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Armed Drone Proliferation and Strange's International Political Economy: Understanding the spread of UCAVs through global power relations

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Abstract

Since the early 2000s the number of countries with access to armed drones, also known as unmanned combat aerial vehicles (UCAVs), has grown precipitously. This growth has been driven both by the domestic development of UCAVs (independent acquisition) as well as by the international trading of UCAVs between supplier and recipient nations (dependent acquisition). Despite this growth, there has been a notable research gap in the exploration of factors motivating UCAV proliferation. In place of earlier theories of proliferation that were developed to explain the proliferation of weapons of mass destruction, this research presents Susan Strange's theory of international political economy (IPE) as a uniquely applicable theory for understanding the phenomenon of UCAV proliferation. The second chapter of this research details Strange's IPE and the ways in which it illuminates proliferation trends. To demonstrate its explanatory strength, the following chapters apply this theory to three instances of recent UCAV proliferation between supplier and recipient nations: US-UK, China-Pakistan, and Israel-India. In doing so, this research suggests pathways regarding the future of both the independent and dependent acquisition of UCAVs. The final chapter utilizes this analysis to make recommendations for the responsible future spread and use of UCAVs. Ultimately, it is argued that UCAV proliferation should be understood as influenced by a wide variety of concerns beyond purely the needs of security and as such, effectively addressing the spread of UCAVs demands that this multitude of influencing factors is taken into account.

About the Author

Jenna R. Mazzella graduated from the School of Government and International Affairs (SGIA) at Durham University with an MA in Politics and International Affairs (Political Theory) in January 2017. This working paper is a revised version of her Master thesis.

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List of Abbreviations

CPEC	China-Pakistan Economic Corridor
FATA	Federally Administered Tribal Areas
FDI	foreign direct investment
GDP	gross domestic product
IPE	international political economy
MNCs	multinational corporations
MTCR	Missile Technology Control Regime
OBOR	‘One Belt, One Road’
R&D	Research and Development
UAV	unmanned aerial vehicle
UCAVs	unmanned combat aerial vehicles
WMDs	weapons of mass destruction

1 Introduction

The number of countries with access to unmanned combat aerial vehicles (UCAVs), or armed drones, is growing. In the early 2000s, the only country using UCAVs in combat was the United States. Today the list of countries using UCAVs is longer, likely numbering six countries (Hennigan 2016). The amount of countries that have access to UCAVs is higher, estimated to be between ten and twelve countries (Dillow 2016). That number reaches twenty when including countries that are currently developing UCAVs (Hennigan 2016). Almost eighty countries deploy some form of unarmed drone, or unmanned aerial vehicle (UAV), for surveillance and security purposes (Hennigan 2016). In fact, one report predicts that virtually every country will have UCAVs by 2024 (Tucker 2014). This increasing spread of UCAVs comes at a time when there is little international consensus regarding the acceptable export practices or permissible uses of UCAVs, creating a potentially dangerous state of affairs (Dillow 2016).

Despite the recognition of rapid UCAV proliferation, there has been little analysis of the factors driving this trend. Research has focused upon the likely challenges and risks that the world will face as UCAVs continue to spread while neglecting to examine the phenomenon of proliferation itself.[1] In light of this research gap, the following chapters will move beyond earlier theories of proliferation that have focused upon weapons of mass destruction (WMDs) and contextualize the proliferation of UCAVs by placing it within Susan Strange's theory of power in international political economy (IPE). To this end, Chapter 2 will discuss Strange's IPE and outline the applicability of this theory to UCAV proliferation. The strength of this theory will be illustrated in three case studies analyzing recent UCAV proliferation.

In discussing the proliferation of UCAVs, it is necessary to distinguish between two methods of UCAV acquisition: independent and dependent. It is along the lines of this distinction that this research will progress. Independent acquisition is the development of UCAVs occurring within a single country, be it through official governmental departments or contracted by the government to corporations based in that country. Dependent acquisition, on the other hand, involves one country relying on the cooperation of another country in order to acquire UCAVs. This reliance can take the form of external assistance in research and

[1] For example, see Michael Mayer (2015). 'The New Killer Drones: Understanding the Strategic Implications of Next-Generation Unmanned Aerial Combat Vehicles', *International Affairs*, 91 (4): 765–780; or Emanuel Boussios (2014). 'The Proliferation of Drones: A New and Deadly Arms Race', *Journal of Applied Security Research*, 9 (4): 387-392.

development towards UCAVs, or through international sales of UCAVs between state governments.

In line with this distinction in the methods of acquisition, this research identifies three aspects of proliferation to guide this inquiry: 1) the resources needed to independently acquire UCAVs; 2a) the motivators driving supplier states to assist other nations in acquirement; and 2b) the motivators encouraging recipient states to pursue UCAVs. Although each of the case studies presented could inevitably shed light upon all three aspects of proliferation, in the interest of concision, each case study will be focused in such a manner to explore only one aspect of proliferation in their respective chapters. Chapter Three, examining the sale of Predator drones between the US and the UK in 2007, will focus upon the United States' independent acquisition of UCAVs in order to clarify the demands of proliferation aspect 1. Chapter Four will explore China's decision to collaborate with Pakistan in the development of the Burraq UCAV to provide insight into proliferation aspect 2a. Finally, Chapter Five will examine India's interest in purchasing armed Heron drones from Israel as a means of understanding proliferation aspect 2b.

Ultimately, this analysis will provide a comprehensive understanding of the power factors driving UCAV proliferation. This analysis will be applied in Chapter 6 to suggest pathways for the ongoing UCAV proliferation, discuss the possibility of curbing this proliferation, and address the need for international norms surrounding the use of UCAVs as this technology continues to spread. The need for international norms will be shown to be highly important as UCAV deployment, similar to UCAV proliferation, could be used as a mechanism for achieving unrelated power objectives. Without proper regulation from the international community, this type of misuse of advanced weaponry could set dangerous precedents in the foreseeable future.

2 IPE as Proliferation Studies

The proliferation of UCAVs is a recent phenomenon. As such, there is little existing literature regarding proliferation trends in this area. In light of this research gap, earlier studies of proliferation could potentially illuminate factors influencing the spread of UCAVs. However, it will be argued that earlier theories of proliferation are not well-equipped to address UCAV proliferation. Instead, Strange's theory of IPE will be introduced as a means for understanding this proliferation. The first section of this chapter will review existing proliferation literature to demonstrate its weaknesses in reference to UCAVs. The following three sections will outline the theory of power in IPE which will be used to analyse UCAV proliferation in the case studies that follow.

1.1 Why IPE Rather than Existing Theories of Proliferation?

Much of the literature in proliferation studies has focused specifically on the spread of nuclear weapons and weapons of mass destruction (WMDs). Although UCAVs do not fit into this category of weaponry, it does share some similarities with these weapon systems. In regards to development, both WMDs and UCAVs are costly (Erickson 2001: 43), requiring a high level of technological and financial investment in order to successfully produce operational units (Joshi and Stein 2013: 55-61). The weapon systems also share comparable appeal. Each system provides a measure of advanced military capabilities with which to tackle security risks. UCAVs have also become associated with the type of international prestige (Boyle 2015: 78) that has accompanied the acquirement of nuclear weapons in the past (Campell 2002: 14). However, despite these similarities, theories of nuclear and WMD proliferation are not equipped to address the proliferation of UCAVs.

Theories of nuclear and WMD proliferation are almost exclusively state-centric. In his paper on *Why Do States Build Nuclear Weapons?*, Scott D. Sagan introduces three common models for explaining the motivations of states that pursue nuclear arsenals (1996-1997). Depicting motivations to derive from either national security threats, domestic political interests, or the symbolism of the weaponry, the three models each take the state government to be the sole relevant actor in nuclear proliferation (Sagan 1996-1997: 56-57). Campbell takes a comparable approach in *Nuclear Proliferation Beyond Rogues*, by outlining ten reasons that a state chooses to develop nuclear weapons (2002: 8-15). Again, the state government is portrayed as the only actor in proliferation trends. Even when discussing the economic trends impacting nuclear proliferation, theorists have limited their inquiry to the costs placed upon

governments in pursuing nuclear weapons, neglecting wider economic analysis (Erickson 2001: 44-45).

This underscores a key difference between nuclear proliferation and UCAV proliferation. Unlike nuclear weapons, UAVs have largely been developed in the private sector and thus an entire industry is invested in UAV proliferation trends (Hall and Coyne 2014: 454-457). Take the US, for example, where the drone lobby has gained considerable influence in policy decisions surrounding their products through significant financial contributions to the federal government, including advocating for more lenient export regulation (Hall and Coyne 2014: 454-457). Alimahomed has noted the effectiveness of the drone lobby in influencing overall government spending as a means of maximizing its profits in the 'War on Terror', a campaign in which UCAVs have been prominent (2014: 86). This public-private sector dynamic is left unexplored under theories of nuclear proliferation.

