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Defining and Distinguishing Homeland from National Security and Climate-Related Environmental Security, in Theory and Practice

Abstract: The worsening effects of human-caused climate change, as well as issues most American view as "homeland security" (HS) can be seen in the news almost every day. Yet most in the general public and even many in security-related fields do not connect the two arenas, even though climate change, and interrelated resource competition and conflicts that together make up the growing field of environmental security (ES), are increasingly important risk and response variables for homeland security and emergency management. Current climate change effects are already destructive and volatile, but the future projected impacts are likely to be severe and costly to the economic, political, and social health of many nations as well as to a large proportion of the world's population. The focus of this paper is to describe and connect the evolving concepts of environmental security, homeland security, and national security (NS). Definitions and missions for each concept are discussed, consistent with current, even if contested, practice and theory. Better comparative analysis of these unique but intimately connected realms will help advance the development of more comprehensive and sustainable security policy and strategy.

Keywords: climate change; environmental security; homeland security; natural disasters; terrorism.

[Climate change] "… is probably the most likely thing… that will cripple the security environment, probably more likely than the other scenarios we all often talk about."
                              – Admiral Samuel Locklear, PACCOM Commander (Boston Globe, 2013)

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1 Unifying Environmental Securities

Anthropogenic climate change is a growing existential problem set that encompasses a wide range of homeland security, emergency management and national security policy issues. If unmitigated and allowed to continue on its present course, global warming and resulting climate disruption, combined with global population growth and intensifying competition for depleted resources, will eventually threaten every aspect of human security and alter life on Earth in historically unprecedented ways.

After the 9/11 and anthrax biological attacks, American "homeland security" was initially and almost exclusively about terrorism prevention and response. But after Hurricane Katrina, this developing HS doctrine also came to include (though still far overshadowed by the terrorism mission) a presumed "all-hazards" approach incorporating risks from natural disasters (Bellavita 2008). Climate change risks fit squarely within a (somewhat) broadened, more complex post-Katrina interpretation of a homeland security enterprise. Not only does climate change and disruption[1] increase the immediate need for natural disaster preparation, response and resiliency challenges in the context of civilian domestic homeland security and emergency management, but it also already threatens to exacerbate global instability, political violence and terrorism – and thus US (and its allies') national interests.

The effectiveness of post-September 11th US homeland security (HS) practice, broadly writ, has been strongly criticized, as discussed below – not only because of perceived waste, inefficiencies, and debate about the militarization of U.S. domestic policing in places like Ferguson, MO (HSNW 2014; Kraska 2007), but also because perception of comparative disaster risk, and thus of the HS mission at various levels of government (local, state, national, and global), continues to evolve. Vigorous organizational, policy, and theoretical debates aside, however, homeland security research and practice has become a complex and dynamic arena that borrows from many established social science, physical science, and professional disciplines. As the above quote by the US Pacific Command's Admiral Locklear (Bender 2013) suggests, climate change and broader *environmental security* (ES) related challenges are rapidly becoming some of the most important disruptive and expensive direct threats and threat multipliers (Ramsay and O'Sullivan 2013; NCA 2014; DoD 2014). Consequently, developing a better understanding of the relevance and interrelationships among homeland security,

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1 We will use climate *change* and climate *disruption* interchangeably here, given that while the former is the most commonly used, the latter is increasingly employed by climate experts and more accurately captures the dramatic effects of global warming.

environmental security, and national security (NS) policy, practice and intellectual boundaries is imperative for guiding broader US domestic and international security policy formulation.

In the US, there continues to be political resistance to embracing the incorporation of environmental security into HS and NS, particularly stemming from ongoing, politically charged denial of climate science (Oreskes and Conway 2010; McCright and Dunlap 2011a,b; Maibach et al. 2013). Regardless, global warming and climate disruption are very real, and because of this ES will likely become one day the single most important unifying component of homeland security/ emergency management and national security risk analysis and policy response.

2 The Case for Environmental Security as a Key Element of Homeland Security

There is a broad scientific consensus that climate change is occurring, and that it is primarily caused by anthropogenic greenhouse gas emissions (Doran and Zimmerman 2009; Cook et al. 2013; IPCC 2013; NASA 2013; NCA 2014). In addition, a wide variety of recent government and academic analyses agree that climate is a domestic and international security problem, especially in less developed countries already stressed by resource and socioeconomic challenges. Environmental security risks, whether catastrophic and acute, or slow developing, arise from a complex, mutually reinforcing interaction of natural disasters caused by extreme weather, climate shifts, and other catastrophic environmental disruptions, population growth, and development pressures on both the environment (pollution, land-use, growing standards of living) and key resources availability. In various combinations, these can result directly or indirectly in conflicts over energy, food, water, land, strategic minerals (etc.) and consequently political, psychological, and civil disruptions. Such disruptions in affected societies may exacerbate political violence and socio-economic instability, and lead to weak- and failed nation-states. Disasters such as Hurricanes Katrina and Sandy, or the 2011 Japanese Tohoku earthquake and subsequent tsunami (and the ensuing Fukushima nuclear plant meltdown) cause damage, economic losses, and injury, and can leave lingering scars in even wealthy, post-industrialized (i.e. more developed) nations. But the human toll on less developed societies is considerably greater, due to already-fragile infrastructure and resilience.

