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Responding to Asymmetric Threats in the Maritime Domain: Diplomacy, Law and Naval Operations

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Tension on the high seas between lawful commerce and illicit activity has existed for thousands of years, but today it represents a particularly serious challenge that requires more than just power projection; it requires innovative diplomacy, regional commitments, dedicated leadership and increased legal authority. In the maritime domain, there is no greater area of concern than asymmetric threats. Cooperation has unfolded to address some of these challenges, but states and international venues have yet to holistically confront the myriad threats emanating from the oceans. The desired result of every maritime attack may not necessarily be a judicial proceeding, but the ability and political will to prosecute is a critical factor in ensuring a safer maritime environment. When gaps in the law exist – whether in the area of illicit cargo, container security, underwater explosive devices or attacks in shipping channels – criminals and terrorists can operate with impunity. To address these gaps, states can better position themselves by strengthening the law, prioritising political and operational support, removing sanctuaries and authorising the pursuit of illicit assets.

The ability to freely transit the maritime domain is critically important to national security, regional stability and economic vitality. Criminals and terrorists also ply the

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oceans to advance their objectives. While tension between lawful commerce and illicit activity on the high seas has existed for thousands of years, it now represents a particularly serious challenge that requires more than just power projection; it requires innovative diplomacy, regional commitments, dedicated leadership and increased legal authority.

International accords as well as partnering initiatives have recently sought to address maritime threats, such as piracy and the transport of weapons of mass destruction (WMD). A key objective of such action is ensuring there is legal authority and judicial capacity. However, many states remain incapable of prosecuting instances of misconduct committed on the high seas, creating 'gaps' in law that have significant adverse consequences on stability and order.

These gaps, in some instances, allow terrorists and criminals to operate with impunity. Among the current maritime threats, 'asymmetric warfare'[1] in the littorals[2] represents a dominant area of legal and operational concern.[3] Somali pirates have secured more than US$ 50 million in revenue from ransom for hijacked commercial vessels. The devastating terrorist attacks in Mumbai in December 2008 emerged from the sea and the terrorist strike against USS *Cole* in Yemen in 2000 nearly sank the powerful warship. In 2002, Al Qaeda struck the French oil tanker *Limburg*[4] that was transporting almost 400,000 barrels of crude oil and in 2004 *Super Ferry 14* was attacked by the Abu Sayyaf organisation in the Philippines.

Because no one nation has the capability or resources[5] to stop all maritime attacks, legal, political and operational integration is necessary.[6] But it is the legal issues in the maritime domain that have proved particularly challenging, as was evidenced by the release of captured Somali pirates (by several states, in unrelated interdictions) due to the lack of judicial authority and/or prosecutorial interest. With regard to piracy, however, there is clear and unambiguous authority through the 1982 United Nations Convention on the Law of the Sea and the 1988 Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation (SUA).[7] Thus, even if international accords exist, there needs to be implementing legislation and political will at the state level.[8]

The International Maritime Organisation (IMO) Secretary-General, Efthimios E. Mitropoulos, sagely noted that:

> "*in the fight against terrorism, which in these uncertain times has tragically succeeded in shaping the political agenda worldwide, it is vital that the*

*international community has in place a framework for legal action capable of
ensuring that terrorists are apprehended and brought to trial wherever in the
world they may seek to hide*".[9]

States have worked cooperatively, both regionally[10] and in international venues,[11]
but have yet to holistically confront the myriad threats emanating from the oceans.
The challenge is to ensure no gaps[12] exist in the law – whether it is in the area of illicit
cargo, container security, underwater explosive devices or attacks in shipping channels
– and that states are both willing and capable of prosecuting criminal activity committed
on the high seas. States can better position themselves by strengthening the law,
prioritising political and operational support, removing sanctuaries and authorising the
pursuit of illicit assets.[13] The desired result of every maritime attack may not necessarily
be a judicial proceeding, but the ability and political will to prosecute is a critical factor
in ensuring safer maritime environment.

Asymmetric Maritime Threats

Illicit activity[14] that occurs in the maritime domain[15] can threaten a specific ship, state
or regional area or have global implications. In contrast with asymmetric threats on
land, the operating environment in the high seas is enormous and complex.[16] The area
that needs to be covered is daunting. In just the United States (US), there are more
than 350 ports, 10,000 miles of navigable waterways, 110,000 commercial fishing
vessels and approximately 70 million recreational boats. Collectively, merchandise worth
US$ 700 billion moves every year through US ports and waterways. In India, too, the
scope of the maritime domain is immense: "Almost 95% of India's trade is sea-borne.
About 40,000 tankers come to Indian ports annually".[17] Approximately 70,000 ships
transit the Indian Ocean with good worth US$ 2 trillion.[18] Regarding specific cargo,
the transport of oil and natural gas from the Persian Gulf provides 40 per cent of the
globe's supply, with 15.5 million barrels of oil a day, or 40 per cent of all-traded oil,
transiting through the Strait of Hormuz. Vessels carrying more than half of the world's
oil pass through Southeast Asian waters.[19]

The maritime domain is also a likely area for the transit of WMD. Protecting
states against the threat of terrorism and the deployment of WMD has received
significant attention this decade. The September 11, 2001 (9/11) Commission Report
remarked that:

"*the greatest danger of another catastrophic attack in the United States will materialise if the world's most dangerous terrorists acquire the world's most dangerous weapons*".

