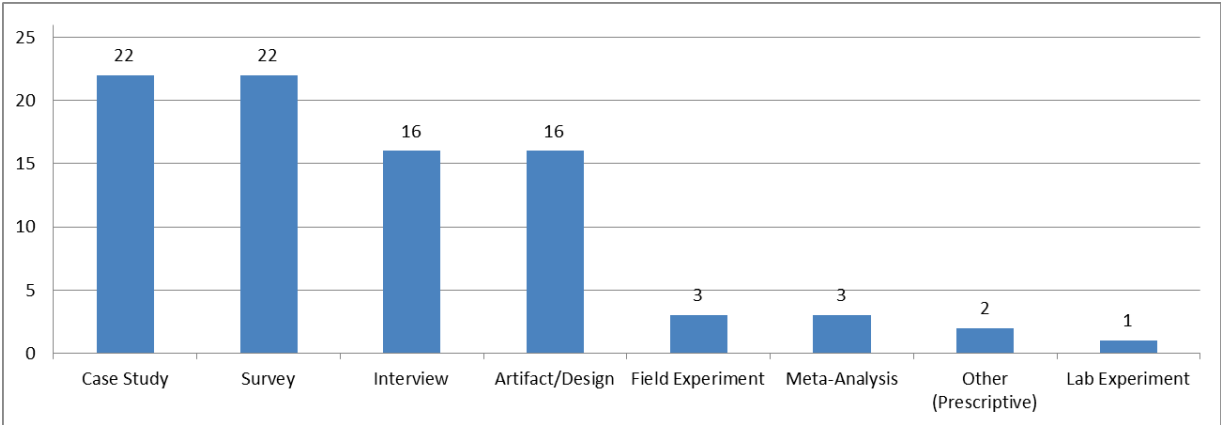

Fig. 3

We then assessed the relationship between multiple methodologies used within the same thesis to determine if a pattern was discernible. The result was more revealing that expected. We found that case studies were often coupled with artefact/design, surveys, interviews and meta-analysis as the largest coupling group. Surveys were often coupled with interviews, artefact/design, field experiments, and lab experiments. In the minority were interviews and artefacts coupled with field experiments. A few theses utilised triplets consisting of case studies, surveys and interviews as well as surveys, interviews and field experiments. Lastly, there was one (1) multi-paper thesis utilising case studies, surveys, artefact/design and field experiments. See Figure 4 for details.
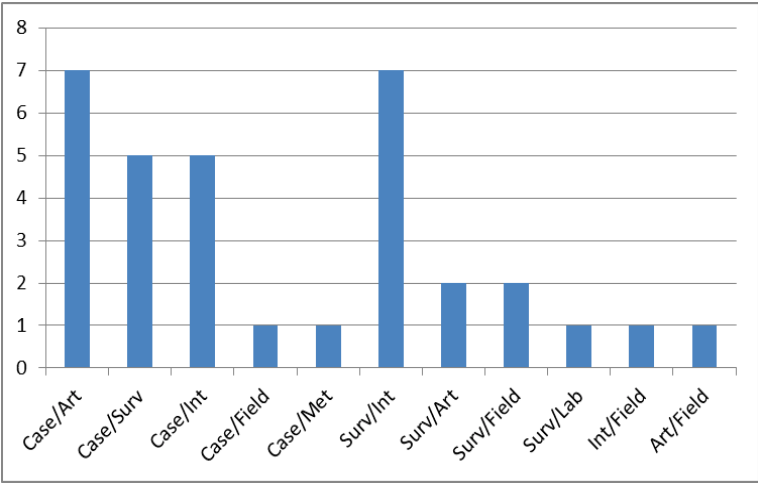

Fig. 4

After careful consideration of our findings, several larger perspectives can be inferred as a result of the above. First, it would appear that the scholarly research represented in this study favours focusing on the historical context of a problem by using case study methodologies. In fact, it could be argued that the use of artefacts may become a new precedent to a lesser extent that forms the foundation of future case studies. These artefacts and designs form the basis for discourse in re-examining a particular research question. Second, it appears that the scholarly research represented favours utilising people's perceptions and understandings to answer research questions through employing survey and interview methodologies. Thus, we also believe that 'people' and 'things' may become equally critical components in driving what constitutes Security Studies. In essence, the outcome of this study may form the foundational pedagogy of how security research moves forward in a more unified manner.