Among the many recent related studies, a National Academies of Science report noted that there is a rising risk of cascading failures in global supplies of food, water, and other key commodities, and highlighted the risks to public health,

and economic and political systems (Steinbruner et al. 2012). Other studies have asserted the security implications of increasing record-high temperatures and drought, stronger hurricanes/cyclones, increases in precipitation and climate variability, a warming Arctic (with geopolitical implications to ice-free Arctic Ocean), potentially catastrophic sea level rise by the end of the century, and the overall acceleration of warming (e.g. McElroy and Baker 2012; Kurukulasuriya and Rosenthal 2013; National Climate Assessment 2014). Coupled with the changes that have already occurred, these future threats will be extremely costly, both to less developed as well as the wealthier industrialized nations (Haines et al. 2006). It is estimated that climate change already contributes globally to 400,000 deaths per year, and reduces global GDP by over 1.6% – equivalent to $1.2 trillion in current damage, and significantly greater damage is projected for as soon as 2030, when economic losses may rise to 3.2% of global GDP (DARA International 2012). For less-developed countries (LDCs), economic lossed may reach as much as 11% of GDP in less than a generation and there are projections that the economic effects may turn out to be even greater than that (Stern 2013). Assuming a relatively unchanged rate of greenhouse gas emissions, such losses may skyrocket. One recent *Nature* study concludes that the cascading effects of Arctic warming alone could eventually cost the global economy as much as $60 trillion (Whiteman et al. 2013).

The projections for US climate effects are growing worse, as well, as policy response continues to be sporadic and contentious. A 2014 White House Council of Economic Advisors report asserted that the economic consequences of delaying climate mitigation measures by even one decade would increase total response costs by around 40%, and that subsequently failing to implement any measures would significantly damage the U.S. economy – costing it as much as 1% of GDP (around $150 billion) per year under even low-end climate scenarios of 3 degrees Celsius total global warming (White House 2014).

Definitions matter to policy makers, not only regarding what both HS and environmental security are and are not, but also for the normative aspects of these contested fields – that is, what they *should* be. Indeed, there are multiple definitions of HS, probably as a result or function of its many mandates, organizational manifestations, origins, pivotal events, and critiques in American society. The various manifestations of HS even before, but particularly since 9/11 have been at times schizophrenic and dysfunctional, in both theory and practice. While this was to be expected for a "new"[2] consolidated practice field such as HS, the results of this have arguably included a distortion of US domestic security (Potok 2013) and economic priorities, wasted resources (Coats et al.

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2 Obviously the operational and many of the institutional components of HS existed well before the post-9/11 restructuring of federal and national priorities, as discussed further below.

2006; Cole and Dempsey 2006; Hedgpeth 2008; Mueller and Stewart 2011b; Brattberg 2012; Kouri 2012) and destructive erosion of American civil liberties (Cole and Dempsey 2006; Pierce 2012; Turley 2012; Webster 2009), including a disturbing trend toward the militarization of domestic policing (Kraska 2007). Better defined but broadly inclusive homeland security analysis and practice would improve policy priorities and shift HS practice back toward what *should* be its mission: The security and resilience of civilian domestic populations against naturally occurring and man-made threats, practiced in ways that preserve the foundations of democracy, government, the economy, and civil society. Related to that mission reprioritization, resources must be shifted back toward sensible comparative risk analysis that better incorporates the growing, existential climate change/environmental security challenges.

    Despite the obvious areas of collaborative overlap, and in order to address specific security challenges, each of these arenas – HS, NS, and even ES – must also operate independently, with unique missions and identities at both the policy/practice and academic theory levels. Of course, for the average citizen, who ultimately demands safety and security from government, and who is far more concerned with how effective the *practice* is, rather than the theory underlying the practice, the nuances or boundaries of analytic academic disciplines are relatively unimportant. But in the 21st century, in order for practitioners and analysts (scholarly or otherwise) to best understand and optimize evolving homeland security and emergency management requires integrating the complex concepts, theory, and underlying principles of environmental security. These overlaps and distinctions are framed below, in line with the argument that disruptive anthropogenic climate change is rapidly becoming one of the most critical unifying variables in all three of these security realms.