They concluded, in part, that:

"*terrorists are determined to attack us again – with weapons of mass destruction if they can...*".[20]

There certainly is an awareness of the threat posed by asymmetric warfare. The US Secretary of Defence, Robert Gates, says:

"*unconventional warfare is now the norm rather than the exception... Smaller, irregular forces – insurgents, guerrillas, terrorists – will find ways, as they always have, to frustrate and neutralise the advantages of larger, regular militaries. And even nation-states will try to exploit our perceived vulnerabilities in an asymmetric way*".[21]

Multiple studies, too, have exhaustively examined the variety of methods by which an attack can take place in the maritime domain, many of which are asymmetric. These include insightful reviews at the Indian Ocean Naval Symposium (IONS) and by the US Congressional Research Service (CRS). In 2007, CRS studied potential terrorist attacks and protection priorities.[22] It divided maritime attacks into five areas of concern:

- Perpetrators: Al Qaeda and affiliates, Islamist unaffiliated, foreign nationalists, disgruntled employees, others;
- Objectives: Mass casualties, port disruption, trade disruption, environmental damage;
- Locations: 360+ US ports, 165 foreign trade partners, 9 key shipping bottlenecks;
- Targets: Military vessels; cargo vessels; fuel tankers; ferries/cruise ships; port area populations; ship channels; port industrial plants; offshore platforms;
- Tactics: Explosives in suicide boats; explosives in light aircraft; ramming with vessels; ship-launched missiles; harbour mines; underwater swimmers; unmanned submarine bombs; exploding fuel tankers; WMDs in cargo ships.[23]

"If one looks at the plans and operations of al-Qaeda... it is clear that by 2001 and 2002, they were conducting trial runs for opening a maritime-related front in global terrorism. They could see that: (1) the vast commercial shipping and cargo container business around the world was open to infiltration and abuse; (2) naval ships were iconic targets; (3) busy ports, too, were tempting because they are key nodes through which so much of world trade is shipped".[24]

The US Port Security Training Exercise Program (PortSTEP)[25] has explored such scenarios as, "targeted or exploited cruise ships, container ships, a harbour truck, a barge, a rail yard, port industrial facilities, bridges, and a national landmark".[26] Other threats have been identified in various governmental and non-governmental studies.[27]

Asymmetric warfare specifically threatens energy stability, a global concern that affects the national security of every state, even those that are landlocked. Strikes on the energy sector have increased over the past five years. In 2003, approximately one in four terrorist attacks was directed at energy related targets, this rose to one in three in the period spanning from 2003-07.[28] "According to the US State Department, between 1996 and 2004, there were at least 80 terrorist attacks against oil companies worldwide that resulted in kidnappings, casualties, damages and large monetary losses."[29]

In an increasingly integrated economic environment, attacks on energy infrastructure have implications far beyond the geographic location of the strike. "In February 2006, terrorists linked to al-Qaeda attempted, but failed, to destroy the Abqaiq processing facility in Saudi Arabia, where 6.8 million barrels per day of oil (some two-thirds of total Saudi production) are processed before export".[30] The piratical strikes on merchant vessels in 2008 and 2009 in the Gulf of Aden, including the super oil tanker *Sirius Star* carrying two million barrels of oil, underscores this threat. In fact, "attacks on energy vessels represent a significant percentage of overall maritime piracy attacks, ranging from a low of 12 per cent of total attacks in 2006 to a high of just over 24 per cent in 2007...".[31]

The movement of oil underscores the global vulnerability and exposure to attack: the US imports 66 per cent of its petroleum,[32] an amount that is more than double of what it imported in 1973-74.[33] Of the 85 million barrels of oil that travel daily, approximately 43 million barrels transit the maritime domain, easily within the reach of criminals and terrorists.

Oil's vulnerability exists, in part, because while it is transited across enormous swathes of ocean, it moves along very narrow areas on predictable routes. In quintessential

asymmetric warfare, pirates are exploiting this funnel-like environment, attacking ships on well-established navigational routes. The closest point in the Strait of Hormuz is 21 miles, the Strait of Malacca 1.7 miles, Bab el-Mandab (the Red Sea into the Gulf of Aden) 18 miles and the Turkish Straits half-a-mile.[34] The threat to shipping by Somali pirates in 2008 and 2009 became so severe that dozens of nations deployed warships to the area to protect merchant vessels.

