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Near-Future Trends that will Influence Global Security

James A. Tindall, Robert Boyd, and Andrew Campbell
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Executive Summary

In the 21st century new challenges to security will likely manifest themselves on a more frequent basis than in the past. Aspects such as security convergence and operational resiliency are examples of some components that may become vital to ensure continuity of operations at any level. Perhaps of greater importance is resource availability such as water, energy, and food that must become interdependent with national and strategic security initiatives. The fundamental key will be to maintain security processes that are both flexible and adaptable and that incorporate continuity goals and strategies. These processes should be based on an all hazards approach that considers disruption from the primary hazards (anthropogenic, natural, and technological). There are four major security implications: 1) to hedge against uncertainty; 2) curtail outdated and less useful security concepts; 3) explore new security concepts and be prepared to be rapidly adaptable; and 4) adapt through time and changing technologies. These implications will be applied against relations with not only current security issues, but far more significant issues that relate to critical infrastructure, mass sustainability, and hazards that affect them. Addressing such issues will require a heightened flexibility and adaptability that could prove problematic for hierarchal organizations. The new global landscape and the effects of economic, trade, social, natural resources, and other issues, particularly water security, power, and agricultural and food production in relation to the overall scope will likely result in reaching operational resiliency boundaries much faster, which could result in a quick cessation of operations. In such an environment, being able not only to respond, but also to anticipate and diffuse problems before they reach the point of collapse, will be of paramount importance to agency, government, and organizational security and continuity of operations. The relation of strategic, complex issues that can affect continuity of operations must be well understood.

INTRODUCTION

This report reviews the critical security issues, challenges, and threats that may likely emerge over the next 10 to 20 years. The security and response of a government, agency, or an organization will be influenced by key trends in global economic and commerce transformations, resource shortages such as water, changes in security from the physical to the technological, and trends in technology direction, as well as strategic goals.

In the near future and 21st century, new challenges to security will likely manifest themselves on a more frequent basis than in the past. For the near term, it is probable there will be opponents, particularly organized crime, terrorists, or nation states who can successfully counter security solutions directly, but there will also be challenges related to critical infrastructure security from various hazards, as well as large-scale effects on mass sustainability due to water, agricultural, and other resource scarcity. The hazards to life sustaining systems are categorized as anthropogenic, natural, and technological.

There are many security threats, direct and indirect that an organization must be prepared to counter. Because today's threats are not necessarily the same that could be faced in the future there remains the likelihood that current security solutions will be ill-suited. Aspects such as security convergence and operational resiliency are examples of some components that may become vital to ensure continuity of operations. Future adversaries will learn from the past and will likely confront us in very different ways, using means that will defeat or circumvent existing and new technologies or processes. New challenges will surely emerge not only in regard to current security issues but may stem from geopolitical, demographic and social, and economic drivers. Even a small group of individuals, terrorists or criminals in origin, with relatively modest capabilities and budget could have a significant impact on an organization or government. Growing reliance of societies on networked information systems to control critical infrastructures and communication systems to modern life have seen unprecedented growth.[1] Natural disasters of a variety of magnitude and intensity could also have catastrophic consequences as was demonstrated by Hurricane Katrina. Additionally, continued downturns in the global economy, without being addressed and improved could breed a new form of terrorism on a scale not previously encountered and in a manner difficult to address, even causing massive civil unrest. The Boston Marathon bombings in April 2013 may be illustrative of this type future.

The fundamental key is to maintain a security process that will be both flexible and adaptable and that incorporates continuity goals and strategies. This process should be based on an all hazards approach that considers all possibilities of disruption from the primary hazards (anthropogenic, natural, and technological). The very context of security will likely alter dramatically over the next generation as better and newer methods to sustain continuity of operations are developed. Sustainability of the agency, corporation or government on a mass scale would appear to be more important than the physical security process as a whole. This is well illustrated by the current global economic crises as problems with employment, shortage of resources, particularly water and food, begin to spread. Failure to anticipate these challenges and to change security processes, as well as