4 IMPLICATIONS AND FUTURE RESEARCH

If the goal of academic research is to ultimately contribute to professional practice, a shift in synergies needs to occur between the security research domain, its contributing researchers and professional security practitioners. In the current state of the dissemination of research, practitioners can rarely keep up with academic literature and therefore have come to rely on academics providing the synthesised guidelines to keep their practice current. For the security domain, this is greatly compounded by the wide dispersion of security related findings. One solution towards this rising need has been the creation of security 'Centres' where a diverse set of security researchers can come together to contribute to professional practice. While this has solved some of the needs of the security sector, such efforts have tended to be specific to special interests, rarely collaborative with other 'Centres' in pursuit of building a unified effort towards consensus, and the 'Centres' often do not share their many of their results. Collective synergies derived from an academic security 'field' could be what is missing from the current security field of practice.

The expanding importance of the Security Studies stable of disciplines also challenges us to think about how it is understood at the higher education level and, if we take our current definition of Security Studies as a far more encompassing or all-inclusive one, then we should begin to think about, and quantify, the true interdisciplinary nature of the area. Do we see the expansion of Security Studies as something that is based around a growing popularity of the discipline since 9/11, and therefore merely perhaps a 'passing fad' or should we ensure that the genuine importance of Security Studies is such that there is a demand for a more accepted cross-disciplinary understanding that reflects the important contributions that multiple higher-education areas can and do make to our discipline both now and into the future. If we take the ProQuest sample used in this paper at first glance, we have no doubt that some members of the Security Studies academe might instantly dismiss a number of the dissertations as completely unrelated to Security Studies; 'computer science might be directly linked to information security (infosec) but that does not make it Security Studies' we hear some say. Similarly, an analysis of security-related services and products may not be able to be linked or mapped to broad strategic security theory that many scholars and researchers will be familiar with.

Irrespective of discipline-specific biases housed within those involved in each of the disciplines contributing to the research (and this includes Computer and Information Sciences, Business and Technology, Engineering, Psychology, Education, Organizational Leadership, Information and Management Systems, Management Sciences, Arts, Political Science, History, Journalism and Communication, Forensic Studies, Environmental Sciences, Agriculture, Economics, and Public Policy) we nevertheless can make an argument that all of the dissertations selected in this research can be either directly or indirectly linked to what is a far broader and more interdisciplinary space. For example, cyber security is now a legitimate research area of Security Studies scholarship. Much of what we see in the sampling of dissertations relates to work in the world of cyber, computing and digital communications; it is a type of physical security if you like. But physical security, access control, does have a place in the Security Studies domain, and should be embraced in the same fashion that economic security, environmental, gender and food security are inseparable elements of global Security Studies.

Cyber Security Studies is a sub-discipline that we have first-hand knowledge of. Before 2011, New Zealand students interested in Security Studies were unable to enrol in a coherent undergraduate qualification in the discipline. Systematic, research-led knowledge of this important topic was lacking in the public, private and academic sectors. This is in stark contrast to the international environment where there has been rapid growth of university programmes, predominantly at the postgraduate level. In 2012 the Centre for Defence and Security Studies (CDSS) commenced delivery of two new interdisciplinary programmes, the Master of International Security (MIntlSy) and the Security Studies major within the Bachelor of Arts (BA) undergraduate degree. Offering a security studies undergraduate major in this country has filled an existing gap in the New Zealand tertiary education sector and provided an opportunity for students to study in this complex and diverse area. Since then, both undergraduate and postgraduate security programmes, including research outputs, have surpassed expectations and continue to grow.

Our experiences lead us to believe that further growth in this education sector is likely to maintain a similar momentum for some time to come. Like the evolution of the Security Studies discipline, the expansion of the security sector in the post 9/11 world has led to further, and substantial, research funding opportunities. With increased budget allocation to almost every security agency, or organisation with a security mandate, on the planet, such resource allocations present further

research funding opportunities. The opportunity to explicitly and clearly identify the interdisciplinary nature of contemporary Security Studies, and the academic contribution that the Security Studies 'field' can make towards professional practice, needs to be supported, and continually reinforced, by higher education research and training.