Addressing maritime threats and its impact on global order and national security has been an important topic at the IMO and its Secretary General Mitropoulos has remarked that:

> "...we should continue relentlessly raising our industry's defences to the extent that terrorists may be dissuaded from launching an attack on ships, port facilities and shipping lanes of strategic importance and significance, and in the unfortunate event that such an act has been committed, we are in a strong position to mitigate its impact on human life, property and the environment".[35]

Asymmetric attacks that deny or delay the delivery of energy have the ability to imperil a state's ability to function.

Czech Deputy Prime Minister Alexandr Vondra remarked at the Conference on Security Policy in Munich, Germany, on February 7, 2009 that energy security is a matter of strategy.

> "It requires us to think and build solutions well ahead. This holds for energy the same as for ballistic missiles. It is too late to start building a pipeline when gas stops flowing. And it is too late to start building a defence shield when the missile is already in the air".

Thus, legal authorities must be a central part of any comprehensive strategy.

Models for Confronting Asymmetric Maritime Warfare

Operational collaboration,[36] bolstered by greater legal capabilities and political commitments are needed to confront asymmetric maritime threats.[37] Several initiatives that focused on either specific threats or in regional areas are models for addressing gaps in law. International law has become the most effective force multiplier for developing

maritime security and nowhere is this more evident than in the fight against WMD and in the waters off the Somali coast.[38] In these settings, international law and partnerships are more important than deploying another warship.

The Proliferation Security Initiative (PSI) was launched in 2003 to combat WMDs. PSI does not have a standing organisation or infrastructure. Rather, states commit (alone or with others) to share information and disrupt the transfer or transport of WMD, their delivery systems and related materials. Actions taken as a result of PSI include operational interdictions resulting in the seizure of shipments containing proliferation-related cargo. More importantly, it involves enhanced communications and improved diplomatic and operational cooperation. While PSI was unfolded on a global scale, many substantive efforts have taken place, or have been proposed, at regional levels also. In the 1990s, the Indian Navy discussed such cooperation.[39]

Another innovative programme, the Container Security Initiative (CSI) seeks to heighten security by collaboratively screening containers.[40] Under CSI, shipping containers that may pose a terrorist risk are inspected in foreign ports before being transported to the US. In part, CSI employs 'intelligence and automated information', pre-screening of cargo and detection technology and encourages 'smarter, tamper-evident' containers. A separate, but complementary programme, the Megaports Initiative, administered by the US National Nuclear Security Administration, advances collaboration with other countries regarding the screening and inspection of cargo for radioactive material at major international seaports.[41]

In 2002, IMO member states developed and implemented the International Ship and Port Facility Security (ISPS) Code. This agreement provides a, "standardised, consistent framework for evaluating risk…" that includes, among other things, guidance on assessing ship and port facility security plans, and monitoring and controlling people's access to such areas.

In 2008, the United Nations Security Council (UNSC) issued four resolutions addressing piracy off the Somali coast. The last, Resolution 1851, encouraged the establishment of a multinational Contact Group on Somali Piracy (CGSP). The inaugural meeting of the group was held at the UN on January 14, 2009. More than 20 countries, as well as observers from the European Union (EU) and the African Union, took part in the discussions.

The CGSP formed several working groups to develop collective action against different aspects of the effort against Somali piracy. These groups were divided along

functional lines, with the UK leading a group focused on naval operations and information-sharing, Denmark leading a group that reviewed the judicial framework and issues associated with captured pirates and witnesses, the US leading the discussions on strengthening industry awareness and capabilities, and Egypt heading the last group that focused on strategic communications and public information. These meetings have been instructive in identifying tangible ways that states can use to cooperatively combat asymmetric threats, such as providing forces, prosecuting (or supporting prosecutions) and assisting in capacity-building.

At an IMO-sponsored meeting in Djibouti in January 2009, agreement was reached on a regional arrangement to fight piracy. Based on the text developed at a previous IMO meeting in Dar es Salaam, Tanzania, eight coastal states situated on the Gulf of Aden, the Red Sea and the Western Indian Ocean, as also Ethiopia, concluded the Djibouti Code of Conduct to combat acts of piracy against ships. The agreement is based on the 16-nation counter-piracy treaty, Regional Cooperation Agreement on Combating Piracy and Armed Robbery Against Ships in Asia (ReCAAP), which has been remarkably successful in reducing the number of piracy attacks in East Asia. Just as ReCAAP was the first Asian agreement dedicated to counter piracy, the Djibouti Code of Conduct is the first regional agreement between Arab and African countries to address maritime piracy. The mechanisms reflected in the Djibouti Code provide a template for long-term regional capacity-building and cooperation, and is expected to continue long after the Somali piracy contact groups have concluded their meetings. Japan and Norway, among others, have committed funds to support implementation of the Code, and the European Commission is identifying projects it can support.