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[1] U.S. White House. *International Strategy for Cyberspace: Prosperity, Security and Openness in a Networked World*. Washington: Government Printing Office [cited April 23, 2013]; available from https://www.hsdl.org/?view&did=5665

intelligence processes and capacity commensurately could inexorably result in erosion of the ability to protect organizations and agencies. The majority of security efforts in the past and currently include a focus on guards, gates and guns (the 3Gs model) in terms of physical security, as well as in the new found resurgence of old fashion crime for profit. For example, rather than break in and steal property organized cyber criminals and terrorists are utilizing computer technology to hold firms at ransom. Cyber criminals leverage CNE activities (computer network exploitation to gain access to firm's server's gathering data from its automated information systems or networks at rest or moving through the cyber environment) as precursory option to DOS (denial of service attack). An example is DOS (denial of service attack in which a firm's server's is attacked by another server in an attempt to create an overload) or DDOS (distributed denial of service attack where multiple servers are used to attack simultaneously); the attack can also be done by infection with a virus that requires an encryption key to unlock. A ransom is then demanded to stop the attacks or get the encryption key so the firm can continue operations. These codes are becoming more malicious and more difficult to stop and have forced many firms to pay up —millions of dollars.[2] Tragically, this trend is continuing to increase. However, mass sustainability of security of people and systems is lagging behind. Examples include protection of critical infrastructure, but more importantly the sustainability of large masses that affect continuity of not only the affected areas but quite possibly stabilization of a region. For example, climate change could increase the dependency of developing countries on imports and accentuate existing focus of food insecurity in many countries around the world.[3] Food insecurity is a partial result of water security, whether the lack be from natural causes such as climate change, mismanagement of water resources, development of new supplies or other reasons, the problem exists and is growing. Agriculture and food production is intensely interdependent with water and its security. The impact is generally seen in four areas: 1) food availability (including production and trade); 2) accessibility; 3) usefulness; and 4) stability of supply, which is generally based upon available water. The food and water security system is diverse in scale, structure, and temporally. More importantly however, management of this now global security system is very complex due to the uncontrolled nature anthropogenic and natural hazards and also because the assessment of the effectiveness of management decisions is difficult because of interdependencies and complexity of water-systems components (agricultural, environmental, physical, and socio-economic), thus, training and education programs will improve competencies in water management[4]. Further complexity can occur in instances where water and food resource management is decentralized and performed by multiple management entities.

KEY TRENDS AFFECTING SECURITY

There appear to be four key trends, parallel and interrelated, that are, and will continue to drive changes for security, as well as other areas. These include: 1) the **geopolitical** revolution that

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[2] (Tindall, 2011)

[3] Amgad ELMAHDI. *"WBFS Model: Strategic Water and Food Security Planning on National Wide Level"* IGU-2008 Water sustainability commission. Tunis. Jan. 2008. [updated April, 27 2013]
Available at: http://works.bepress.com/amgad_elmahdi/24

[4] Hussin A., Tindall J. A., and Moran, E. *Water Security and Interconnected Challenges in Libya"* [cited April 27, 2013]
Available at: http://www.tinmore.com/pdf/WS121027_WaterSecurityLibya.pdf

prompted the collapse of the Soviet Union and that has witnessed the emergence of China as a major regional and global actor with a significant impact on manufacturing, economics, energy use and other industries and with Middle East partners and alliances, as well as violence in Iraq and Afghanistan that promises to spill into adjacent countries and regions; 2) **demographic and social** pressures on potentially volatile social and natural resource systems. These changes are becoming dramatically apparent in the Darfur region of the Sudan[5], the Middle East, and the Americas and are beginning to cause shifts in resources and global tensions that may ultimately impact mass security (the security of large-scale populations) for many corporations and governments around the globe due to interdependent effects within the economy, political and business partners/cooperators, the corresponding trade and economic issues that accompany them, and for a growing scarcity of global resources (food, water, and energy) and the systems they dominate; 3) the emergence of a **global, interdependent marketplace**. The Internet has and continues to pave the way for this to happen as it continues to change at almost an exponential rate[6]; and 4) the **technology** revolution that is transforming advanced industry-based economies into information-based economies and that promises to affect a revolution in global manufacturing bases, defense and other industry supply chains, labor markets, SCADA (Supervisory Control and Data Acquisition) controls for critical infrastructure, and interdependent areas. All of these should be considered in strategic security, policy, and organizational actions taken by major corporations and governments. The current global economic state is a key example of interdependence between the four trends. Intertwined significantly within this trend is governmental policy directed at critical resources. For example, the energy crises in regard to oil and alternative fuels, as well as water and its sustainability and security. The decisions made today about strategic security direction, whether as a corporation or a government, will likely have tremendous future implications, especially for those organizations who are global in scope.