Further detailing the incompatibility of nuclear proliferation theories with the spread of UCAVs, nuclear weapons and WMDs are transformative weapons and theorists have understood their acquisition as an assurance of long-term security (Ogilvie-White 1996: 44-45). As such, theories of nuclear proliferation take the pursuit of these uniquely destructive capabilities as a rational means for protecting the security interests of the state (Ogilvie-White 1996: 44-45). This reflects the long-held realism common to nuclear proliferation theories (Hymans 2006: 456). However, UCAVs are not transformative weapons. The small payloads common to UCAVs indicate its limited destructive capabilities (Davis et al. 2014: 13). Furthermore, the capabilities of UCAVs are already present in other defence systems (Davis et al. 2014: 13). For example, satellites, high flying planes, and unarmed drones are able to surveil areas similarly to UCAVs (Davis et al. 2014: 11). Additionally, fighter jets and cruise missiles can potentially strike targets as well as UCAVs while simultaneously being less vulnerable to enemy air defences (Davis et al. 2014: 12). Beyond being a non-transformative weapon, drones present a particularly difficult proliferation puzzle. Unarmed models are ostensibly suitable for a wide number of civilian and consumer uses, but can easily become armed and dangerous through rudimentary methods (Zenko and Kreps 2014: 14). These traits are entirely neglected under theories of WMD proliferation.

1.2 Strange's Typology of Power: Structural and Relational

In place of earlier theories of proliferation, this research presents Strange's theory of power within IPE as a suitable approach for understanding the proliferation of UCAVs for a number of reasons. Firstly, IPE accepts a wide variety of actors beyond the state as relevant to

diplomacy, rejecting state-centric understandings of international relations (Strange 1982: 491-492). Global corporations, non-profit organizations, lobbying groups, and insurgent militants are just a few examples of the types of actors that can be potentially influential under Strange's theory of IPE (Strange 1982: 496). Secondly, Strange theorizes that actors are fundamentally self-interested but does not presuppose the rationality of these actors, limiting analysis primarily to actions rather than consequences (1994b: 217-218). This is due to the fact that irrational actors may pursue a course of action whose consequences were unintended and, as such, consequences are often not a reliable indicator of the true intention of an action. Thirdly, Strange's nuanced approach to power allows for important distinctions between the motivations of UCAV supplier nations and recipient nations.

Unlike traditional IR theory, which has a one-dimensional understanding of power, Strange recognizes two distinct types of power: relational and structural (1994a: 24). Relational power closely aligns with the understanding of power seen in realist theory, namely the power to make a group do something which they would otherwise not do (1994a: 24). This is largely determined based upon the relative capabilities of two groups, seen in differences in military might, financial resources, or production capacities. Clear differences in the capabilities of specific groups allow the stronger power to apply power directly and coercively (Strange 1996: 19). Structural power, on the other hand, is an indirect application of power, defined as the influence held by a strong nation to shape and determine the structures in which other nations and groups operate (Strange 1996: 24-25). It 'confers the power to decide how things shall be done, the power to shape frameworks within which states relate to each other, relate to people, or relate to corporate enterprises' (Strange 1996: 25). Comparatively, structural power is less easily quantified than relational power but it is significantly more important in modern international affairs and thus it attracts the interest of many state governments who wish to expand their influence in the world at large (Strange 1996: 25). This will be seen to be an important factor in the proliferation of UCAVs. Broadly speaking, structural power concerns will be shown to be relevant in the pursuit of independent acquisition as well as the actions of supplier nations. Meanwhile, relational power concerns will be key to the motivations of recipient nations.

1.3 Dimensions of Power

Strange's approach to IPE divides structural power into four fundamental, distinct, and equally-important structures: security, finance, production, and knowledge (Strange 1996: 26). Although inherently separate, these dimensions of power affect one another, each supporting

and holding up the other three (Strange 1996: 26). When in possession of structural power through these dimensions, the possessor gains the ability to change the range of choices available to other groups without visibly pressuring them to make one choice over another (Strange 1996: 31). Understanding the components of each of these dimensions will clarify this phenomenon and assist in the quantification of structural power for later chapters. Although not an exhaustive list of the ways in which these power structures may be present, some exhibitors of structural power in these dimensions are given for reference.

1) Security: Understood as the power which is gained by a person or group through the protection of others from real or perceived threats (Strange: 1996: 45-46). Although seemingly limited, the security structure has the potential to impact the distribution of goods, services, and privileges within society (Strange 1996: 45-46). In providing security, protectors acquire a power which allows them to determine (or limit) the range of choices available to those that they protect, incidentally gaining special advantages themselves by virtue of not having those same limitations imposed upon them (Strange 1996: 45-46). It should be noted that security is not limited to the prevention of violence. It includes various and complex types of security, such as security from starvation, disease, disablement, and bankruptcy, and therefore it is not only the state who can provide security (Strange 1996: 47). It can potentially include private corporations, militant groups, and others, but historically it has been dominated by the governments of states (Strange 1996: 50). Power in this structure can be quantified in a number of ways. Nations whose militaries rank highest in the world, such as the US, can claim a measure of structural power. The same can be said for nations that have a large number of military alliances. Military technology also gives a measure of power in the structure of security, particularly if the weapons produced by a provider become commonplace in conflict areas globally. Structural power can also be seen in the composition of global military forces, such as UN Peacekeepers or NATO troops, nations that have contributed the most through service members or finances gaining influence.

2) Finance: Defined as all arrangements determining the availability of credit and the global exchange rates that impact the power of generated credit, giving possessors of this power the ability to permit or deny others the possibility of spending in global markets (Strange 1996: 90). This structure has two inseparable components: the ability to create credit (shared by governments and banks) and influence over the exchange rates between currencies (determined partly by government policies and partly by market forces; Strange 1996: 90-91). This structure is a hybrid between a truly global system, the international financial market which is difficult to control, and a series of national financial and monetary systems, still largely controllable by

national governments and domestic corporations (Strange 1996: 90-91). Power in this dimension can be quantified, for example, by global currency exchange rates, the presence of a given country's national banks on the international level, or the relative stability of a currency or national financial sector.

3) Production: In short, all arrangements involved in determining what is produced, who produces it, who it is produced for, and on what terms production occurs (Strange 1996: 64). Factors relevant to production include a variety of issues, such as state and corporate taxes, the efficiency of manufacturing tools, the skills of the local workforce, and the availability of natural resources (Strange 1996: 86-88, 74, 64). Similar to the security structure, the production dimension can potentially have far-reaching and unpredictable impacts in the world. Changes in production, such as women joining the workforce, are inevitably followed by big changes in a society's overall distribution of political and economic power (Strange 1996: 64). While the most powerful actors within this structure have been generally private, multinational corporations, even the least involved governments still play a significant role in this structure through import/export regulations and tax policy (Strange 1996: 79-80). In the case of state-owned businesses, the power of the state in the production dimension correspondingly increases. Structural power in production can be quantified by a variety of factors, including the quality of manufacturing technology, overall production numbers, import/export practices, the ease of accessing trade routes, and the relative skills or training of local workers. Groups can increase their power in this structure by devoting resources to improve upon some of these factors.

4) Knowledge: Strange defines the knowledge structure as the determination of what information is discovered, the storage of information, and the circumstances of its communication (Strange 1996: 121). Among other attributes, this dimension can include belief systems, religions, and scientific/technical knowledge (Strange 1996: 126-127). This third attribute has been the most important in modern history. Strange has identified three major changes that advances in technical and scientific knowledge have had upon the world: 1) encouraging competition between states and corporations for leadership in the knowledge structure, replacing territorial and industrial competition; 2) increasing the asymmetry between states' acquisition of and access to knowledge; and 3) creating new distributions of power, social status, and influence across borders (Strange 1996: 136-138). These changes demonstrate the extent to which the knowledge structure can affect the overall distribution of structural power, particularly in reference to advanced technologies such as UCAVs. Power in this structure is seen largely in the level of technological innovation coming out of a country.

However, it can also be demonstrated in the level of higher education received by citizens, the ease of information dispersion in a society, or the surveillance practices of governments, to name just a few potential indicators.

Although theorized specifically for structural power, these dimensions of power can apply to relational power as well, albeit in a different manner. In reference to structural power, holding power in a given dimension refers to a wide-reaching global influence in that dimension. In reference to relational power, the dimension merely refers to a comparative advantage held in that dimension. Only those countries or groups with a high calibre of relational power are likely to be able to achieve any measure of structural power. In discussing the proliferation of UCAVs, the structures of production and knowledge will be shown as key in independent acquisition. For dependent acquisition, supplier states will be shown to be motivated by structural power interests stemming from all four dimensions of power whereas recipient states will be more likely motivated by relational power interests in security and finance. This will be illustrated in detail in the following three chapters.

1.4 Triangular Diplomacy

The final relevant concept of Strange's theory of power addresses the changing nature of diplomatic relations. With multinational corporations becoming more powerful while the power of states declines, diplomacy is no longer constituted only of intergovernmental interactions but involves three separate types of interactions: government-government (bargaining among states), government-company (bargaining between states and firms for the use or creation of wealth-producing resources), and company-company (competition or collaboration between firms seeking advantages in the global market; Stopford and Strange 1991: 21, 32). Each set of forces impacts negotiations and actions on the international stage by subjecting governments and companies to the interests of additional actors (Stopford and Strange 1991: 22). To illustrate, the government of country A could choose to interfere with the expansion of a business headquartered in country B as a means of expressing their dissatisfaction with a recent course of action taken by the government of country B, involving an independent business in the dealings between two governments (Stopford and Strange 1991: 23). Another example could involve the attempt of a business to influence their government into entering an international accord that would ultimately benefit their business. This dynamic is referred to as triangular diplomacy (Stopford and Strange 1991: 19). Without reference to all three of the forces described in triangular diplomacy, it is impossible to have a complete understanding of the factors driving actions on the international stage.