Regional contact groups, with protocols for communication, can create a network of interested states that coordinate in real time and work across legal and jurisdictional lines to ensure collective action against maritime threats. The development of communications and coordination protocols or centres, much like in international law, will require multilateral support, a sustained national focus, operational capability[42] and legal mechanisms to interdict and prosecute.

None of the recent legal authorities are more sweeping and authoritative in the maritime domain than the SUA Amendments, which are yet to take effect. These amendments proscribe, among other things, the use of a ship to commit terrorist acts (the intentional/unlawful release of substances, such as chemical, biological or radiological material capable of causing serious injury), proliferation-related acts (the unlawful

transport of weapons of mass destruction, delivery systems and related materials, including 'dual-use' materials) and the transport of persons alleged to have committed offences under any of the 12 UN terrorism conventions with the intent to help them evade prosecution.

The underlying SUA Convention was created in response to the hijacking of *Achille Lauro* in 1985. At the time of the attack on the cruise ship, many states did not have criminal legislation for extradition or prosecution for vessel hijacking. Consensus on SUA was reached in 1988 in Rome and it now has 149 state parties. The 1988 SUA Convention was referenced in two UNSC Resolutions (in 2008) for its use in prosecuting pirates. In part, this is because SUA criminalises the unlawful and intentional seizure or exercise/control over a ship by force or threat. The treaty further provides that state parties shall criminalise such conduct and either consider prosecuting or extraditing the offender. But the 1988 SUA Convention did not address maritime transport of WMD or terrorists, nor did it contain a boarding regime.

The SUA Amendments, developed after 9/11, filled several of the above-noted gaps. They define a terrorist act as occurring, "when the purpose of the act, by its nature or context, is to intimidate a population, or to compel a government or an international organisation to do or to abstain from doing any act…". The 'dual use' article, which is the first of its kind in an international treaty, proscribes, "any equipment, materials or software or related technology that significantly contributes to the design, manufacture or delivery of a biological, chemical, nuclear (BCN) weapon, with the intention that it will be used for such purpose".

The Way Ahead

The oceans pose myriad challenges to economic stability and national security. As states explore how to most effectively address maritime threats, it is important to assess them in the context of a continually changing environment, with the expectation that criminals and terrorists will develop new methods and new technology.

The response to WMD transport (and to some degree, to piracy) provides guidance on holistically confronting maritime asymmetric threats by emphasising the importance of:

- A national commitment to prosecuting and deploying, as capable, operational assets (or sharing intelligence);

- States developing, in international venues, the legal authorities for prosecuting illicit activity;
- Inclusion of an 'extradite or prosecute' provision in such agreements, which effectively ensures judicial action; and
- A commitment to collaboration (including logistics support).

The PSI statement of interdiction principles is also instructive in this regard. The principles include a commitment by states to, among other things, "review and work to strengthen their national legal authorities where necessary...and work to strengthen, when necessary, relevant international law and frameworks in appropriate ways to support these commitments".

A working group should be developed to explore the utility of a new accord to address potential gaps in law and separately whether action can be taken at the regional or state level. As illustrated by the PSI statement of interdiction principles, state commitments must come first. Strong leadership can drive this action, which must accommodate various scenarios and threats and, most of all be, flexible and adaptable[43] – a difficult objective with law, which requires precision.

Such a group can build on some recent ambitious actions. The Nairobi Conference in December 2008, sponsored by the UN Office on Drugs and Crime (UNODC), catalogued the maritime criminal codes of countries in the region. The UNODC is following up on ways to modernise the criminal codes in those countries. Also, projects under the Djibouti Code have a similar focus. Finally, committees within the IMO have been considering a proposal by the Comité Maritime International (CMI) to develop a model code for maritime crimes.

As safety and security on the high seas is a shared responsibility, states must commit their operational, legal and diplomatic resources to improving the ability to pursue illicit activity in any maritime setting. Short of an accord, a global-scale document that complements and expands the above actions should be created that reflects, to the greatest possible extent, the universe of crimes in the maritime domain along with an accounting of what authorities exist (at the state-level and internationally) and record the conditions under which a state will initiate judicial action and provide investigative assistance.

Information related to judicial capabilities will shape the necessary next steps in addressing legal gaps against asymmetric maritime threats, increase transparency and

enable expanded discussions, partnering and information sharing. This process and the collaborative dynamic it entails may yield the greatest long-term benefits in stability and global order.

Notes

1. "Asymmetric warfare is violent action undertaken by the 'have-nots' against the 'haves' whereby the have-nots, be they state or sub-state actors, seek to generate profound effects – at all levels of warfare...from the tactical to the strategic – by employing their own specific relative advantages against the vulnerabilities of much stronger opponents. Often this will mean that the weak will use methods that lie outside of the 'norms' of warfare, methods that are radically different". Rod Thornton, *Asymmetric Warfare, Threat and Response in the Twenty-First Century* (Polity Press, 2008), pp. 1-2. See also, Jonathan B. Tucker, "Asymmetric Warfare", *Forum*, Summer 1999, "...Future adversaries who resort to military force against the United States will probably employ asymmetric, or David-and-Goliath, strategies involving innovative yet affordable weapons and tactics designed to weaken US resolve and its ability to use its superior conventional military capabilities effectively", http://form.ra.utk.edu/1999summer/asummetric.htm (accessed August 3, 2009).