GEOPOLITICAL TRENDS
For a specific case of point, the satellite states of the former Soviet Union have become more disparate as they compete for manufacturing and energy bases around the region and with near neighbors in the Middle East even as groups of states seek to join together in regional or other interstate arrangements to further common political and economic interests — the European Union (EU) is an example.[7, 8] From an organizational perspective these present security risks, challenges, and opportunities and, from a policy standpoint, serious problems could arise from governance and decisions about resources. As an example, the EU imports about one quarter of its gas from Russia, 80 per cent of which is distributed through a distribution system that crosses the Ukraine. Russia and Ukraine have had problems in the past regarding apportioning debts and assets, military disputes, and ethnic Russians.[9] What affects

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[5] Irin News, *Sudan: More Displacement Amid Continuing Violence in Darfur* (Reuters, 2007 [cited February 21, 2007]); available from http://www.alertnet.org/thenews/newsdesk/IRIN/17ac4df0d56400f5b6341a7b17024e02.htm.

[6] Steve Schifferes, *How the Internet Transformed Business* (BBC News, 2006 [cited January 3, 2007]); available from http://news.bbc.co.uk/1/hi/business/5235332.stm.

[7] (J. a. C. Tindall, A., 2009)

[8] Richard J. Krickus, *The Presidential Crisis in Lithuania: Its Roots and the Russian Factor* (East European Studies at the Woodrow Wilson International Center for Scholars, 2004 [cited March 2, 73]); available from http://www.lituanus.org/2007/07_3_01%20Krickus.html.

[9] *The post-cold-war war: strained relations between Russia and Ukraine.* The Economist , June 19, 1993.

would occur in the EU if Russia, due to a more serious issue with the Ukraine cut off natural gas supplies? On a broad scale, in addition to the typical security challenge, new challenges could arise based upon conflict of race, religion, political ideology, and economic status that might exert pressure on the solutions necessary to reduce operational and security risks. Iraq, Afghanistan, and other areas around the globe are good examples and, a downturn of the global economy would likely exacerbate global security problems and greatly extend affected areas. As a brief example, more people are moving from the passive to active role in terrorism in Britain[10] and throughout the EU terrorists are becoming more difficult to profile.[11] The Boston Marathon bombings could also fit into this category as they were totally undetected and, since currently, it is not readily known if the bombers acted alone as 'lone wolves' or were pawns in a more strategic enterprise. Furthermore, the law-enforcement resources involved to apprehend the agents responsible for the bombings were so large in scope for only two fugitives that other critical law-enforcement responsibilities were temporarily marginalized. These issues alone, notwithstanding natural and technological hazards, will only serve to further tax security forces and strategic goals and initiatives. The role and importance of multinational corporations within the security arena and in other areas around the globe will grow as government policy issues, business opportunities, and the number of commerce transactions abroad continues to expand, whether such services are to provide defense-type components to allies of the U.S. or basic business and manufacturing services. It is inevitable, due to a growing global population that security risks will rise and will exert growing influence on the global community, national governments and corporations.

As a corporation or government, these developments have implications on an approach to security solutions, partnerships, supply-chain, and agreements for all types of trade, the environment, food and water security, and other issues and pose a series of significant questions.

- What risks will be posed to the corporation or government policy in regions that control scarce resources, but may have plentiful labor or lack of it? The partial answer to this question may be forthcoming within the next two to three years as a result of China's growing water shortage and how it could affect bordering countries and U.S. foreign policy.
- How would a firm deal with an anti-nation alliance against its country of origin, which may affect the company or agency. An example is the five-nation alliance who have associated themselves with the Presidents of Venezuela and Iran, Hugo Chavez and Mahmoud Ahmadinejad respectively, against the U.S.[12] These alliance countries currently include Bolivia, Peru, Ecuador, Guatemala, and Venezuela, as well as influence from Iran and Cuba.
- What affect would such an alliance have on a government or one of its agencies or an organization that has partners or cooperators in the alliance region?