Triangular diplomacy has grown as a result of an international system which is characterized by a wide number of actors, each with varying levels of relational and structural power to be exercised. This has created new challenges in international bargaining for all parties involved. Both states and companies must pursue their agendas while avoiding conflicts with the agendas of the actors around them, a difficult prospect due to the highly interconnected nature of the global political economy (Stopford and Strange 1991: 28). States in particular have struggled with these new bargaining requirements as they have attempted to balance the competing and often contradictory demands placed upon them domestically and internationally (Stopford and Strange 1991: 33).

Understanding the influence of triangular diplomacy upon international affairs allows for a complete analysis of the proliferation of UCAVs. Consider, for example, the active drone lobbies in the United States and the United Kingdom, the two most prominent users of UCAVs in recent history. Each of these governments have been lobbied by domestic and international drone producers over the past decade (Hall and Coyne 2014: 451-452). Those lobbying efforts have been followed by an increase in the purchase and use of drones by those countries (Hall and Coyne 2014: 451-452). However, the demands of the industry must be balanced against the security risks of proliferating drones, a delicate equilibrium to strike. In the next chapter, this dynamic will be explored in detail, demonstrating the explanatory strength of triangular diplomacy, structural power, and Strange's IPE as a whole in reference to UCAV proliferation.

1.5 Methodology for Case Studies

This research project utilizes both qualitative and quantitative data for illustrating existing structural and relational power. Qualitative evidence has been derived from reputable news agencies including *Reuters, CNBC,* and *Foreign Policy,* as well as from official government documentation and reports from non-profit organisations such as the Council on Foreign Relations. Quantitative data has been retrieved from databases made available from a variety of sources including the Organisation for Economic Co-operation and Development (OECD), the Stockholm International Peace Research Institute (SIPRI), and the Center for Responsive Politics. In demonstrating the potential power changes that follow UCAV acquisition, qualitative data was heavily utilized, referring to news organizations such as *The Diplomat, the Economist,* and *The New York Times*. Academically-authored op-eds and reports from non-profit organisations are also referenced.

Due to the newness of UCAV proliferation, there is an appreciable research gap in proliferation trends. Given this lack of research, academic books and journals were not able to

be widely used. Additionally, the covert nature of UCAV programs has limited the availability of official government documentation regarding drone acquisition and use, although reference to such documentation has been made where possible. Lastly, the secrecy with which UCAV providers handle UCAV transactions has made verifiable information difficult to gather. As such, trustworthy news sources and academic experts in drone warfare, including Micah Zenko and Sarah Kreps, have been greatly relied upon.

3 US-UK: Independent Acquisition and Role of MNCs

As outlined in the introduction, case studies will be presented in this research in order to identify ongoing trends in UCAV proliferation and make predictions regarding the future of proliferation. In doing so, both independent acquisition and dependent acquisition must be considered. This chapter will analyse the sale of armed drones from the United States, a nation which independently acquired its UCAVs, to the United Kingdom, a close ally which was dependent upon the US for its acquisition of UCAVs. While this transaction will inevitably give insight to all three relevant factors driving armed drone proliferation (identified in the introduction as aspects 1, 2a, and 2b), this chapter will give primary focus to aspect 1, the resources required for independent acquisition. In exploring the demands of independent acquisition embodied by the US, it will be possible to judge the likelihood of future UCAV proliferation through independent acquisition.

Placing the discussion of independent acquisition within the context of US-UK transactions will give additional insight into aspects 2a and 2b, the core focus of chapters 4 and 5 respectively. Unlike the nations which will be discussed in those later two chapters, the US-UK dynamic is uniquely influenced by the interests of multinational corporations (MNCs). Given this, the US-UK transactions can provide an understanding of aspects 2a and 2b that would not be accounted for in chapters 4 and 5. Although not the primary focus of this section, MNCs have the potential to exercise such influence upon the future proliferation of UCAVs that significant attention will be given to the role of MNCs in section 3.2.

3.1 Investment in Structural Power Needed for Development

Independent acquisition is difficult. It requires a high calibre of structural and relational power in the dimensions of knowledge and production, demanding significant national investment. Knowledge is needed for the research and development of high-tech, unmanned devices. Production ensures the ability to create the quality of device needed for use in the demanding combat situations for which UCAVs are intended. By almost all measures, the United States was a global leader on both fronts in the early 2000s, the period in which notable UCAV use began, and these power advantages continue through to the present.

To illustrate, consider investment in Research and Development (R&D), a strong tool for increasing power in the dimension of knowledge. Although the United States does not contribute the highest percentage of its GDP globally towards R&D, the pure dollar amount spent on R&D is the highest in the world by far (OECD 2016). Referring to Figure 1, the

spending difference in R&D is apparent. For each year in the 1998-2006 period, the US outspent all of the countries in the European Union combined by approximately 100,000 million USD (OECD 2016). In the same period, it outspent the second nearest economy, Japan, by nearly double, spending approximately 200,000 million USD more per year (OECD 2016).

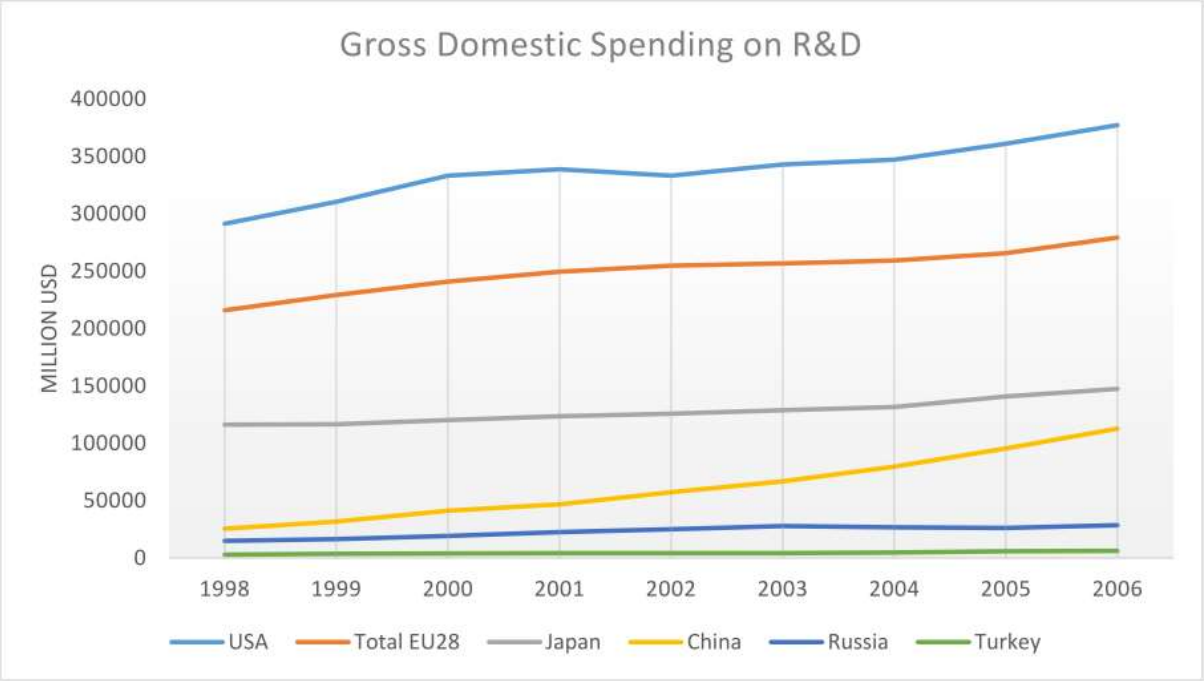

Figure 1: Gross Domestic Spending on R&D (Adapted from figures provided by source: OECD 2016).

Consider further a report produced by *The Economist* aimed at ranking the world's most innovative economies. The Economist Intelligence Unit placed the United States as the number three most innovative economy globally for the 2002-2006 period, ranking behind only Japan and Switzerland (2009: 4). This report took into account factors included in the knowledge structure, such as investment in R&D and education of the local workforce, as well as the production structure, including infrastructure and the technical skills of the local workforce (Economist Intelligence Unit 2009: 2). The Economist Intelligence Unit notes that although the US has slipped in the rankings for more recent years, it has traditionally occupied a place as the world's technological leader and it is expected to remain a powerhouse in world innovation (2009: 5, 9).

A third indicator of US power in knowledge and production can be seen in global military expenditures. According to data available from SIPRI, the US has invested the most of any nation in military expenditures by significant margins (2016b). Take, for example, the 1998-2006 period in which the US invested the most of any nation in its military, totals for the single nation numbering more than the entire investments from all the countries on the European

continent combined (2016b). These numbers are particularly important in reference to UCAV proliferation. Under SIPRI's definition of military expenditures, the cost of R&D as well as the cost of producing UCAVs is included in these totals (2016c). This level of investment is rare. It is such investment that has allowed the US to occupy a formidable position in the structural dimensions of knowledge and production needed for advanced military technologies.