2. When Somali pirates attacked more than 100 vessels in 2008, they almost always operated in the littorals. This area, which includes the exclusive economic zone (EEZ) and 36 per cent of the globe's water, is the most important on earth for naval operations. Seventy-five per cent of the population lives within 100 miles of a coast and more than half of the known oil reserves are located in the littorals. The US Chief of Naval Operations Gary Roughead said, "Our ability to operate there, to move quickly there, to be present there, is going to be key", http://www.navy.mil/navydata/people/cno/Roughead/Speech/Complete%20 Constitution%2010%2021%2008%20(final)%5B1%5D.doc (accessed August 3, 2009).

3. "Asymmetric warfare is arguably the main threat facing the United States since the end of the Cold War. Gone are the years where America knew who its enemy was, and more importantly, knew where it was." John Maszka, *A Critical Juncture: American Foreign Policy and Asymmetric Warfare*, Center for Contemporary Conflict at the Naval Postgraduate School, http://www.ccc.nps.navy.mil/si/2009/Apr/maszkaApr09.asp (accessed August 3, 2009). See also, "While asymmetric warfare encompasses a wide scope of theory, experience, conjecture, and definition, the implicit premise is that asymmetric warfare deals with unknowns, with surprise in terms of ends, ways, and means. The more dissimilar the opponent, the more difficult it is to anticipate his actions". Colonel Clinton J. Ancker III, US Army, Retired, and Lieutenant Colonel Michael D. Burke, US Army, Retired, "Doctrine

for Asymmetric Warfare", *Military Review*, July-August 2003, p. 18, http://usacac.army.mil/CAC/milreview/English/JulAug03/JulAug03/ancker.pdf (accessed August 3, 2009).

4. "The Limburg bombing may have been an (economic) attack...threatening to disrupt global oil trade and causing considerable consternation among tanker operators. Although the bombing killed only one member of the Limburg's crew, it caused insurance rates among Yemeni shippers to rise 300% and reduced Yemeni port shipping volumes by 50% in the month after the attack. The bombing also caused significant environmental damage, spilling 90,000 barrels of oil into the Gulf of Aden". Congressional Research Service Report for Congress, Maritime Security: Potential Terrorist Attacks and Protection Priorities, Updated May 14, 2007, Paul W. Parfomak and John Frittelli, Resources, Science and Industry Division, http://www.fas.org/sgp/crs/homesec/RL33787.pdf (accessed August 3, 2009).

5. The Italian Representative of Italy to NATO, Vice Admiral Ferdinando Sanfelice di Monteforte said, "...the question of whether states will provide enough funding to ensure European maritime capabilities can respond to these new security the greatest threat of all". "The Questionmarks over Europe's Maritime Security", Security and Defence Agenda, November 8, 2007, p. 5, http://www.securitydefenceagenda.org/Portals/7/Reports/2007/Final_Discussion_Paper.pdf (accessed August 3, 2009).

6. Maritime security expert Dr. Lee Willet, Royal United Services Institute for Defence and Security Studies remarked that the, "unifying nature of the maritime environment, coupled with the unstable and trans-national nature of potential threats, encourages co-operation and collective responses. "The Questionmarks over Europe's Maritime Security", Security and Defence Agenda, November 8, 2007, p. 7, http://www.securitydefenceagenda.org/Portals/7/Reports/2007/Final_Discussion_Paper.pdf (accessed August 3, 2009).

7. The Convention for the Suppression of Unlawful Acts (SUA) against the Safety of Maritime Navigation was approved at the IMO in Rome on March 10, 1988 and entered into force on March 1, 1992. A key SUA offense is to unlawfully and intentionally seize or exercise control over a ship by force or threat or other form of intimidation.

8. The enactment of domestic legislation to implement international accords represents the single greatest opportunity for substantive improvements in judicial capacity today.

9. IMO website; 18 States sign 2005 SUA protocols, Briefing, February 13, 2007, http://www.imo.org/About/mainframe.asp?topic_id=1472anddoc_id=7790 (accessed August 3, 2009).

10. One noteworthy and recent example, of a regional engagement was the "Meeting of Senior Defense Officials on Common Security Challenges in the Asia-Pacific Region," in Tokyo in March 2009. The meeting involved representatives from Japan and the 10 member countries of the Association of Southeast Asian Nations (ASEAN) and discussed anti-disaster cooperation, maritime security and peacekeeping operations.