5 FINAL THOUGHTS AND CONCLUSIONS

Theory and policy practice are integrally and reciprocally related. Despite the gulf that often separates the scholarly world from that of policy practitioners, ideas really do matter for both. Policy practitioners routinely use and develop theoretically derived doctrinal concepts and rules of thumb. [14]

Our understanding of what Security Studies is as an academic discipline is varied to say the least. We can argue that definitions and understandings have broadened to encompass a myriad of areas and subjects beyond our initial understanding of the discipline. It has moved from an international security/national security space, largely coming out of the post-World War II period of the 20th century, to encompass a number of relatively new – often described as 'non-traditional security' subjects - that now have a link to our broader understanding of security; be that personal security, state-level national security, and global security thinking.

The importance of the broader understanding of Security Studies has been supported – at the same time – by a much wider understanding of the impact of security issues in the wider global community. This impact has come about via societies' ability to see just what 'security' is and means – in terms of conflict and war, acts of violence (especially terrorism), and the effect of natural and economic catastrophe and disasters. All these things we can watch taking place on television, computer and telephone screens in real time. We no longer need our imaginations to visualise what militaries, combatants and victims directly experience; it is available for all to see. And because more of us see it, then more demand to understand what is happening, why it is happening and the larger implications of such activities. This is why Security Studies is expanding and is now linked to so many other research and higher education disciplines beyond the traditional humanities and social sciences.

The resistance to broadening the Security Studies research 'field', we think, may be substantive but we remain convinced that there is a place for such inclusiveness. More and more, in our particular research and teaching environment we hear from our organisation and agency stakeholders and interlocutors that they are not seeing enough actionable and useable research that could drive, formulate or support policy direction in the defence and security space. To this end, we feel that a much broader Security Studies 'field' will enable many more opportunities, from many more disciplines, to contribute to critical, real-world security challenges. The first step is to embrace the wealth of knowledge and applicability in higher education, and understand the research methodologies that can be applied to Security Studies problems. Those that come from other academic disciplines, not traditionally associated with Security Studies, should be part of this too. Our hope is that this work may become a catalyst for a deeper examination that identifies a real and genuine foundational pedagogy of Security Studies research.

REFERENCES

[1] Williams, P. D. (2013). *Security Studies: An Introduction*. 2nd Edition. Routledge.

[2] Smith, S. (1999). The increasing insecurity of security studies: Conceptualizing security in the last twenty years. *Contemporary Security Policy*, *20*(3), 72-101.

[3] Krause, K., & Williams, M. C. (1996). Broadening the agenda of security studies: politics and methods. *Mershon International Studies Review*, 229-254.

[4] Brower, J., & Chalk, P. (2003). *The global threat of new and reemerging infectious diseases: reconciling US national security and public health policy* (No. 1602). Rand Corporation.

[5] van Lieshout, M., Friedewald, M., Wright, D., & Gutwirth, S. (2013). Reconciling privacy and security. *Innovation: The European Journal of Social Science Research*, *26*(1-2), 119-132.

[6] Aradau, C. (2010). Security that matters: Critical infrastructure and objects of protection. *Security Dialogue*, *41*(5), 491-514.

[7]   Collier, S. and Lakoff, A. (2008). "The Vulnerability of Vital Systems: How 'Critical Infrastructure' Became a Security Problem." *Securing 'The Homeland': Critical Infrastructure, Risk and (In)Security.* Routledge.

[8]   Hammond, M., & Wellington, J. (2012). *Research methods: The key concepts*. Routledge.

[9]   Nunamaker, J., Chen, M., and Purdin, T. (1991). "Systems Development in Information Systems Research". *Journal of Management Information Systems.* 7(3).

[10]   Lewis-Black, M., Bryman, A. and Liao, T. (2004). The SAGE Encyclopaedia of Social Science Research Methods. DOI: http//dx.doi.org/10.4135/9781412950598.

[11]   O'Leary, Z. (2014). The essential guide to doing your research project. 2nd Edition. Sage.

[12]   Rowley, C., & Weldes, J. (2012). The Evolution of International Security Studies and the Everyday: Suggestions from the Buffyverse. *Security Dialogue, 43(6)*, 513-530.

[13]   Merriam-Webster Inc. (2004). *Merriam-Webster's collegiate dictionary*. Merriam-Webster.

[14]   Biersteker, T. J. (2010). Interrelationships Between Theory and Practice in International Security Studies. Security Dialogue, 41(6), 599-606.