The power of the US in these dimensions is not only seen in investment data. It is further supported by the quality of American-made UCAVs. While over 60% of nations have some form of UAV for surveillance purposes and at least ten nations are known to have UCAVs, the Reaper and Predator drones produced in the US are high-end products (Dillow 2016a, Kreps and Zenko 2014: 72). They are technologically-demanding weapons that require satellites, global data links, and foreign bases of operation (Dillow 2016a). While the infrastructure needed to operate US drones is more extensive than those produced by other nations, it is also accompanied by advanced capabilities and a unique excellence in operation (Zenko and Kreps 2014: 14). They have been rigorously tested through their usage in actual theatres of war, the US having conducted well over 1,000 drone strikes globally since 2008 (Kreps and Zenko 2014: 71). When compared with other UCAVs available in the international market, particularly Chinese-made drones, sources have deemed competing drones to be more cheaply-made, unreliable, and less capable than US drones (Rawnsley 2016). As such, American-made UCAVs are arguably the best available high-technology, long-range UCAVs. The independent development of these high-quality UCAVs tangibly demonstrates to the world that the US has invested in and claimed superior structural power in the dimensions of knowledge and production.

3.2 The Role of MNCs in Encouraging UCAV Sales

The structural power that allowed the US to independently acquire UCAVs does not belong only to the US government. A large portion of the US power in production and knowledge belongs to the private sector, particularly in relation to US military technology which has often been developed in the private sector. For example, the Global Hawk surveillance drones operated by the US Air Force are produced by Northrop Grumman (Corcoran 2012). The Marines' K-MAX unmanned helicopter is a product of Kaman Aerospace and Lockheed Martin (Dillow 2014, Lockheed Martin 2016). Regarding America's UCAVs, General Atomics has produced the MQ-1 Predator drone and the more recent MQ-9 Reaper drone for use overseas (Strobel and Tabassum 2011).

The partnership between the public and private sectors is a complex dynamic in which interests of the private sector can have profound impacts upon actions in the public sector, and vice versa. In particular, lucrative government contracts give private companies a vested interest in maintaining business relationships with the government. Lockheed Martin, producer of the K-MAX drone, earned over $ 36 billion in contracts with the US government for the 2015 fiscal year alone (U.S. General Services Administration Federal Government 2016). In that same period, Northrup Grumman earned $ 10 billion in government contracts (U.S. General Services Administration Federal Government 2016). General Atomics, ranking 22nd on the top 100 list of government contractors for 2015, earned almost $ 2.4 billion (U.S. General Services Administration Federal Government 2016). These sums are nontrivial, most importantly for General Atomics. Given that General Atomics produces UCAVs and distribution is tightly controlled by the Missile Technology Control Regime (MTCR), the company is reliant upon the US government for any purchases of their military-grade drones (Cole 2011). These purchases can be made by the US government through defence contracts or, on occasion, made by other nations when permitted by the US government (Shalal and Stephenson 2015). In essence, the US government both controls General Atomics' market for sale and constitutes the largest single customer in that market.

Given this, the activities of the drone lobby in the US are unsurprising. According to the Center for Responsive Politics (2016), General Atomics has made over $ 7 million in campaign contributions since 1990. Since 1998, the company has spent over $ 36 million in lobbying (Center for Responsive Politics 2016). Referring to Figure 2, these lobbying expenses can be seen to significantly increase since 2005, trending upwards over the next 10 years, and reaching a height of almost $ 4 million spent on lobbying in 2015 alone. (Note that the first US-UK UCAV transaction occurred early 2007, closely following these spending increases.) Over those same years, General Atomics lobbied on behalf of over 150 congressional bills (Center for Responsive Politics 2016). Additionally, the majority of its lobbying staff had previously worked in the government, approximately 60% (Center for Responsive Politics 2016).

This dynamic is concerning. The exchange of money between the public and the private sector in the form of contracts, campaign contributions, and other methods distorts the decision-making process and interests at play. This is not limited to the US. UK companies, whose lobbying practices towards the UK government are not required to be made public, also have a vested interest in expanding the US drone market. The UK is the world's second largest arms dealer and relies disproportionately upon the sale of aerospace technology, including drone components (Milmo 2015). Many of the UK's top manufacturers are involved in this industry

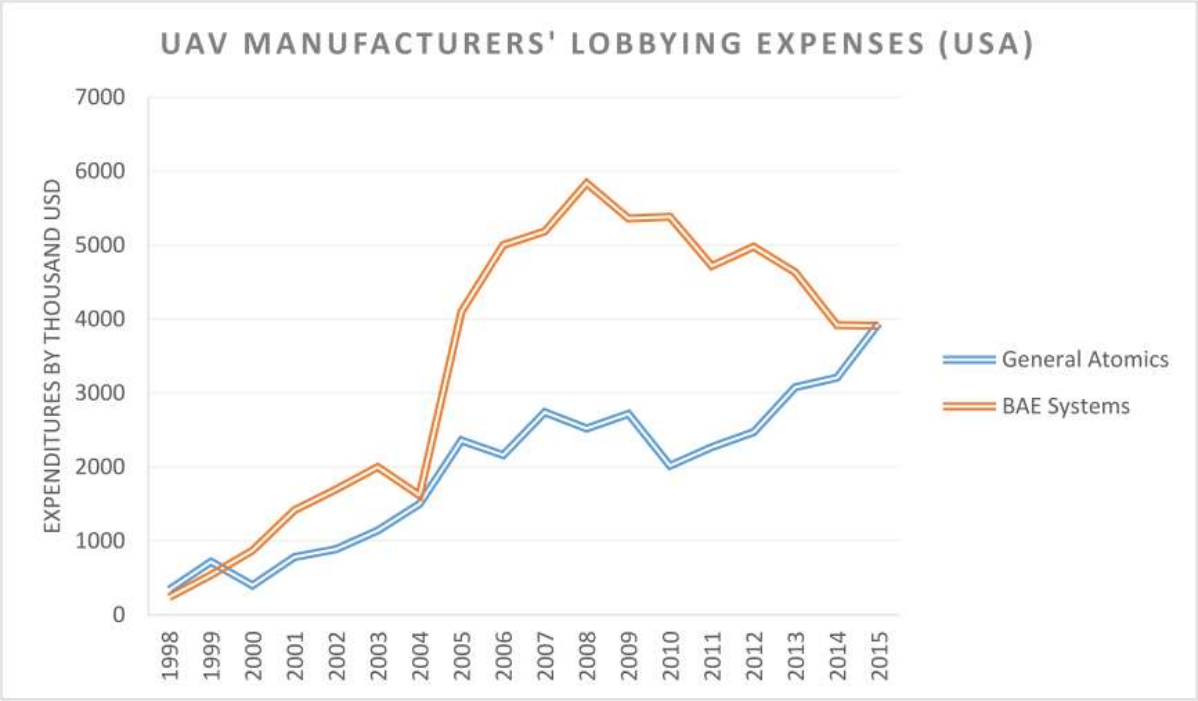

Figure 2: UAV Manufacturers' Lobbying Expenses (USA; Adapted from figures provided by source: Center for Responsive Politics, OpenSecrets.org).

(Milmo 2015). When selling these components to US companies for use in UCAVs, the two companies have a single interest in expanding use of their products. To illustrate, BAE Systems signed a memorandum with General Atomics in 2007 to conjoin the companies' technical expertise to enhance sensors and data collection on the MQ-9 Reapers (General Atomics 2008). This memorandum came to fruition in their joint $ 6 million contract with the US Air Force developing high resolution imagery radar for UCAVs from 2008-09 (General Atomics 2008). Notice in Figure 2, the lobbying efforts of BAE Systems follow the trend of General Atomics, sharply increasing in 2005 shortly before the 2007 US-UK sale. Given the collaboration of these and other companies in the UCAV market, their combined lobbying efforts could be markedly influential.

The relationship between the public and private sector exemplifies Strange's understanding of triangular diplomacy. As the private companies involved in the UCAV market have strong claims to structural power in knowledge and production as well as financial influence, the US government has attempted to balance the interests of the private sector alongside the international security risks of UCAV proliferation. Generally speaking, the US government has exercised restraint in the export of UCAVs. Prior to 2015, the only nation allowed to purchase an American-made, fully-operational UCAV was the United Kingdom (Shalal 2015). In the same time period, a small number of other nations were permitted to purchase unarmed versions of the Predator and Reaper drones (Shalal 2015). However, there

is no assurance that such restraint will be seen in the future. Hall and Coyne, in exploring the lobbying practices of the drone industry, have noted that US drone producers have lobbied persistently to relax the rules regarding international drone transfers (Hall and Coyne 2014: 446). Furthermore, if more nations successfully develop UCAVs in collaboration with the private sector, the influence of the private sector upon these vital international security decisions can increase exponentially. While currently not a key driver of global UCAV proliferation, the potential impact of the private sector, given its power in knowledge and production as well as the financial incentives it represents, should not be underestimated.