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[10] Mary Jordan, *Britain's Mi5 Warns of Rising Terror Threat: Spy Agency Aware of 200 Cells, Chief Says* (Washington Post, 2006 [cited December 21, 2007, updated April 27, 2103]); available from http://www.washingtonpost.com/wp-dyn/content/article/2006/11/10/AR2006111000138.html.

[11] Craig Whitlock, *European Terrorists Are Becoming Harder to Profile* (The Washington Post.com, 2007 [cited March 14, 2007, updated April 27, 2013]); available from http://www.washingtonpost.com/wp-dyn/content/article/2007/03/11/AR2007031101618.html

[12] (Tindall, 2011)

- What affect would it have on regulations such as ITAR (International Traffic in Arms Regulations), FOCI (Foreign Ownership, Control or Influence), FCPA (Foreign Corrupt Practices Act), import/export due diligence, or other legal, compliance, or policy issues — all part of security and, in practicality, an endless list. Clearly, an organization or government cannot overlook the importance of those with whom they have partnerships or alliances because the security risks can be high and the consequences dire. This is primarily because political, economic, or trade developments in the countries where partners reside have a considerable effect on strategic goals.

Security solutions, both short and long term, would be affected. Thus, the necessity of transformation to a more advanced, interdependent security convergence, operational risk management, and operational resiliency model (SCORMOR) would seemingly become more important because the latter can function more efficiently and effectively with large-scale strategic issues, mass sustainability, policy issues, and related factors that influence continuity of operations.

DEMOGRAPHIC AND SOCIAL TRENDS

Paralleling and influencing political developments are social and demographic trends that threaten to outstrip the ability of many countries and regional economies to adapt with trade partners and corporations. These include rapid population growth in regions ill-prepared to absorb such increase, refugee migration and immigration, chronic unemployment and underemployment, and intensified competition for resources, notably energy and water. As an example, China, while growing continuously in economic terms is facing what may become a dire water crises that could greatly affect mass sustainability. This crises is created by three mains factors: 1) Water distribution patterns and climate change; 2) Pollution (anthropogenic and natural); and 3) Industrial, particularly manufacturing growth, and population increases. As these three factors intensify, the demand for water will exceed capacity and negatively affect water security — not only in China, but its surrounding neighbors. This likely will result in global repercussions and changes to U.S. foreign policy.

The world's poor and developing countries face the greatest rates of population increase and the related challenge of providing jobs, health care, decent living conditions, and requisite social services, but also have many economically viable resources for the global marketplace. However, in preparation for participation to provide various goods and services, these countries will face many challenges, which also includes sustainability from a security perspective. Challenges will be especially serious in urban areas that are already experiencing acute shortfalls of services. Such developments could trigger recurrent humanitarian crises characterized by famine and disease that may require extensive security involvement and other responses by the international community — Ethiopia and Sudan are examples.[13] The problem — a flattening global landscape is having such an effect that current areas of stability or instability may be reversed in the near future (3 to 5 years) so that, now stable economies and countries, become much less stable — the problem could become particularly

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[13] *Patrick Webb, Joachim Von Braun And Tesfaye Teklu. Drought And Famine In Ethiopia And Sudan: An Ongoing Tragedy. Natural Hazards, Vol. 4, No. 1: 85-86, March 1991.*

acute in event of steepening global recession or depression. Examples of cultural and political revolutions (mostly violent) in past history worldwide clearly demonstrate how quickly operational and business environments can change. Even natural disasters, hurricane Katrina for example, suggest the need for greater preparedness from an operational resiliency perspective. How will business or governmental partnerships be influenced in such affected regions? How will natural hazards affect supply chains that are extended around the globe, where partners and allies are in many different countries and for which continued regulatory and compliance issues, intermingled with the auspices of national security, are increasing?