11. The Contact Group on Somali Piracy, discussed later in more detail, consists of one of the most comprehensive and diverse array of states and organisations, with representatives from the European Union, the African Union, the United States, Russia, India and China, among others. This group has already begun to establish harmony among the numerous regional capacity-building initiatives that will be essential for the long-term stability of Somalia and the region. Contact Group on Piracy Off the Coast of Somalia, US Department of State, May 18, 2009, http://www.america.gov/st/texttrans-english/2009/May/20090518175245xjsnommis0.5672266.html (accessed August 4, 2009).

12. 'Gaps' refers to an area where legal authority does not exist, either in international accords or at the state level. As illustrated by piracy, even if there is an international document that addresses an issue, a prosecution will most likely not occur if a state does not have domestic implementing legislation.

13. Indian Prime Minister Manmohan Singh remarked that, "...issues within the maritime domain need to be referenced more towards common interests rather than common threats...where malevolent non-State entities find neither spatial nor temporal room for manoeuvre...". Address of the Indian Prime Minister at the Indian Ocean Naval Symposium Seminar, 2008, in *Contemporary Transnational Challenges: International Maritime Connectivities*, eds. Ravi Vohra and P.K. Ghosh (New Delhi: KW Publishers, 2008), p. 199.

14. "Among the weapons that have been transferred through (illegal or clandestine) channels are long-range anti-ship missiles, unmanned aerial vehicles and closer-range armour-piercing missiles and rocket-propelled grenades – all weapons capable of causing significant damage to ships, both big and small. The arms trade is a huge, valuable and competitive global business. Arms smuggling is rife in many parts of the world and the weapons and equipment available for use are increasingly sophisticated and difficult to counter. The Al Qaeda network, Hezbollah and the Tamil Tigers all exploit the weapons trafficking business to get, or try to get, new and more potent weapons." Michael Richardson, "Maritime-Related Terrorism and Crime: A Watchlist for the Indian Ocean Region", in *Contemporary Transnational Challenges: International Maritime Connectivities*, eds. Ravi Vohra and P.K. Ghosh (New Delhi: KW Publishers, 2008), p. 60.

15. "The maritime domain is defined as all areas and things of, on, under, relating to, adjacent to, or bordering on a sea, ocean, or other navigable waterway, including all maritime-related activities, infrastructure, people, cargo, and vessels and other conveyances." US National Strategy for Maritime Security; September 2005, http://www.dhs. gov/xlibrary/assets/HSPD13_MaritimeSecurityStrategy.pdf (accessed August 3, 2009).

16. Asymmetric threats can also exist in judicial venues. Resourceful use of the law, or 'lawfare', has emerged as a sea denial strategy. Sea denial is employed by inferior continental navies to deny maritime powers the ability to exercise command of the sea and thereby limit their influence over events on land. Captain Wayne P. Hughes, *Fleet Tactics and*

Coastal Combat at 256 (2nd ed., 2000). See also, Jonathan B. Tucker, "Asymmetric Warfare", *Forum*, Summer 1999, "Numerous asymmetric strategies could be used to disrupt US military capabilities and bring the conflict to the US homeland. For example, high-tech and low-tech countermeasures could exploit the vulnerabilities of advanced US weapons and their supporting systems. Information warfare could be used to disable computer networks, paralysing communications, transportation, power systems, and industrial enterprises. Public-relations warfare might allow opponents to exploit the international news media to weaken the resolve of US decision makers. Non-conventional attacks by special forces armed with chemical and biological agents could disrupt US military operations. And foreign states could sponsor terrorist attacks against civilian targets to undermine public support for foreign intervention or to deter states from joining a US-led coalition", http://form.ra.utk.edu/1999summer/asummetric.htm (accessed August 3, 2009).

17. Kanwal Sibal, "Geo-Strategic Scenario in the Indian Ocean Region", in *Contemporary Transnational Challenges: International Maritime Connectivities*, eds. Ravi Vohra and P.K. Ghosh (New Delhi: KW Publishers, 2008), pp. 3-14.

18. Indian Defence Update, November 2007, http://www.indiadefenceupdate.com/news53.html (accessed August 3, 2009).

19. Tamara Renee Shie, "Ports in a Storm? The Nexus Between Counter-terrorism, Counter-proliferation, and Maritime Security in Southeast Asia", *Pacific Forum CSIS*, July 2004, http://www.southchinasea.org/docs/Shie,%20Ports%20in%20a%20storm.pdf (accessed August 3, 2009).

20. The US Congressionally-directed Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism released their comprehensive report, World at Risk, on December 2, 2008. The Report of the Commission on the Prevention of WMD Proliferation and Terrorism, Bob Graham, Chairman, Jim Talent, Vice Chairman, Vintage Books, December 2008, p. 12, http://www.scribd.com/doc/8574914/World-at-Risk-The-Report-of-the-Commission-on-the-Prevention-of-WMD-Proliferation-and-Terrorism-Full-Report (accessed July 31, 2009).