3 Separate but Overlapping Domains: What Homeland Security, Environmental Security, and National Security are and, Possibly as Important, What They are Not

Natural disasters and resource conflicts can beget societal stress at best, or major security crises and resultant political conflict at worst, whether or not they are primarily or secondarily related to climate change (NRC 2013). To better frame HS theory, both national security and homeland security policy makers should continue their recent, tentative embrace of environmental security risk assessment

and response variables (FEMA 2012; DoD 2014; NCA 2014), which are becoming among the more important in their portfolios, as does, for example, the 2014 Quadrennial Homeland Security Review (QHSR) (DoD 2014).

Figure 1 illustrates several hypothesized relationships, both the independent and dependent variables, as well as the overlapping character of the environmental security, homeland security and national security domains.

3.1 Describing Three Key Interdependent Security Systems

1. Environmental Security, as noted above, is mainly about two central issues: the environment and resources. Though contested as a term, environmental security has been used since at least the 1990s (Graeger 1996). The following definition of ES – the authors' – encompasses the most important variables, contexts, and problem sets: *Environmental security comprises analysis and problem-solving addressing how extreme environmental or climatic events and ecosystem degradation, in concert with resource conflicts, can either lead to – or result in feedback from – local, regional, or broader geopolitical instability and risk to human systems and critical infrastructure* (Ramsay and O'Sullivan 2013).
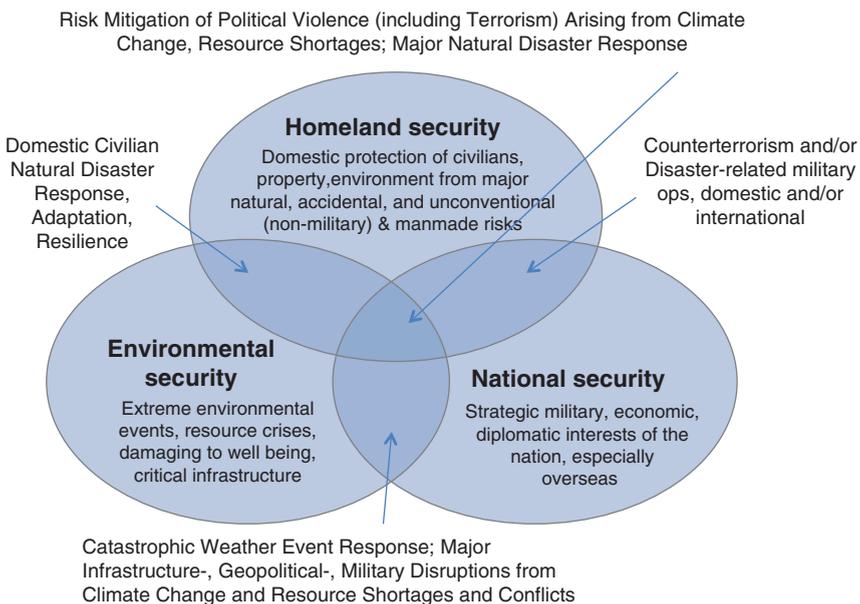
Figure 1 Hypothesized Relationships among Homeland, Environmental, and National Security.

2. Homeland Security is primarily about *domestic* prevention, protection, and response related to major naturally occurring, accidental, and manmade disaster risks to *civilians* and property.[3] This includes security for unconventional political violence risks (terrorism). Among the many "official" American government definitions of homeland security is from the first ever Quadrennial Homeland Security Review (QHSR) from February, 2010: "Homeland security describes the intersection of evolving threats and hazards with traditional governmental and civic responsibilities for civil defense, emergency response, law enforcement, customs, border control, and immigration." (DHS 2010, ii).

Despite the growth of the US federal Department of Homeland Security over the last decade-plus, most HS and emergency management practice exists and occurs locally, not nationally. And yet, US homeland security practice, policy, and even academic analysis has been heavily driven by the activities and funding priorities of both the Department of Homeland Security, and related Congressional prioritization. However, "homeland security" at all policy levels appears to have failed to consistently employ comparative risk-based methodologies when characterizing the threat environment and establishing security priorities (GAO February 2007, GAO September 2011; Masse et al. 2007; Mueller and Stewart 2011b).[4] Even under the narrowest framing of HS as dealing predominantly with domestic terrorism threats, there has been legitimate concern about "probability neglect," as Mueller and Stewart (2011a) refer to the failure of homeland security policy, and particularly of DHS, to evaluate policies in a cost-benefit context, or to base them on either actual or even reasonably well-projected probabilities. This is all the more problematic in an era of major federal and state-level budget cuts, which in turn directly affects HS and emergency management spending overall. Combined with continuing priorities still heavily skewed toward terrorism and domestic crime (e.g., war on drugs), the current era of federal budget austerity is also significantly challenging critical disaster/emergency management research, preparation, and response capabilities, and overall critical infrastructures (Chavkin 2011; Hulse 2011; Donahue et al. 2012; Egli 2013).