ECONOMIC TRENDS

Closely tied to the challenges developing from these demographic and social trends are the effects of the expanding global marketplace. U. S. citizens, businesses, and NGOs have moved into every corner of the globe.[14] This same process is occurring in other countries whose citizens, businesses, and NGOs have operations within and without their respective countries. Multinational corporations continue to gain economic power and political influence, posing not only opportunities and challenges for business growth, but also security challenges to the firm and to governments as well who may react by enforcing more stringent regulations that affect organizational growth and security. One example would be trade and economic sanctions such as those longstanding between the U.S. and Cuba. Even though they may become more difficult to implement and enforce, what would be the effect on corporate gains, policy, or programmatic issues and, are there backups in place for related security solutions? Conjointly, the flow of private capital into the less-developed world can be a force for positive change. The explosion of communications and information accessibility will influence political, cultural, and economic patterns and expanded employment bases, perhaps profoundly.

Critical resources such as water and arable land may become scarcer than oil, exacerbating political, economic, and ethnic tensions, which will present tensions and risks for corporations and NGOs, as well as government agencies and militaries. There are many examples, one of which occurred in Sri Lanka where fighting broke out in Trincomalee as a result of a dispute over water supplies leaving many to wonder if the entire country would be drawn into civil war.[15]

Another example of tensions caused by scarce resources is clearly portrayed by Israel. For example, the waters of the Sea of Galilee have served as a source of conflict between Israel and its neighbors for centuries. The 1967 Israeli War with Syria was a war over water. "I can promise that if there is not sufficient water in our region, if there is scarcity of water, if people remain thirsty for water, then we shall doubtless face war" said Meir Ben Meir, Former Israeli Water Commissioner. The Jordan Valley is not unique—along the Nile, Tigris and Euphrates there is also a danger of conflict over water. Palestinians gathering water from a spring in their village use a quarter as much water as their Israeli neighbors.[16] There continues to be strife over whether or not Israel will return access to rivers or

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[14] Kelly Davis, *Flat or Spiky? The Paradox of How the Flattening of the Global Economy Encourages Spikes of Economic Activity and Population Concentration* (Mid-America Manufacturing Technology Center, 2006 [cited January 10, 2007]).

[15] Samanthi Dissanayake. *Water and war in Sri Lanka*. BBC News (August 3, 2006 [cited November 10, 2007]); available from http://news.bbc.co.uk/2/hi/south_asia/5239570.stm.

[16] Ja'as, M.*"Infrastructure development after Oslo B in the West Bank governace of the Palestinian National Authority."* Water Science and Technology. 2000. Volume 42, No 1-2, pp 161-166.

underground water supplies with the return of lands such as the West Bank.[17] The lack of water keeps Israel, Jordan, Syria, and other neighbors in a constant state of tension. Nabil Sha'ath, the Palestinian Authority's Minister of Planning and International Co-operation, stated the Israelis have to rethink their agricultural practices. "They've got to change their crops, cut down on citrus, cut down on rice," explains Mr. Sha'ath.

Water in the Middle East has a long history. Post-WW I, Israel wanted Sykes-Picot borders altered to include the Jordan River, Lower Litani, east coast of the Sea of Galilee and Lower Yarmouk headwaters and tributaries.[18] These affect Palestine, southern Lebanon, Syria and the Jordan Valley. Efforts to secure them fell short because French opposition blocked them. By the end of World War II, accommodating a growing Palestinian and Jewish population grew acute. Israel's "War of Independence" followed in 1947-48, which assured water sovereignty as well. Several regional water-sharing proposals failed in part because Israel coupled them to recognizing the Jewish state. Israel's National Water Carrier project began in the late 1950s and through the early 1960s; it became the country's largest water project — to transfer Sea of Galilee northern water to highly populated areas in the center and south and to facilitate efficient water use.[19] Neighboring Arab states viewed the project as a hostile act — they responded with their own diversion plans. Reciprocally, Israel viewed these diversion plans as a national security threat and confrontation followed. Israel targeted the National Water Carrier and retaliated against Syrian construction sites — the 1967 war resulted. Ben-Gurion had previously warned that Israel and Arab neighbors would battle over strategic water resources and determine Palestine's fate. A well documented perspective regarding Israel and its 'Water Wars' has been written by Godesky.[20]