3.3 Considering Dependent Acquisition

The US-UK transaction can give some measure of insight into the motivations of states involved in buying and selling of UCAVs, particularly in the context of close alliances. The US-UK alliance, a uniquely close partnership that has expanded over decades, has been labelled by some commentators as a 'special relationship' (Dumbrell 2009: 64). This relationship is primarily military- and intelligence-based, aligning well with the export of UCAVs (Dumbrell 2009: 65). The fact that these UCAVs were intended for use in America's 'War on Terror' in the Middle East, representing a greater sharing of responsibility for the war effort on the part of the UK, was certainly a strong incentive for the US government to approve the transaction. Similarly, the UK has demonstrated interest in maintaining its influence within the US as much as possible, presenting an incentive for their greater involvement in the 'War on Terror' (Foreign Affairs Committee, House of Commons 2010: 74). This accounts for data which suggests that UK-operated drones are significantly more likely to fire on targets in Afghanistan than American-operated drones, roughly 300% more likely (Ross 2014).

The interests of both the US and the UK in pursuing UCAV transactions can be understood best in reference to power relations. Arguably, the United States government is the world's most structurally powerful actor in the dimension of security, especially in terms of hard power. It is a key NATO member, holds a permanent position on the UN Security Council, and the country's high military expenditures have made it the world's single dominant military force (Nye 2003: 65). As a close ally participating in US military endeavours, the UK benefits from the United States' structural power by association. On the other hand, the US benefits from stronger understood legitimacy in its military actions when supported by other nations such as the UK, enhancing their soft power and deepening their overall structural power in security (Nye 2003: 66). In the case of close alliances such as the US-UK, UCAV proliferation

between them stands to mutually benefit the nations by bolstering US structural power while allowing the UK to build its relative power through access to UCAV capabilities.

Despite this mutually beneficial relationship, the UK has continued its plans to independently develop its own UCAV, the Taranis (Farmer 2015). The product of over £200 million in investments since 2006, the Taranis has been designed by BAE Systems to be an advanced, practically undetectable stealth drone and, although not officially branded as an armed drone, tests have included a simulated weapons release (Farmer 2015). Current estimates predict that fully-functional Taranis drones will not be incorporated into the UK military until 2030 (Hollinger 2015). It is noteworthy that the UK has persisted in the development of the Taranis drone in light of high costs and time investments required to complete the project, even while having the US as a reliable UCAV supplier. This move suggests that the UK recognizes the advantages of independent acquisition over dependent acquisition. Moving beyond mere access to the capabilities of armed drones, developing its own UCAV can demonstrate the nation's structural power in production and knowledge. This is a theme that will be explored in the following two chapters.

3.4 Insights from the US-UK UCAV Collaboration

The US-UK UCAV transaction provides insight into a number of issues related to the proliferation of armed drones. First and foremost, it illustrates the demanding nature of independently acquiring UCAVs, involving high levels of investment in order to maintain the needed power in knowledge and production to develop this high-tech weaponry. Similar trends in spending can be observed in both China and Israel, the world's other key drone producers. Israel consistently contributes the highest percentage of its GDP towards research and development globally (OECD 2016). Likewise, China's spending on R&D and education has increased rapidly since the early 2000s which has allowed the country to rise significantly in global innovation indexes (Economist Intelligence Unit 2009: 8-9). Independent acquisition is complicated further because it is not only a matter of investment. As Zenko and Kreps have noted, several countries with relatively advanced aerospace programs and available financial means, such as Italy, Russia, and France, have struggled to develop UCAV technology (2014: 14). Given the high level of investment and power needed in knowledge and production to become a drone-producing nation, it seems that independent acquisition is not likely to be a core driver of future UCAV proliferation. However, as the UK's Taranis illustrates, it is likely that governments will continue to pursue the independent development of UCAVs despite its high costs and the difficulty of success.

Secondly, this chapter has addressed the potential impact of MNCs upon UCAV proliferation. Although it is not a strong factor in recent proliferation trends, the influence it may have is noteworthy. Strange's understanding of triangular diplomacy reflects the possibility that MNCs can have a place at the table in international diplomatic matters, a risk that should be monitored. Although unable to fully address this phenomenon in the above section, the works of Hall and Coyne[2] offer a good base point for exploring the relationship between the public and private sector in reference to drones more completely. It should be noted that industry concerns are not only relevant in the US. Israeli drone producers also pressure their government and military to help them stay competitive in the global market (Reed 2014).

Thirdly, the US-UK transaction illuminates some of the motivations for nations involved in UCAV sales, aspects 2a and 2b. In this case, a close alliance between the two parties allowed UCAV sales to be a mutually beneficial arrangement through a sharing of a measure of structural and relational power. However, not all UCAV transactions have occurred between such closely allied nations. Understanding the motivations for nations to buy and sell UCAVs in the absence of a strong alliance can reveal future trends in armed drone proliferation. In the following two chapters, aspects 2a and 2b will be examined in greater detail through reference to the UCAV collaborations between China and Pakistan as well as Israel and India.

[2] See Abigail R. Hall & Christopher J. Coyne (2014). The political economy of drones, *Defence and Peace Economics*, 25 (5): 445-460.

4 China-Pakistan: Why Supplier Nations Supply

In recent years, China has taken advantage of the gap in the international UCAV market resultant from strict export policies surrounding the technology on the part of the United States and Israel. Reportedly, China has exported its Caihong armed drones to a number of governments including those of Saudi Arabia, Egypt, Iraq, and the United Arab Emirates (Dillow 2016b). This chapter will analyse the UCAV selling habits of China as a means of exploring proliferation aspect 2a, namely the motivations for countries with UCAVs to sell this weaponry to other groups. The first section of the chapter will discuss China's interests in internationally expanding access to its UCAVs as a means of undermining US control over armed drone technology and the position of superiority of the US in structural power. The second section will address the sale of UCAVs in relation to China's building of economic relationships with recipient nations, demonstrated through the China-Pakistan Economic Corridor (CPEC) initiative. It will be argued that this transaction represents another facet in China's pursuit of structural power.

In discussing China's part in UCAV proliferation, primary focus will be placed upon China's partnership with Pakistan in developing the Burraq drone, a Pakistani UCAV experts say is rooted in Chinese technology (Mangi and Pearson 2015). Examining this collaboration will principally demonstrate the interests of China in aiding the proliferation UCAVs while also providing a measure of insight into aspect 2b by examining Pakistan's impetus for acquiring UCAVs. For both nations, motivations for pursuing the UCAV transaction seems to be rooted in joint economic interests that have been impacted by security concerns.

4.1 UCAV Transactions in Building a Global Security Presence

China's increased military expenditures since 1996 have focused upon the rapid modernization of its equipment, both domestically producing and importing equipment to improve its surface, air, and naval capabilities (Tiezzi 2014b). Signalling growing confidence in domestically-produced equipment, China's arms imports have dropped from an average of $ 2917 million in imports per year from 2000-2006 to an average of $ 1413 million per year from 2007-2015, a decrease of over 50% (SIPRI 2016a). During the same period, arms exports increased from an average of $ 458 million per year to $ 1362 million per year, making China the world's third largest arms exporter for the 2011-2015 period, directly behind the US and Russia (SIPRI 2016a). In short, China has been building a global arms presence that has begun competing with that of the US, making an argument for China's claim to greater structural

power in the dimension of security as its weapons technology appears in other countries with increasing frequency. UCAV transactions are part of this larger competition for power in global security against the US.

Consider the governments that China has provided with UCAV technology. The US government has denied requests for access to American-made UCAVs from the governments of countries including Pakistan, Saudi Arabia, and the UAE, each of whom have later acquired armed drones from China (Zenko 2015). Additionally, both Pakistan and Iraq, also recipients of Chinese UCAV technology, have been subject to targeted armed drone strikes by the US within their territories (Serle 2015). Furthermore, recent Iraqi requests to the US for use of UCAVs and US airpower to target extremist militants in Iraq as an assistance to their security forces have been rejected (Gordan and Schmitt 2014). In place of US UCAVs, China has stepped in. China's supplying of UCAVs to these governments can be viewed as a direct challenge to the US and the largely unilateral control it has exercised over the UCAV market in previous years. In selling armed drones on the international market with little regard for the controls that the US has imposed upon its own UCAV exports, China has filled the gap in the drone market while simultaneously pressuring the US to lower its barriers to export in order to regain influence over the market.

The presence of China in the international arms trade is particularly important for garnering global power in security because arms transfers can be a vehicle for building other attributes indicative of structural power in security, many of which China has thus far lacked. This is most obvious in reference to military alliances. Presently, China's only fully-fledged military alliance is with Pakistan, compared with the US which has over sixty alliances involving military cooperation (Xuetong 2015). However, increased arms transfers between China and developing nations suggests that closer military cooperation is an interest.

For example, the Chinese government released its first Arab policy paper in January 2016 and outlined its intentions to pursue stronger relationships with Arab nations (Xinhua News 2016). The fifth section of the paper, focusing entirely upon peace and security, stated that China intends to expand its military cooperation with Arab states and be involved in the creation of a regional collective security mechanism for the Middle East (Xinhua News 2016). It should be noted that it is likely that at least five of the ten countries that have imported Chinese UCAVs are Arab nations: Saudi Arabia, the UAE, Egypt, Iraq, and Somalia (Agence France-Presse 2016, Dillow 2016b). UCAV transactions with these states should be understood as a precursor for deepening military partnerships with China, a move that would contribute significantly towards bolstering China's claims to global structural power. In this sense, UCAV

transactions only tangentially reflect immediate security concerns, rather primarily involving the exhibition of advanced military capabilities to illustrate superior power in security.