Across the US *federal* government alone, a multitude of definitions and framings inform homeland security mission statements. A 2013 Congressional

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3 The FBI defines terrorism as "the unlawful use of force or violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof in furtherance of political or social objectives." See for instance http://www.fbi.gov/albuquerque/about-us/what-we-investigate.

4 This essay does not aim to fully argue the range of policy-related reasons for a separate academic discipline; but at a minimum, because there has not been a systematic testing of assumptions about HS policy and spending, at least beyond the level of government reports and an atomized level of academic analysis, it is far more difficult to inform policymaking.

Research Service (CRS) Report asserted that the lack of common homeland security definitions, and conflicting and confused institutional missions, is detrimental to both US homeland security strategy and Congressional oversight (Reese 2013).

Ideally, from a normative standpoint, the homeland security enterprise should be an integrative effort with extensive comparative risk analysis and cost-benefit assessment, representing a wide range of significant, overlapping, traditional and non-traditional security challenges. Such non-traditional security challenges include climate change and environmental security – which have traditionally received inadequate societal/policy focus at the US federal level, including from Congress and homeland security-related agencies, despite rhetorical evidence to the contrary (McKibben 2013).

The existence of a federal institution (DHS) devoted to domestic civilian security does not address the question of whether homeland security deserves status as an intellectual/academic discipline that can add "significant value not provided by other disciplines" (Bellavita 2011), nor at the bureaucratic level questions about whether HS should be effectively (re)-absorbed back into the various respective constituent practice areas (i.e. local public safety and law enforcement, national security, and broader emergency management,[5] from where it came. Nonetheless, problem sets such as climate change and ES illustrate more than ever the need to keep domestic civilian HS as a separate but overlapping enterprise, with a unique mission and portfolio, as well as a robust academic and theoretical agenda (Ramsay et al. 2010).

3. National security: The term national security (NS) is also a contested one, but traditionally is associated with various elements of national defense. Thus, NS can be characterized as "safeguarding of a people, territory, and way of life... [that includes] protection against "attack on the territory and the people of the US in order to ensure survival with fundamental values and institutions intact; promotion of values; and economic prosperity" (Jordan et al. 2011: pp. 3–4). Maier (1990) defines national security (NS) as: "...a capacity to control those domestic and foreign conditions that the public opinion of a given community believes necessary to enjoy its own self-determination or autonomy, prosperity and well-being." Broad as these definitions may be, for the purposes of this paper, national

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5 Emergency management is itself a relatively new academic and practice field, which did not take off until the 1980s as a practice field, and academic programs primarily in the 1990s (and particularly after 9/11, along with HS), around the heyday of the Federal Emergency Management Agency (FEMA) as a cabinet level organization. Today, FEMA is part of the Department of Homeland Security. See for instance the FEMA Higher Education Project for good sources on this.

security may be simply characterized as *strategic military, economic, diplomatic interests of the nation, especially at the borders and overseas*.

In the post-Cold War world, the national security apparatus addresses strategic interests that are primarily *outside* or *at* the nation's borders, even though post-9/11 mission reorientation includes significant activities under the US Northern Command (USNORTHCOM), intended to support domestic civilian authorities. Elements of these institutions are embedded in the executive branch of federal government, including the National Security Council, Intelligence Community (IC) – especially NSA, DIA, CIA, etc.; the Department of Defense and its main military branches; State Department; and even various trade-related institutions such as the US Trade Representative's office. Nonetheless, there have long been certain gray areas, with overlap including: the Coast Guard (one of the five branches of the US military); the Department of Homeland Security (since 2003); and overseas (usually counter-terrorism) functioning of the Federal Bureau of Investigation (FBI); employment of the National Guard in times of disaster, or federalization and deployment of the Guard in times of war; and involvement of the US Army Corps of Engineers in design and management of US waterways – such as the New Orleans levies and flood walls (Kapucu 2011). At the international level, national security missions have been diversifying, and shifting increasingly toward more humanitarian disaster aid and peacekeeping, even while maintaining a significant combat capability around the world (Ricks 2011).

Especially since around the end of the Cold War, environmental issues and other non-traditional arenas have become increasingly "securitized" (Barnett 2010: pp. 125–127).