This issue will likely become quite contentious in the future as population throughout the Middle-East region increases, the distribution infrastructure continues to deteriorate, and water shortages grow. This could be particularly catastrophic due to links between terrorist groups in various countries in the region and the heavily armed nature of potential combatants.[21] Despite this, water security is crucial for the entire region and could serve as a strengthening common bond between Israel and its neighbors. Thus, securing and preserving water supplies against, natural, anthropogenic, and technological threats is essential. This example serves as a reminder that security trends go far beyond physical security and armed combatants. Further, the combined complexities are both highly interdependent and very intricate. The Middle East is not the only location where this water-resource crisis rears its dire concerns; additional river systems such as the Nile, Indus, Brahmaputra, Euphrates, and others, even the Southwest United States, are witnessing increasing vulnerability and risk.[22]

Finally, perceived disparities of wealth, where vast riches are controlled by relatively few countries, could also create tension and present political and moral challenges for business and

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[17] Nazer, D., Siebel, M., Van Der Zaag, P., Mimi, Z., and Gizjen, H. *"Water Footprint of the Palestinians in the West Bank."* American Waters Association. Journal of the American Water Resources Association. 2008. Volume 44, No. 2, pp. 449-458.

[18] Stephen Lendman. *Drought and Israeli Policy Threaten West Bank Water Security.* Global Policy Forum (in press).

[19] Stephen Lendman. *Drought and Israeli Policy Threaten West Bank Water Security.* Global Policy Forum (in press).

[20] Jason Godesky. *"Israel's Water Wars."* Anthropik Network (August 15, 2006): http://anthropik.com/2006/08/israels-water-wars (accessed July 20, 2008).

[21] Tindall, James, and Andrew Campbell. *"Water Security – Homeland and International Security Implications."* 2009. In press.

[22] (Tindall, 2011)

governments. As an example, in some countries bribes are common place, but for businesses in the U.S. strict internal controls prohibit this.[23] The key legislation is the FCPA. How will this affect global security practices of the U.S. and American business organizations, as well as foreign governments and other corporations?

TECHNOLOGY TRENDS

Technology will play an ever-increasing and imperative role in security policy and solutions in the future. Exponential advances in computing power, the rise of high-speed networks, and the growing mobile revolutions, which puts the entire Internet at our fingertips, have unleashed new innovations, spawned new industries and reshaped existing ones.[24] Conversely, natural disasters, accidents, or sabotage can disrupt cables, servers, and wireless networks on U.S. soil and beyond.[25] Robotics and unmanned vehicles will likely become a part of everyday life—an example is the increased use of drones against American terrorist abroad. Nano-technology has the potential to radically alter every manufacturing process from computer systems to defense technology and household goods. Information technologies will play a preeminent role in communications, global manufacturing, security, and other industries. A critical technology could be advancement in energy technology such as cold fusion that could catapult the globe from dependence on depleting petroleum reserves or enhanced development in solar, wind, and geothermal energy technologies, as well as combustion engines that run on water. Technological advances will also lend themselves to more lethal and destructive weapons that can be utilized by criminals and terrorists. In the hands of these groups, foreign or domestic, new weapons offer frightening security prospects to all entities not only in terms of immediate physical threat, but in destruction of large distribution and life sustaining systems that comprise critical infrastructure.

It would appear that since the advent of the dot-com era the world has been in the grip of rapid technological advances in everything from surveillance and detection technologies to space-borne telecommunications.[26] The rapid rate of new and improved technologies, a new cycle about every eighteen months, is a defining characteristic of this era and of future change and will likely have an indelible influence on new security strategies, operational concepts, and tactics that organizations and governments and their agencies employ from the programmatic to the strategic level. If security and continuity functions do not maintain a change of pace equal to that of the technological revolution it is very likely that vulnerabilities and risks will increase dramatically.

FUTURE SECURITY CONSIDERATIONS

Depending upon environmental disasters, wars, epidemics, and technological breakthroughs — any plausible world future could fundamentally alter the local to global security environment. Current key

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[23] BISNIS, *Foreign Corrupt Practices Act Antibribery Provisions* (Business Information Service for the Newly Independent States (BISNIS),   [cited January 8, 2007]); available from http://www.bisnis.doc.gov/bisnis/fcp1.htm.