4.2 UCAV Transactions and Economic Development Plans

China's UCAV transactions are closely intertwined with its ambitious economic development plans. This is readily apparent in the China-Pakistan relationship. Beginning in 2014, the governments of China and Pakistan announced a development scheme geared towards enhancing transportation and trade between the two nations, called the China-Pakistan Economic Corridor (CPEC; Tiezzi 2014a). This plan is highly valuable to both countries. For Pakistan, CPEC represents an opportunity to attract much needed foreign direct investment (FDI), primarily from Chinese investors. Since the initiative was announced, foreign investment in Pakistan through capital expenditures has increased from $ 3.1 billion in 2013 to $ 18.9 billion in 2015 (Fingar 2016). CPEC has also made Chinese loans available to Pakistan at little to no interest. For example, China has offered loans for infrastructure projects at an interest rate of 1.6 %, compared with the interest rates on loans previously provided by the World Bank for Pakistani infrastructure projects which have ranged from 4.63 to8.5 % (Butt 2015, World Bank Group 2016). China has also committed to invest an additional $ 33.8 billion in energy projects to be completed by 2017 (Butt 2015). Energy projects are of particular importance because Pakistan has struggled to meet its energy demands, suffering from regular blackouts and expensive electricity services that have significantly hindered FDI (Sender 2013). For Pakistan, CPEC could reinvigorate its national economy and spur greater economic growth well into the future (Markey and West 2016).

China also expects to benefit from CPEC. Beyond the obvious economic advantages that Chinese-owned enterprises have reaped through the government selection and closed bidding process for projects, greater land access to the region will serve Chinese business interests in the long-run by creating new modes of export to southwest Asia, the Middle East, and Africa (Markey and West 2016). Furthermore, this access will reduce China's reliance (and subsequent vulnerability) upon Strait of Malacca for its energy imports, through which approximately 85 % of its oil imports transited in 2014 (Office of the Secretary of Defense 2016: 24).

The importance of CPEC for China extends further than the direct benefits derived from easier land access to Pakistan. In 2013, China's president Xi Jinping announced the New Silk Road initiative, also known as the 'One Belt, One Road' (OBOR) initiative (Markey and West 2016). This is an economic development plan that incorporates Central and Southern Asia to

build infrastructure for China to easily access Europe via land and sea (Catanzaro et al. 2015). The plan is quite ambitious, reportedly involving the collaboration and consultation of more than sixty countries and regions (Catanzaro et al. 2015). Relating to this larger OBOR initiative, CPEC has been called its 'flagship project' and was provided with the first investment from China's $ 40 billion Silk Road Fund (Tiezzi 2015). Selecting Pakistan as a sounding board for OBOR at large makes strategic sense. Given China's close relationship with Pakistan, Pakistan is likely the most permissive and eager country with which to launch OBOR projects, creating better odds that CPEC will be a success (Tiezzi 2015). An early success with CPEC will encourage the involvement of other nations in OBOR, thereby growing the economic influence of China through these development projects. Ultimately, the success of CPEC and OBOR would be a strong boost to the structural power of China in the dimensions of finance and production, increasing its influence in the nations through which the New Silk Road passes (Sahoo 2015).

However, CPEC faces significant obstacles relating to Pakistan's security. The proposed land route between China and Pakistan will cross areas that are within striking distance of Pakistan's Taliban insurgents, generating concerns among Chinese investors regarding the safety of their projects (Markey and West 2016). Although the Pakistani government has committed a force of over 20,000 personnel for the protection of CPEC projects, fears surrounding the targeting of Chinese projects by Islamist militant groups remain a hindrance to the initiative (Hussain 2016, Markey and West 2016). In this uncertain security situation, Pakistani UCAV capabilities can be seen as a valuable tool for putting the minds of investors at ease.

Although the Pakistani government has used UCAVs in security operations, it is unclear if security was the primary motivation for acquiring Burraq. In the year that Burraq has been operational, only two drone strikes by Pakistan have been reported, suggesting it is not often needed. Despite this lack of usage, the government of Pakistan did wish to draw international attention to Burraq, differing from the vast majority of nations that have treated their armed drone acquisition and operations with high levels of secrecy. Upon announcing successful testing of Burraq in early March 2015, Pakistan's army chief of staff, General Raheel Sharif, proclaimed: 'It's a great national achievement and momentous occasion… [that puts] Pakistan in a different league' (Craig 2015). On Pakistan Resolution Day later the same month, a holiday of national significance, Pakistan held its first military parade since 2008 (Gady 2015b). The parade was performed on a new Parade Ground built in Islamabad specifically for the event and featured a special highlight: the flyover of a Burraq UCAV (Gady 2015b). The parade was

interpreted to be a symbolic message sent to the world at large, in particular Pakistan's geopolitical rivals and the militant groups operating within Pakistan (Gady 2015b).

The publicizing of the Burraq drone continued after immediate development, extending into its earliest operations. When Burraq was first used to target a terrorist compound in September 2015, it was a Twitter post from the army Chief of Staff that revealed the operation (Boone 2015). This tweet specified that insurgents were eliminated and identified the location of the strike as the Shawal Valley region in Waziristan, an area in the Federally Administered Tribal Areas (FATA) known for insurgent militancy (Boone 2015). Similarly, the second known targeted strike by a Burraq (announced in a statement released by the military's Inter-Services Public Relations in October) was also conducted in the Waziristan area (Express Tribune 2015). This is notable because the region is in close proximity to the proposed western route of CPEC and insurgent activity in the region is a security risk for the project (Rakisits 2015). Demonstrating publicly the use of UCAV technology in this region indicates to investors that Pakistan is committed to protecting development projects and that is has the advanced capabilities to do so. However, the apparent infrequent use of this technology suggests that it is not an essential weapon in Pakistan's domestic security initiatives.

For both Pakistan and China, there is reason to believe that the underlying motivations of their UCAV transactions are tied to economic concerns relating to CPEC. The initiative has continued to be hampered by widely-reported security concerns, underscoring the need for public reassurance regarding the safekeeping of the endeavour (Express Tribune 2016). To illustrate, former Pakistani diplomat Riaz Muhammad Khan has stated that the success of CPEC hinges upon Pakistan's ability to address its security challenges and that continued relationships with Chinese investors demand the safety of trade routes (Express Tribune 2016). Considering the vested interest that the governments of both China and Pakistan have in seeing CPEC successfully completed, the Chinese-Pakistani UCAV transaction can be understood, at least partially, as a public relations manoeuvre to rebrand Pakistani security, ultimately as a means of gaining power in finance and production.

4.3 Insights from the China-Pakistan UCAV Collaboration

China's motivation in providing UCAV technology internationally is driven by more varied concerns than solely security. The first section of the chapter discussed UCAV transactions as a method for increasing structural power in security through building stronger military-oriented alliances with recipient nations as well as through expanding the presence of Chinese arms globally. The second section addressed UCAV transactions as the means to

publicly protect China's various economic development projects, the ends to which will increase China's structural power in finance and production through greater global economic influence. In both respects, the motivations for selling UCAVs seem to reflect a variety of interests that extend past only providing for the immediate security needs of recipient nations. Ultimately, the Chinese government has utilized its access to UCAV technology to undercut the dominance of the US within the UCAV market and beyond, securing its economic development plans and fostering closer strategic partnerships (Xuetong 2015).

This strategic use of UCAV sales to improve economic and political alliances (thereby bolstering structural power) may not be unique to China. In early 2015, the US released a new policy on drone exports to clarify which nations could potentially receive UAVs through the US (Zenko 2015). While this new policy largely upholds the strict requirements for export seen in the MTCR, it also introduces 'rare occasion' justifications when those requirements may be exempted, leaving open the possibility for the US to pursue drone transfers that had previously been prohibited (Zenko 2015). Unlike the MTCR, which works staunchly against proliferation, this policy arguably allows for a measure of UAV proliferation and suggests that there is lessening opposition to UAV exports on the part of the US government (Zenko 2015). Given this, it should be recognized that there is the potential for more supplier nations, in addition to China, to provide UCAV technology for loosely-related political and economic interests in the future. This potential increases as China continues to export drones more cheaply and with less regulatory hurdles than other UCAV producers, pressuring other suppliers to lower their export requirements as a means of competing with China on the UCAV market to limit China's growing structural power.

5 Israel-India: Why Recipient Nations Receive

Coinciding with Pakistan's acquirement of the Burraq UCAV in early 2015, India began consulting with the government of Israel regarding a $ 400 million procurement plan for Israeli-made armed drones (Gady 2015a). This chapter will address Israel's expedited sale of ten Heron TP UCAVs to India immediately following Pakistan's first use of Burraq in September 2015. In discussing this transaction, focus will be placed upon the interests of India in pursuing UCAVs as a means of providing insight into proliferation aspect 2b, the motivations of countries who choose to dependently acquire UCAVs through collaboration with a supplier nation.

The first section of this chapter will discuss UCAV acquisition as a response to developments in regional power distribution. In this context, the dependent acquisition of UCAVs can be a method for a recipient nation to build relational power compared to its immediate geopolitical neighbours. The second section will address the limits of UCAV acquisition in reference to structural power, arguing that dependent acquisition often does not result in significant structural power changes for recipient nations. It will be argued that the motivations for nations to dependently acquire UCAVs generally involve regional relational power concerns whereas independent acquisition can be pursued as an indicator of structural power. Understanding the motivations of recipient nations in such a manner will illuminate the likely usage and risk areas associated with this method of proliferation.