3.2 Unique Distinctions and Overlaps Between the Three Expressions of Security

3.2.1 Homeland Security and Environmental Security (HS/ES)

As previously noted, the overlap of homeland security and environmental security mainly involves domestic-civilian natural disaster response, and climate change-related adaptation and/or resilience-buildings activities and initiatives. But homeland security ultimately will also have to address the indirect secondary and tertiary effects of climate change and resource competition on social systems, critical infrastructure protection, and political disruption – including some problems initially emanating overseas, but all destined to have an impact on US domestic security, broadly writ.

Although the main federal organization in charge of ES-related HS is the Federal Emergency Management Agency (FEMA), a part of the Department of Homeland Security, a large measure of the overlapping environmental security-related homeland security risk analysis (of natural disaster, accident, and terrorism threats to people and property) and disaster response occurs at state and local government levels – and a significant amount of that within the private sector. Severe environmental and climatic events, resource disruptions and conflicts, and related political instability will all have a significant impact on already ailing critical infrastructures (Rosenzweig et al. 2011; ASCE, 2013) and overall civilian security, at home and abroad.

Indeed, climate change is already severely affecting local and state-level critical infrastructure (CI). For instance, one American climatic weather trend has been a major increase in high-volume *deluge rainfall* (and in the winter, blizzards), particularly in the American South, upper Midwest and Northeast, where the incidence of such damaging events has risen 27%, 37%, and 71% respectively since 1958 (National Climate Assessment 2014). Extreme precipitation events can overwhelm and destroy infrastructure under the best of circumstances, but especially CI that is already outdated or crumbling, such as drainage/sewer systems, water treatment facilities, and bridges and roads that have not been properly maintained or replaced (PBS Newshour 2013; Gertz 2014).

Before her departure as Secretary of Homeland Security, Janet Napolitano oversaw an enhanced institutional awareness at DHS of climate change adaptation and analysis issues (Napolitano 2013). For example, the 2010 Quadrennial *Homeland Security* Review (QHSR) highlighted the issues (DHS 2010), and FEMA's Strategic Foresight Initiatives (Caudle 2012) began to more systematically address climate risk issues head-on. Further, in 2013, DHS announced it was reviewing the National Infrastructure Protection Plan to account for global warming/climate change-related risks (DHS 2013b).

There are countless dynamic and important areas involved in the (domestic and international) nexus between environmental security and homeland security. The following are two illustrative examples:

3.2.1.1 Climate Migrants and Refugees

By mid-century, those displaced by climate change and resource crises will number in the millions, and by end of century in the 100s of millions. Some of these people live on land already threatened by rising seas and increasingly saline water tables.[6] For example, roughly 20% of Bangladesh would be uninhabitable if

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6 Sea level rise causes saltwater intrusion that contaminates underground fresh water sources and fertile river delta farmland close to coasts.

seas rise just two feet, something that could occur as early as mid-century), forcing a significant portion of Bangladeshi society to migrate. Meanwhile, for wealthier nations, this means that climate change could motivate large and unsustainable immigration pressures at their borders. And in addition to in-migration, there could be US challenges arising from "internal climate refugees" eventually as well: First from those areas most affected by extended drought across the American West and Southwest, as large areas become 1920s-like dust bowls (Munson et al. 2011), with growing water shortages from extended heat, drought, and rapid ground water depletion, making farming and ranching difficult or impossible, and increasing the risks of regional catastrophic crop failures (NRC 2012, 2013); and secondly, coastal areas will be increasingly inundated by rising ocean levels, forcing local residents to migrate inland (NRC 2012, 2013; NCA 2014), especially in low-lying cities such as Miami, FL and Charleston, SC (Magill 2014).

3.2.1.2 Critical Infrastructure Threats

Highlighted in the latest National Infrastructure Protection Plan (DHS 2013b), the number of economic/infrastructure sectors considered "critical" to US National Security has steadily risen over the last 10 years from 10 to 18 now (DHS 2013a). Climate change has the potential to directly threaten almost all of these important economic and security sectors over the coming decades – from food and water, to energy, transportation, to healthcare and many others (Wilby and Dessai 2010; NRC 2013).

Following disasters such as Hurricane Katrina and Superstorm Sandy, average Americans and policymakers alike (at least those not already so aware) have realized that even natural disasters could be so traumatic, expensive and disruptive that they should be "homeland security" concerns (Adamski 2006). This has been particularly demonstrated by the need during large scale disasters for federal assistance via FEMA, now an integral component of DHS and therefore of the overarching domestic-civilian security enterprise. And as it is well documented, there has been an increase in large, over $1 billion natural and man-made disasters in the United States in recent decades, with estimated losses in 2013 alone at around $140 billion (Insurance Journal 2013). Most private and public sector (including academic and government sector) disaster analysts recognize that climate change is at least part of this troubling causal trend.