[24] U.S. White House. Digital Government: Building a 21st Century Platform To Better Serve the American People. Washington: Government Printing Office [cited April 27, 2013]; available from https://www.hsdl.org/?view&did=711162

[25] U.S. White House. *International Strategy for Cyberspace: Prosperity, Security and Openness in a Networked World*. Washington: Government Printing Office [cited April 23, 2013]; available from https://www.hsdl.org/?view&did=5665

[26] Spectrum Online, *Terror: What's Next? Five Years after 9/11, Technology's Role against Terrorism Is Still Murky* (IEEE, 2006 [cited January 20, 2007]); available from http://www.spectrum.ieee.org/sep06/4426.

trends point toward at least one of two types of world futures with various consequences. However, any future will experience the necessity for continued and well-thought out strategic security processes. Two futures examples include: 1) conventional balance as has been experienced until now, but one where a hostile alliance is posed against a particular nation or region, such as the Venezuela Alliance against the U.S., even though it may falter since the death of Hugo Chavez; and 2) a future of unending crises in which there are deteriorating global economic conditions coupled with the breakdown of international, corporate, and NGOs and institutions, as well as interdependent effects with critical resources such as energy, water, and food.

The latter appears to be currently emerging as a result of economic global downturn. Increasing energy prices, higher food prices, and a continuing credit crises, beginning in the U.S. as heavy mortgage losses and a substantial credit crisis leading to the drastic bankruptcy of large and well established investment banks predominated from about 2007-2009, as well as commercial banks in many nations around the world has been ongoing, such as the recent crisis in Greece that could spread to Portugal, Spain, Italy, and other European countries. Perhaps more importantly, there are several global trends that have emerged, which are important from a security perspective. These trends include: 1) **High Prices** (the prices of many commodities, notably oil and food, are rising so high they could cause genuine economic damage, threatening stagflation and a reversal of globalization). 2) **Trade** (the credit crunch is making it difficult for exporters to obtain letters of credit, which could cause a further rise in prices and eventually a shortage of goods). 3) **Inflation** (In February 2008, Reuters reported that global inflation was at historic levels, and that domestic inflation was at 10-20 year highs for many nations.[27] Inflation was also increasing in the developed countries,[28] but remained low compared to the developing world, but appears to be increasing again, even in the U.S. as the Federal Reserve continues to print additional money); 4) **Increasing Unemployment** (The International Labor Organization (ILO) predicted that at least 20 million jobs will have been lost by the end of 2009 due to the crisis - mostly in "construction, real estate, financial services, and the auto sector" - bringing world unemployment above 200 million for the first time.[29] This trend continues to worsen. The ILO's recent update of this figure indicates they were correct. By the end of 2013, unemployment is expected to be about 205 million or a 6.1 percent global unemployment rate, increasing to 6.2 percent by 2017. The rise of advanced economies in Brazil, India, and China increased the total global labor pool dramatically. Recent improvements in communication and education in these countries has allowed workers in these countries to compete more closely with workers in traditionally strong economies, such as the United States and Europe. This huge surge in labor supply has provided downward pressure on wages in developed countries and contributed to unemployment.[30] Another potential cheap labor pool could be North Korea if political tensions ease with world nations and the country seeks a more

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[27] Kevin Plumberg and S.C. Johnson. *Global Inflation Climbs to Historic Levels* (The New York TImes, November 2, 2008 [cited November 2, 2008]); available from http://www.nytimes.com/2008/02/12/business/worldbusiness/12iht-inflate.1.9963291.html.

[28] *EU slashes growth forecast, foresees inflation surge* (EurActiv, February 22, 2008 [cited February 23, 2008]); available from http://www.euractiv.com/en/euro/eu-slashes-growth-forecast-foresees-inflation-surge/article-170470

[29] *Financial crisis to cost 20 million jobs: UN* (Reuters, October 21, 2008 [cited October 28, 2008]); available from http://www.expressindia.com/latest-news/Financial-crisis-to-cost-20-mn-jobs-UN/376061/.