21. Young, Jeffrey. "Pentagon Sets 'Asymmetric' Warfare as High Priority." *Voice of America News*, December 15, 2008.

22. CRS Report for Congress, "Maritime Security: Potential Terrorist Attacks and Protection Priorities", Updated May 14, 2007, by Paul W. Parfomak and John Frittelli, Resources, Science, and Industry Division, http://assets.opencrs.com/rpts/RL33787_20070514.pdf (accessed August 3, 2009).

23. *Ibid.*, p. 7.

24. Michael Richardson, "Maritime-Related Terrorism and Crime: A Watchlist for the Indian Ocean Region", in *Contemporary Transnational Challenges: International Maritime*

Connectivities, eds. Ravi Vohra and P.K. Ghosh (New Delhi: KW Publishers, 2008), pp. 39-64.

25. This collaborative US Transportation Security Administration programme is conducted in association with the US Coast Guard. Programme details are available at http://www.tsa.gov/ what_we_do/layers/portstep/editorial_with_table_0061.shtm (accessed August 3, 2009).

26. See note [22], p. 8.

27. "Explosives attack on a chlorine storage tank in port; hostage-taking and executions aboard a vessel in port; a marine mine attack on a Navy frigate in port; underwater explosive devices planted on multiple vessels in port; a nuclear device aboard an incoming vessel in a 55-gallon drum; attack on a port with a biological disease agent; detonation of a dirty bomb in a shipping container in port; aircraft attack on a passenger ferry or cruise ship; ammonium nitrate bombs shipped by rail to a port; Sarin gas attack on a cruise ship in port; various types of an explosives attack on a ship in port; 'dirty' bombs in cargo containers at multiple US ports; radioactive materials carried on a cargo ship 90 miles offshore; underwater and fishing boats explosives attacks on riverboat; bombing and sinking of a liquefied propane gas (LPG) tanker in a major commercial and naval shipping channel; hijacking of a river tanker for use as a 'floating bomb'; ramming and 'dirty' bombing a ferry with a hijacked cargo ship; coordinated bombing of docks and bridges, and mining of the harbor at a major commercial port; attack on a liquefied natural gas (LNG) terminal and tanker in port." See note [22], pp. 10-11.

28. Jennifer Giroux, "Targeting Energy Infrastructure: Examining the Terrorist Threat in North Africa and its Broader Implications", Real Instituto Elcano (ARI), February 13, 2009, http://www.realinstitutoelcano.org/wps/portal/rielcano_eng/Content?WCM_ GLOBAL_CONTEXT=/Elcano_in/Zonas_in/ARI25-2009 (accessed August 3, 2009).

29. *Ibid*.

30. *National Security Consequences of US Oil Dependency*, Council on Foreign Relations, 2006 report of an independent task force, p. 23, http://www.cfr.org/content/publications/ attachments/EnergyTFR.pdf (accessed August 3, 2009).

31. Donna J. Nincic, "Maritime Piracy: Implications for Maritime Energy Security", *Journal of Energy Security* (2009), http://www.ensec.org/index.php?option=com_contentandview= articleandid=180:maritime-piracy-implications-for-maritime-energysecurityandcatid= 92:issuecontentandItemid=341 (accessed August 3, 2009).

32. Daniel Yergin, "Ensuring Energy Security", *Foreign Affairs*, March/April 2006. Some estimates state that by 2020, the number of barrels transiting the oceans, "could jump to 67 million," a day. "By then, the United States could be importing 70 per cent of its oil (compared with 58 per cent today and 33 per cent in 1973)...", http://www.foreignaffairs.org/ 20060301faessay85206/daniel-yergin/ensuring-energy-security.html (accessed August 3, 2009).

33. The Presidential Climate Action Project (PCAP), http://www.climateaction project.com/ plan (accessed August 3, 2009).

34. Energy Information Administration, Department of Energy, http://www.eia.doe. gov/cabs/ World_Oil_Transit_Chokepoints/Background.html (accessed August 3, 2009).

35. Opening address by Efthimios E. Mitropoulos, at Kuala Lumpur, September 18, 2006, Enhancing Safety, Security and Environmental Protection, http://www.imo.org/About/ mainframe.asp?topic_id=1322anddoc_id=7004 (accessed August 3, 2009).

36. The ocean's vast expanse has spawned considerable naval collaboration. Dr. Lee Willet, Royal United Services Institute for Defence and Security Studies remarked that the "unifying nature of the maritime environment, coupled with the unstable and transnational nature of potential threats, encourages cooperation and collective responses". "The Questionmarks Over Europe's Maritime Security", Security and Defence Agenda, November 8, 2007, p. 21, http://www.securitydefenceagenda.org/Portals/7/Reports/2007/Final_ Discussion_Paper.pdf (accessed August 3, 2009).