3.2.2 Environmental Security and National Security (ES/NS)

The overlap of ES and NS is also partly in the realm of climate change-related catastrophic weather disaster planning and response. But the environmental and

national security nexus anticipates ES-related threats to national security from political-economic vulnerabilities related to damage, to critical infrastructure, and civilian communities overall, due to rising sea levels and extreme weather events. Furthermore, these climate-related geopolitical disruptions will be exacerbated by expanding global competition for finite resources such as fossil fuels energy (oil and gas), food and water, and strategic minerals. These threat multipliers will especially create national security concerns in less developed nations (Klare 2012), from the secondary effects of enhanced political or religious radicalization and weakened political-economies. But because of this projected instability, these issues will clearly also be ones threatening to US and overall Western national security (Nanto 2011).

It is primarily only within very recent years, during the first term of Barack Obama, that the national security establishment has begun to more extensively address the deep, growing environmental security risks from green house gas emissions that threaten the US economy, the physical safety and health of American citizens, and even traditional national security interests overseas (Ramsay and O'Sullivan 2013). Both the Pentagon's 2010 and 2014 *Quadrennial Defense Reviews* (QDRs) – its central planning document (DoD 2010, 2014) – addressed for the first time the need to adjust the US military's strategic mission to include the interacting influence of climate change and resource supply shortages. Both QDRs emphasized the growing importance of military involvement in crisis/disaster management, the threat of rising ocean levels to critical military infrastructure (e.g. naval bases at sea level), and risks to US strategic interests overseas. The Pentagon has been very active in investing in alternative (and renewable) energy technologies, as well, in order to reduce costs and dependence on foreign energy supplies, and reduce vulnerable supply lines in times of armed conflict (Karvetski et al. 2011; Reardon 2012).

The 2010 QDR asserted that climate change, in combination with poverty, rapid urbanization, overall environmental degradation, rising resource demands, new disease strains, and a variety of other socio-political and economic tensions will weaken fragile governments, and are among the complex, interacting trends that could be the trigger for future political conflicts (DoD 2010). And the most recent 2014 QDR went even further, asserting that climate change disruption is a serious enough national security vulnerability that it, along with other variables, will promote terrorism. In addition, it notes the "impacts of climate change may increase the frequency, scale, and complexity of future missions, including defense support to civil authorities, while at the same time undermining the capacity of our domestic installations to support training activities" (DoD 2014).

One notable case in which climate change may have contributed to geopolitical and economic instability lies in the Arab spring (aka the "Arab Awakening").

Originating with political protests in Tunisia related to food price increases, then spreading to other countries in the region, the Arab Spring was likely triggered in part by a severe and prolonged 2010 Russian drought that drove global food prices up (Kolesnikova 2010; Baragona 2011; Breisinger et al. 2011; Johnstone and Mazo 2011; McMichael 2014). Further, in the case of Syria, an extended drought in 2006–2011 linked to climate change created and subsequently drove climate refugees into urban areas and helped to destabilize them, contributing at least one threat multiplier to the eventual civil war there (Plumer 2013; Werrell and Femia 2013).

Recent changes in the polar ice cover in the Arctic represents another instance of developing geopolitical tensions over territorial claims and resource rights. For the first time in recent history, scientists soon expect there to be year-round shipping lanes through the Arctic. This relatively new level of access to the Arctic has in turn created access to the vast mineral, water, fish and oil and gas wealth that's historically been out of reach. Such access to natural resources has motivated new challenges to international policy. For example, the Russian Federation is known to have planted a flag at the bottom of the Arctic Ocean, claiming all such territory (and therefore the natural resource and mineral wealth it holds), and has now stationed new military forces in the area, presumably to enforce its territorial claim (Wong and Lengell 2012; Berkman and Vylegzhanin 2013; Chalecki 2013).

Unfortunately, from an international diplomatic or military perspective, the United States is not a signatory to the United Nations Convention Law of the Sea (UNCLOS), and therefore does not have formal diplomatic entrée into discussions or disputes about the sovereignty or use of the Arctic, though it clearly has strategic interests in the area (ibid). Because the United States is an Arctic nation (because of Alaska), as Arctic sea ice declines, such competition for territory and resources clearly illustrates a nexus between traditional concepts of national security and environmental security, but also with the continuously emerging concept of homeland security (further explored below).