5.1 UCAV Acquisition and Regional Tensions

India's military had considered plans to acquire Israeli-made UCAVs as early as 2012 but the plans were shelved when they failed to garner the needed political support at the time (Gady 2015a). However, when Pakistan 'sent a message' by featuring Burraq in its military parade, India gained the needed political support and pursued UCAVs of its own. Revived in early 2015 near the time of Pakistan's military parade, the plans were accelerated immediately subsequent to Pakistan's first drone strike in September (Gady 2015b, Miglani 2015). In all respects, India's expedited acquisition of UCAVs appears to be a direct reaction to Pakistan's Burraq drone.

Given the long-standing geopolitical rivalry and contentious border region between the two nations, these actions by India are unsurprising. It has been theorized that the acquisition of UCAVs tends to lower the threshold at which states will authorize the use of force (Zenko and Kreps 2014: 8). This is attributed to the lower risks associated with UCAV use comparable

to other options, such as fighter jets in which pilots are vulnerable (Zenko and Kreps 2014: 8). Given these effects of UCAV acquisition, Pakistan's acquisition should concern India. Pakistan can launch surveillance and strike operations in the contested border region of Kashmir with less disincentives than can India.

In response to this potential for more cavalier military operations on the Pakistan-India border, as well as Pakistan's growing alliance with China, India has chosen to dependently acquire UCAVs of its own, levelling its relational power and capabilities with that of Pakistan (Joshi 2016). It should be noted that this instance of UCAV acquisition was likely not pursued with usage against states in mind. In their current form, UCAVs are vulnerable to anti-air defences and can be easily shot down when used in combat, making it highly unlikely that either India or Pakistan would attempt to use their UCAVs in a direct military confrontation against the other (Davis et al. 2014: 4). However, UCAVs do increase the likelihood of issues along the border. For example, it has been reported that India's new UCAVs will be used in counterinsurgency operations to take out targets specifically in areas outside of India's territory (Gady 2015a). Consider further that the extensive monitoring and targeting capabilities of UCAVs ensure that neighbouring nations will be sensitive to the presence of drones near their borders, particularly in disputed regions (Kreps and Zenko 2014: 75). To illustrate these potential issues, in July 2015 Pakistani authorities reported that they had shot down an Indian surveillance drone taking aerial photos in their territory (Haider 2015). The Indian government denied that the drone belonged to them (Haider 2015). In spite this denial, the incident did impact relations between the nations, ending a short thaw when the Pakistani government lodged a formal protest with the Indian High Commissioner regarding the perceived infringement upon Pakistan's sovereignty (Haider 2015). This incident foreshadows possibly greater mishaps when limited UCAV use begins in the border region, an area where gunfire is already exchanged with some regularity (Miglani 2015).

Despite this potential for an increase in the risk of border skirmishes, India's acquisition of armed Heron drones seems to have been primarily pursued as a means of matching Pakistan's relational power rather than reflecting a pressing need for UCAV security capabilities to protect the border. With a strong air force and over 150 operational surveillance drones, India did not lack the capabilities that UCAVs provide (Gady 2015a). Instead, India aimed to demonstrate to Pakistan that it has access to the same type of advanced weaponry. This analysis suggests that the dependent acquisition of UCAVs can flare regional tensions and spur further proliferation as geopolitical neighbours seek to equal the relational power of recent recipient nations.

5.2 Structural Power and the Limits of Dependent Acquisition

This move raises an important question: Why did India choose to acquire UCAVs in response to Pakistan when India did not seek UCAVs when its other great geopolitical challenge, China, debuted its first UCAV in 2008 (Rawnsley 2016, Roy-Chaudhury 2016)? Although the India-China relationship is not as contentious as that of India-Pakistan, India remains concerned by China's increasing influence in trade and security, reflecting overall structural power growth in security, production, and knowledge (Roy-Chaudhury 2016). Despite these concerns, India did not seek to acquire UCAVs in the aftermath of the development of the CH-3 as it did following that of Burraq. This variance in response is indicative of differences in the type and amount of power conferred upon nations through dependent acquisition compared with independent acquisition.

As explored above, India likely pursued greater relational power relative to Pakistan through its dependent acquisition of UCAVs. Given India's concern regarding the border, relational power is a valuable tool for maintaining the status quo in regards to Pakistan. Similar to India's relation with Pakistan, India and China share a disputed border area. However, unlike India-Pakistan relations, India and China have met regularly in a continuing effort to diplomatically resolve their border issues (Westcott 2016). India's concerns about China surround structural power gains, rather than relational power and capabilities. For example, India has demonstrated unease with the geopolitical impact of China's expansive economic development projects, including CPEC (Stanzel 2015). India is particularly concerned with China's increasing influence in the Indian subcontinent through its alliance with Pakistan and its presence in the Indian Ocean region (Malik 2012: 349). However, due to the reliable India-China diplomatic relationship, the Indian government is not greatly worried about armed conflict with China (Westcott 2016).

The dependent acquisition of UCAVs would do little to help India check China's structural power gains. Through dependent acquisition, recipient nations gain purely the combat and surveillance capabilities of UCAVs, as well as a closer relationship with its supplier nation, representing an increase in relational power. However, to challenge structural power gains, a state must demonstrate a level of structural power itself. In reference to the acquisition of UCAVs, only independent acquisition can demonstrate such structural power.

This distinction between dependent and independent acquisition provides insight into India's continued efforts to independently develop its own UCAV, the Rustom, despite having already acquired armed drones from Israel (Bhat 2016). Described as being in the same class

as US Predator drones in payload and capabilities, the successful development of the Rustom-2 as a top-tier UCAV would illustrate India's structural power in knowledge and production and pose a genuine challenge to China's recent power gains (Press Trust of India 2013). In this sense, independent acquisition remains an alluring achievement for world powers regardless of any pre-existing dependent access to UCAVs.

5.3 Insights from Israel-India UCAV Collaboration

India's dependent acquisition of UCAVs in response to Pakistan's capabilities illustrates the propensity of drone acquisition to ignite regional tensions and spur further acquisition. This is attributable to competition for regional relational power between geopolitical neighbours. Such competition increases the chance that UCAVs will be used in regional interstate skirmishes when tensions between neighbouring nations flare. This risk is particularly pronounced in the South Asian region where multiple potential flashpoints exist and crises could unfold simultaneously (Council on Foreign Relations 2016). Similarly tense regions, such as the Middle East, could also face an increased risk of conflict as UCAVs spread in the area.

Ultimately, dependent acquisition of UCAVs presents an opportunity for nations to gain power relative to their immediate geopolitical neighbours. However, dependent acquisition does not confer the same structural power benefits as would independent acquisition, an achievement which demonstrates a state's technological superiority. As such, many nations continue to pursue independently acquired UCAVs even after receiving UCAVs from a reliable supplier nation. This was shown to be the case for the UK as well as India. Given this, it should be expected that nations will continue to pursue independent acquisition in addition to dependent acquisition, further driving proliferation.

6 Responsibly Addressing UCAV Proliferation

The rate of drone proliferation, particularly in reference to UCAVs, is rapidly increasing. Compared to the early 2000s when only a handful of countries had access to any type of drone, the number of countries with access to UAVs has more than doubled since 2006 (Cali 2013). The growing number of nations with access to this advanced weaponry comes at a time when the permissible use of UCAVs remains murky under international law and precedents set by the US have established dangerously low thresholds for the use of force through UCAVs (Brooks 2014: 83, Zenko and Kreps 2014: 10). Simultaneously, the threat of non-state actors acquiring armed drone capabilities is growing (Boyle 2015: 78). Hamas and Hezbollah are already thought to have some form of armed drone, most likely through explosives attached to an unarmed drone, underscoring the dangers of unarmed drone proliferation as well as that of armed drones (Dillow 2016a). In the face of these disconcerting trends, addressing ways to curb proliferation is key.

The first section of this chapter will discuss strategies for halting the dependent acquisition of UCAVs, currently the largest driver of proliferation. As discussed above, dependent acquisition frequently involves relational power struggles and often occurs in tense regions, making such acquisition notably concerning. Dependent acquisition of unarmed UAVs is also the means through which non-state actors can eventually acquire armed drone capabilities, presenting another incentive for restraining drone trade. Ultimately, however, the continued pursuit of independent acquisition will result in more nations gaining UCAV technology over time. As such, the second section will explore the need to establish international norms and procedures regarding the acceptable use of drones, armed and otherwise, to prevent misperceptions or unintended escalation as this technology spreads.

6.1 Curbing Dependent Acquisition

In order to deter further proliferation through dependent acquisition, it is necessary to address proliferation aspects 2a and 2b directly, beginning with aspect 2b. As explored in the previous three chapters, recipient states have demonstrated a strong interest in gaining armed drone capabilities as a method of building their relational power. However, this desire is largely limited to states who face a challenging security environment, such as a shared border with geopolitical rivals, and therefore seek UCAVs to attain greater power relative to their neighbours and other security risks (Horowitz and Fuhrmann 2016: 6-8). Given this, curbing UCAV proliferation in respect to the motivations of recipient nations can be achieved by

diminishing the perceived utility of UCAVs. For example, the United States could lead the international community in establishing severe repercussions, such as economic sanctions or diminished diplomatic relations, for the usage of UCAVs outside of designated combat zones or across national borders. Introducing these consequences for the unauthorized use of UCAVs could deter otherwise interested buyers from pursuing dependent acquisition because the high cost of utilizing the weaponry would render it useless. This course of action could realistically be achieved with the vast economic and diplomatic reach of the US, although it would be deeply problematic given the questionable UCAV use of the US over the past decade (Zenko and Kreps 2014: 20-21).