37. A conference on maritime security which addressed the development of effective strategy for Europe identified the following, which has application globally: "increased exchange of information between the various security and defence organisations; the development of a coordination hub that would tie together the civil, military, national, international and regional initiatives; the creation of a common operational picture through advanced technologies and common procedures that transcend borders; increased discussion with third countries in order to ensure greater cooperation and stronger networks." "The Questionmarks Over Europe's Maritime Security", Security and Defence Agenda, November 8, 2007, p. 27, http://www.securitydefenceagenda.org/Portals/7/Reports/2007Final_ Discussion_Paper.pdf (accessed August 3, 2009).

38. In addition to Operation *Atalanta* and the US Navy's Fifth Fleet-organised Combined Task Force (CTF) 151, littoral states from the Persian Gulf and Red Sea committed in June 2009 to create an all-Arab naval task force to combat piracy. States of this task force would include Bahrain, Djibouti, Egypt, Jordan, Kuwait, Oman, Qatar, Saudi Arabia, Sudan, the United Arab Emirates and Yemen.

39. "In 1992, at a symposium held in Delhi, an interesting, if somewhat radical, concept of a *Panchayat* for naval cooperation in the Indian Ocean was mooted by the then Indian Chief of Naval Staff. A *Panchayat* is the local council for governance in an Indian village, and forms the basic building block of democracy in India. While this concept aroused considerable interest in academic circles, it was an idea whose time had perhaps not yet come, and it petered out for lack of official interest. A decade later, an academic group of the Heidelberg University undertook an analytic study of Indian Ocean security. While endorsing the old *Panchayat* concept as well as the idea of a regional security regime, they also recommended enhancement in the range, scale and scope of security cooperation in

the Indian Ocean, mainly through non-governmental activity." Admiral (Retd.) Arun Prakash, former Chief of Naval Staff, India, "Commonality of Maritime Challenges and Options for a Cooperative IOR Maritime Security Structure", in *Contemporary Transnational Challenges: International Maritime Connectivities*, eds. Ravi Vohra and P.K. Ghosh (New Delhi: KW Publishers, 2008), p. 184. See also, in the Indian Ocean Region, for example, it has been suggested that, "the greatest opportunity that maritime cooperation...presents...is that of bringing about maritime security through the operationalisation of region.... As a first step, the increasing use of the expanded term "maritime safety and security"...may signal the convergence of regional views on maritime security. This is a *sine qua non* condition for effective and enhanced trade for the region, a critical foundation that will see the realisation towards improved stability, associated development and increased trade within, and for, the region...Cooperation is based on principles of sovereignty, equality, territorial integrity, political independence, and non-interference in internal affairs, peaceful coexistence, and mutual benefit." Rear Admiral (SAN) Bernard H. Teuteberg, "Operationalising Regional Maritime Cooperation Towards Ensuring Collective Maritime Security for the Indian Ocean Rim Association for Regional Cooperation", in *Contemporary Transnational Challenges: International Maritime Connectivities*, eds. Ravi Vohra and P.K. Ghosh (New Delhi: KW Publishers, 2008), p. 171.

40. For more details on CSI, see http://www.cbp.gov/xp/cgov/trade/cargo_security/csi/ (accessed August 4, 2009).

41. Details of the Megaports Initiative are available at http://nnsa.energy.gov/nuclear_non proliferation/1641.htm (accessed August 4, 2009).

42. "The response by most states has been to shift their defence emphasis in the direction of their maritime resources so as to utilise them as flexibly as possible. The challenge for the 18 nations of the Indian Ocean Rim Association for Regional Cooperation is to focus their collective maritime forces symbiosis in order to ensure permanent maritime security in this principal maritime arena." Rear Admiral (SAN) Bernard H. Teuteberg, "Operationalising Regional Maritime Cooperation Towards Ensuring Collective Maritime Security for the Indian Ocean Rim Association for Regional Cooperation", in *Contemporary Transnational Challenges: International Maritime Connectivities*, eds. Ravi Vohra and P.K. Ghosh (New Delhi: KW Publishers, 2008), p. 157.

43. "An enduring lesson that doctrine must emphasise is that warfare is about adaptation when confronting asymmetry...In an era of asymmetry, doctrine must create flexibility of thought and action by stressing creative application of force; doctrine must be predicated on uncertainty and not tied to prescriptive solutions to problems; doctrine must be constantly reviewed at all levels to ensure we retain the useful concepts and throw out those rendered useless by opponents; doctrine must capitalize on our asymmetric advantages." Colonel Clinton J. Ancker III, US Army (Retd.) and Lieutenant Colonel Michael D. Burke, US

Army (Retd.), "Doctrine for Asymmetric Warfare", *Military Review* (July-August 2003): 23, 25, http://usacac.army.mil/CAC/milreview/English/JulAug03/JulAug03/ancker.pdf (accessed August 3, 2009).