3.2.3 Homeland Security and National Security (HS/NS)

In the majority of instances, it is not necessary to involve the traditional military in homeland security-related endeavors – aside from National Guard troops and the US Coast Guard who are especially skilled at large-scale civilian disaster response. But in massive regional disasters such as Hurricane Katrina and Superstorm Sandy, there is often cooperation among civilian government and military units in disaster response and relief. Indeed the DOD's "Defense

Support of Civil Authorities" program exemplifies this type of cooperative civilian-military joint disaster response, in concert with FEMA and state and local emergency agencies (DoD 2013). The nature of the emerging HS/NS nexus is particularly manifest in the US security establishment, which has become increasingly engaged in disaster relief, at home and abroad (Elsea and Mason, 2008; Kapucu 2011) – from natural disasters to environmental accidents. But the security nexus also lies in national security policy response to threats that emerge from larger scale natural disasters in more vulnerable countries overseas, that can beget economic crises, political violence, terrorism or transnational asymmetric insurgencies.

Domestically, disasters such as Superstorm Sandy and Hurricane Katrina, or the 2010 BP Deepwater Horizon Gulf oil spill, damaged or destroyed homes, businesses, ecosystems, and critical infrastructure, and consequently at least temporarily diminished US regional and national economic health. Internationally, the US has a national interest in aiding countries (allies in particular) that undergo severe natural disasters that may overwhelm their response capabilities. US civilian aid agencies and military resources have been deployed as needed in instances such as the 2004 Great Sumatra-Andaman earthquake and tsunami, which killed almost a quarter million people in South Asia; the massive 2011 Japanese Tōhoku earthquake and tsunami (and Fukushima nuclear meltdown) – the most expensive natural disaster in history, which rocked one of the world's largest economies (Zhang 2011); and the 2013 Philippines Super Typhoon Haiyan (Typhoon Yolanda to Philippines residents) – among the strongest and most damaging tropical cyclones recorded in history.

Even in the pre-911 world, there was overlap. The 1997 suicide bombing of the USS Cole in Yemen, for instance, was investigated by both US domestic (homeland) security-related (FBI) and national security (DoD) terrorism experts, since clearly it is in the interests of both to anticipate and respond to political violence or even economic instability that might give rise to threats at home or to trading partners and strategic regional allies. As noted earlier, the Quadrennial Homeland Security Report (2010) and the 2014 QDR (DoD) both illustrate the important cooperative relationships among all the major US law enforcement, security and defense agencies in promoting integrated US security strategies.

Both homeland- and national security policy responses have at least four key dimensions in common. In both: 1) preparation, response, and recovery forces the engagement of a large number of government agencies, which involves especially complex coordination and intergovernmental relations among all levels – (local, state, federal), as well as private-public cooperation with nonprofits and business sector; 2) these issues can be extremely costly to address for all nations, 3) they can be considered to include complex, ever-changing and often intractable

societal and organizational "wicked problems" (see Mitchell 2009 and Ritchey 2011, for instance); and 4) both HS and NS demand solutions that require long term, resilience-based strategies in order to minimize subsequent risk.

At the same time, a lack of clear definitions and even mission statements can also blur the relationship between HS and NS. Despite the traditional association of national security with military power, NS has increasingly become associated with a wider set of non-military issues[7], and as with homeland security and environmental security, there seems to be no widely accepted definition of national security. Regardless, most concepts of NS include a broad charge of protecting the nation's strategic interests and survival by selective and combined uses of the instruments of national power – elements common to both homeland security and environmental security (Ramsay and O'Sullivan 2013).

For instance, the 2009 presidential study directive (PSD), noting that the distinctions between homeland and national security are blurry at best, asserted that "Homeland Security is indistinguishable from National Security – conceptually and functionally, they should be thought of together rather than separately" (PSD 21 2011). Emblematic of its continued emphasis on the national security implications of homeland security, the Obama Administration decided in 2010 to merge the White House Homeland Security Council (HSC) staff with its National Security Council (NSC) staff (White House 2009). Despite the staffing merger, the HSC still remains separate from the NSC, even though it is, by statute, composed of many or most of the same various high-level White House and Cabinet officials as the NSC is. This merger of the HSC and NSC, and the rationale cited at the time, clearly indicated that the Obama White House viewed national security and homeland security, writ large, as "indistinguishable." (Wormuth and White 2009; Troy 2010; Cohen and O'Sullivan 2013).