Alternatively, supplier nations could restrict UAV exports to tense geographical regions, eliminating much of the demand for UCAVs by removing interested parties from the possible pool of buyers. This method would require cooperation on the part of all supplier nations, addressing proliferation aspect 2a. Given the small number of potential supplier nations, options for governments seeking to acquire UCAVs are already limited. The United States, a member of the MTCR, has been shown to be prudent in its UAV exports (Dillow 2016b). Although not a member state, Israel's precarious security situation has led it to be similarly cautious in exporting UCAVs and thus it has nominally adhered to the MTCR (Dillow 2016a). In disregard of these MTCR regulations, it is China as a non-member state that has offered a worryingly accessible route for interested groups to purchase UCAVs, enabling increasing sales and a greater share of the global UAV trade (Dillow 2016b). With China's unusually large role in UCAV proliferation through dependent acquisition, it is vital to address this nation directly to deter further transactions.

Officially speaking, China's domestic export policies match the requirements of international non-proliferation regimes, including the MTCR (Yuan et al. 2002: 155-157). However, the country has struggled to adequately implement and enforce these policies (Yuan et al. 2002: 165). Additionally, since it is not a member of the MTCR, China is able to interpret and selectively enforce its regulations without input from the international community (Yuan et al. 2002: 166). With this in mind, the most practical method to change China's UAV export tendencies would be to admit it as a full member in the MTCR (Gormley 2013: 77). This would foster increased transparency in China's exports and allow other members states to enforce MTCR export controls on their UAV sales (Gormley 2013: 77). This would also allow MTCR member states to aid and instruct China in effectively implementing these export controls (Yuan et al. 2002: 166).

Ultimately, however, the MTCR itself requires relatively significant updates to better cope with the proliferation of UAVs. Most pressingly, the distinction between Category I and Category II exports should be re-evaluated. As Zenko and Kreps note, the payload and flight distinctions that separate Category I and II exports are arbitrary and drones that technically fall under the less restrictive Category II exports can still have strongly destabilizing effects (2014: 17-18). Consider the Predator UCAV whose original model falls under Category I. Faced with tougher export controls, General Atomics has developed the Predator XP which has reduced its capabilities to meet Category II requirements while maintaining many of its advanced capabilities, including the ability to add laser designators to highlight ground targets for attack (Capaccio 2015, Zenko and Kreps 2014: 18). In place of the payload and flight distinctions, it would perhaps be more valuable to distinguish UAVs based upon their intended or presumable mission type, differentiating between lethal and nonlethal (Zenko and Kreps 2014: 18). Furthermore, the strong presumption of denial that is currently applied unconditionally to Category I exports should be applied unconditionally to both Category I and II drones to account for the ease with which it is possible to arm an otherwise unarmed drone (Zenko and Kreps 2014: 27). This will help prevent the acquisition of armed drone capabilities by non-state or unauthorized actors. If all potential supplier nations work in tandem through the MTCR, enacting these stronger restrictions on the export of both armed and unarmed drones can drastically reduce the rate of UCAV proliferation, particularly in tense geographical regions.

6.2 Developing International Norms Surrounding the Use of UCAVs

Despite efforts to curtail dependent acquisition of UCAVs, it is highly likely that governments will continue to pursue the independent development of this weaponry, contributing to increasing UCAV proliferation, albeit at a slower rate. As illustrated in the cases of the United Kingdom and India, even nations with access to advanced UCAVs through a reliable supplier nation persist in their plans to produce armed drones domestically. The structural power benefits, freedom of action gained by independent production, and the prestige associated with UCAV development, taken alongside the already-established relational power gained from UCAV capabilities, ensures that independent acquisition will remain an appealing route for drone proliferation in the immediate future (Boyle 2015: 78). Given this, formulating coherent international norms and policies surrounding the acceptable use of UCAVs is of utmost importance.

There are a number of established laws that can feasibly establish the acceptable use of UCAVs, including the laws governing aerial and missile warfare, specialized weapons treaties, The Hague and Geneva Conventions, and the UN Charter (Vogel 2010: 137). However, these laws are not uniformly and fairly enforced (Vogel 2010: 137). In lieu of an apparent international consensus, it is possible that governments will look to the US usages of UCAVs as a precedent for their own uses (Davis et al. 2014: 19). This is a disconcerting prospect given the analysis of UN special rapporteur Christof Heyns who has argued that targeted drone strikes undermine international law and suggested that some strikes are war crimes (Bowcott 2012). In the future, other governments may choose to replicate the actions of the US in similar disregard of international law (Bowcott 2012). With this possibility in mind, reliance upon precedence in this area should be firmly disavowed and replaced with a strong set of guidelines respecting the sovereignty of independent states and the universal human rights recognized by the UN.

In his article on *Drone Warfare and the Law of Armed Conflict*, Vogel offers ten guiding principles for the lawful conducting of drone strikes (2010: 138). As a whole, the list presents a coherent policy for ensuring the restrained legal use of UCAVs for targeted killings. Three of these principles in particular can ensure that conflicts utilizing UCAVs do not escalate as a result of either relational or structural power struggles. These three principles read:

> A drone strike must be directed only at lawful targets—i.e., combatants, civilians who have forfeited their protections by directly participating in hostilities, and military objectives… A drone strike must be conducted within the framework of an actual armed conflict... Commanders and operators should receive prior consent (even if blanket approval) from the state in whose territory the strike will occur…(Vogel 2010: 138)

Limiting drone operations to proper targets in a recognized zone of conflict and, more importantly, requiring that strikes be carried out with consent of the government who administers the territory of the strike will prevent states from undermining one another in their use of UCAVs. Ultimately, these types of regulations can ensure that the usage of UCAVs will not be subjected to the same competitive and damaging power concerns that have driven its proliferation.

7 Conclusion

The application of Strange's theory of power has provided valuable insights into the future of UCAV proliferation. For the immediate future, independent acquisition is unlikely to be a large source of further proliferation. The high levels of investment needed in knowledge and production as well as the length of time required for development ensures that UCAV development is currently out of reach for many interested nations. However, the continued efforts by the UK and India to independently acquire UCAVs foreshadows likely similar efforts from more nations going forward. As such, it is likely that independent acquisition will become the primary method of UCAV proliferation in the more distant future.

Dependent acquisition remains the most likely source of UCAV proliferation for the near future. This research has demonstrated that supplier nations, motivated by a variety of political and economic power interests, may provide UCAVs to allies as a means of bolstering their own status on the international stage. China, in particular, has engaged in this type of practice and will probably continue to do so. Meanwhile, recipient nations have been driven to pursue UCAVs by relational power concerns, principally in the dimension of security but also including production and finance.

These results suggest that curbing ongoing proliferation is unlikely. Supplier nations have not adopted uniform export regulations for UCAVs, allowing interested parties to appeal to multiple potential suppliers. The perceived power benefits accompanying UCAV acquisition ensure that an increasing number of nations will seek out this technology, dependently or independently. An important issue for future research could be the impact of the private sector in encouraging UCAV transactions on the international market, a subject matter only briefly addressed in this analysis.

The most concerning implication of this research extends beyond the proliferation of UCAVs. Given the extent to which the acquisition of UCAVs seems to be influenced by unrelated power concerns, it is possible that the use of UCAVs could be impacted by similar interests. This potentiality underscores the need for the international community to collaborate in creating and promoting uniform standards for the acceptable uses of UCAVs, nullifying US precedent in this matter. These standards can help to ensure that UCAV use does not increase the chances of interstate conflict.

Although not addressed in this research, further work should be done by the international community to create acceptable standards for the domestic use of UCAVs, protecting citizens

from governments and groups that could abuse this technology.[3] This is just one of many unresolved issues surrounding the use of UCAVs. Other issues include the legality of extrajudicial killings,[4] the potential for continuous warfare,[5] and the ethicality of autonomous UCAVs.[6] Given the probability that this technology will continue to advance and spread, it is of utmost importance that these issues are discussed outside of academia. The issues surrounding UCAVs must be addressed by international regulations and consistently enforced across all groups.

[3] For further analysis on this topic, see Steven Levine (2014). 'Drones Threaten Democratic Decision Making', in Bradley Strawser (ed.), *Opposing Perspectives on the Drone Debate*, New York: Palgrave Macmillan.

[4] For further analysis on this topic, see Gabriella Blum and Philip Heymann (2010). 'Law and Policy of Targeted Killing', *Harvard National Security Journal*, 1: 145-170.

[5] For further analysis on this topic, see Christian Enemark (2014). 'Drones, Risk, and Perpetual Force', *Ethics & International Affairs* 28 (3): 365-381.

[6] For further analysis on this topic, see Noel Sharkey (2011). 'Automating Warfare: Lessons Learned from the Drones', *Journal of Law, Information, and Science*, 21 (2):140-154.

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