However, while there are both operational and definitional commonalities between national security and homeland security, despite the apparent Obama White House efforts to merge the two broad areas *operationally*, full operational or conceptual merger would be detrimental to the latter, especially (see for instance Flynn 2011; Ramsay and O'Sullivan 2013). There are clear areas of specialization that separate these practice and policy areas. As the wars in Iraq and Afghanistan have drawn down, it remains likely that there will be significant continuing military emphasis on the fight against transnational or regional terrorist organizations like al Qaeda and its affiliates. Although the Obama administration officially

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7 Indeed, fully 25% of the US military's Transportation Command (USTRANSCOM) operations have been humanitarian relief based efforts between 1989 and 2001. United States Transportation Command, 2002: Presentation given to US Air Force Air War College by General John W. Handy, Commander, during Academic Year 2001–2002.

ceased using the term "global war on terror" (GWOT) in 2009, and the preferred term now is "overseas contingency operation" (Kamen 2009), it seems likely that to many, HS will continue in one form or another to remain synonymous with counter-terrorism for now. If for no other reason, this is true because major policy responses to the attacks of September 11th included the creation of the massive Department of Homeland Security – which to this day remains primarily driven by its terrorism and crime-related mission.

While confederation of the US White House Homeland- and National Security Councils may be logical from a strategic planning and policy perspective, it should not suggest or imply that HS is primarily a subset of national security. Rather, it should signal that there are some risks/threats that could be considered both homeland security and national security challenges. It would be a mistake for the traditional US security apparatus to absorb homeland security in its entirety, but instead federal HS and NS institutions should remain as cooperative, collaborative and supportive players at the Executive Branch level, just as they should be with state and local government security-related entities.

3.3 The Overlap Among All Three – HS, NS, and ES

Conceptually and operationally, the overlap of all three security types – HS, NS, and ES – primarily involves comparative analysis of and response to risks arising from political and economic destabilization and violence, including terrorism, civil wars and other political violence, and broad threats from weak and failed nation-states. Any of these could be the direct or indirect result of natural disasters, such as extreme weather events and/or longer-term climate changes – or the other types of catastrophic natural disasters and accidents discussed above (earthquakes, oil spills, etc.), as well as critical resource shortages and geopolitical competition (related, or unrelated, to weather and climate) for energy, water, food, minerals, etc. Such events not only challenge the treasury and the national security resilience of individual nations, but also the capacity to form, sustain and execute a collaborative international response. As previously noted, climate instability and disruption can exacerbate existing domestic political violence in less stable nations (such as Syria's drought and food crisis, which contributed to its subsequent civil war), which may subsequently lead to domestic or regional civilian terrorist threats, or radicalization that ultimately exports asymmetric transnational violence to the United States or other nations. The latter may soon be evident with the rise of the group, the Islamic State of Iraq and al-Sham (ISIS) in Iraq and Syria (see for instance, Knights 2014), which had vowed to export its brutal brand of Salafist radical Islam to the West.

4 Conclusion

It is clear by now that future security methods and strategies will be influenced directly and indirectly by climate change, population stresses, and resource-based conflicts. Definitions matter to government policymaking institutions' mission statements, jurisdictions and practice. Despite the fact that there is clear overlap between civilian domestic "homeland" security and "national" security, the two are ultimately not the same. Among the clearest illustrations of this is the fact that climate disruption and other environmental security issues challenge "traditional" notions of both HS (as primarily terrorism) and the military/diplomatic nature of national security. Both domestic and international US security will continue to grapple with the global repercussions of increasing natural disasters on or beyond the scale of Hurricanes Katrina and Sandy, Typhoon Haiyan, a growing array of massive floods, withering droughts, water shortages, and crop failures in various key regions around the world. As represented in evolving Pentagon and intelligence community strategy and restructuring documents, the older, traditional military missions, capability and force structure do not adequately address or prevent evolving, worsening environmental security-related threats to national security – nor did, until recently, the US homeland security paradigm and DHS mission statements.

Thus, for all nations, environmental security hazards and threats need to be thoroughly integrated into the theory and practice of the greater homeland security/emergency management missions, as well as the US national security strategic vision. ES issues are both cause and effect variables, and will be a growing catalytic factor for terrorism and other political violence, in addition to jeopardizing critical infrastructure, population health, and economic growth rates. Because of these linkages and growing environmental risks, both homeland and national security will need to shift resources away from their traditional mandates and toward more sustainable approaches to security, prevention, mitigation, adaptation, and response in order to protect domestic civilian populations and American interests overseas. Fighting the post-911 "war on terrorism" has been fabulously expensive, and likely well beyond the commensurate level of actual threats (Bobbitt 2009; Bjelopera 2013). In contrast, a growing set of environmental and resource-based challenges exacerbated by climate change threaten to overwhelm the global capacity to mitigate or respond, and will cost trillions of dollars in lost economic activity in decades to come. The Earth is undergoing significant physical changes that forewarn of uncertain yet catastrophic results if significant mitigation of the causes (especially human greenhouse gas emissions) does not occur. Given their unique purviews, HS, NS and ES must exist in part as robust, independent policy and practice specialty domains, but growing climate

disruption risks mandate integrating significant components of HS, NS and ES policy and strategic planning capabilities.

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