[30] Thomas Palley. The Global Labor Threat. Tom Paine (Institute for America's Future – September 29,2005 [cited July 23, 2008]); available from http://www.tompaine.com/articles/2005/09/29/the_global_labor_threat.php

robust path forward. Perhaps more importantly, these changes can be greatly curtailed by increasing global unemployment with a resulting and cascading social unrest that could prove extremely difficult to national security and to both local and national response forces to cope with. This will be particularly true if ensuing water scarcity continues causing reduced food production that could result in inflation of food prices and scarcity so severe that city-wide riots occur, potentially affecting 1.5 billion people. "*Rocketing food prices — some of which have more than doubled in two years — have sparked riots in numerous countries recently. Millions are reeling from sticker shock and governments are scrambling to staunch a fast-moving crisis before it spins out of control. From Mexico to Pakistan, protests have turned violent*"[31]; and 5) **Policy Responses**. Because national security is closely tied to commerce, trade, and the economy, it is the author's opinion that the financial phase of the crisis beginning with the mortgage crises in the U.S. will likely spread globally and possibly lead to emergency interventions in many national financial systems. This is plausible particularly for the U.S., China, India, and the EU as they are close trading partners whose combined trade and economic health have rapid and global repercussions.

CONVENTIONAL BALANCE FUTURE

A global condition in which a traditional balance of power exists and in which a hostile regional alliance or even a single nation such as China, Russia, or even Iran is rising to challenge the United States and EU or other global influence of power represents a conventional balance. The Latin America alliance described previously is an example, thus this world future may already be upon us. In response to such a future, a government or organization will likely be required to adapt new security relationships and enter into new alliances, trading, and partnerships to balance and, if necessary, counter new security challenges. This implies that both governments and large corporations could be required to develop a greater capacity for adaptability, flexibility, and operational resiliency. Will a hierarchal organization be able to adapt? Examples of this future also include the formation of an all-Asia or all Latin/South America trading bloc similar to the EU and possibly other large groups centered on opposing the political, economic, and cultural influence of the West, primarily the U.S. Increased security spending worldwide will be a prominent feature of this world, as well as military spending — this is occurring today in Iraq, Afghanistan, India and other areas, despite withdrawal.[32] However, the great majority of future security spending by both corporations and governments will likely be on more strategic issues such as security convergence processes, operational risk management, risk assessment, and related processes because these will ensure operational resiliency and continuity of operations. Additionally, many states and criminal groups (including terrorists) will likely have acquired WMDs and the means to deliver them, partially if not completely. If terrorists do not possess or obtain WMDs, they will almost assuredly possess highly toxic chemicals or bio agents such as anthrax, thallium, or even Ebola. Although ethnic and humanitarian tensions will likely still exist, their relative significance in the international system could possibly be reduced due to the resurgence of nation-state conflict. Consequently, security processes must position organizations to defend against all hazards and risks.

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[31] Vivienne Vault. The World's Growing Food-Price Crises. Time Online (February 27, 2008 [cited July 25, 2008]); available from http://www.time.com/time/world/article/0,8599,1717572,00.html.

[32] Petter Stålenheim, Catalina Perdomo and Elisabeth Sköns. Chapter 8: Military Spending. *In* SIPRI Yearbook 2007: Armaments, Disarmament, and International Security. Stockholm International Peace Research Institute, Sweden.

UNENDING CRISES FUTURE

The unending crisis future is that in which deteriorating global economic conditions is coupled with the breakdown of international institutions and organizations, water and its security, transportation, and other critical infrastructures due to a weakened economic state and also scarcity of resources, particularly water, food, and energy. The key critical infrastructures in this case would be telecommunication, power and energy, and water, with possible catastrophic effects on agriculture and food production if power and water are significantly affected. Weakened nation-states, non-state organizations, corporations, and coalitions could fight over scarce resources. The current "water wars" is a good example.[33, 34] Government, nation-state, and corporate alliances will likely be fluid, unpredictable, and opportunistic. Nationalism and ethnic hatreds could form violent independence movements in Latin and South America, Asia, South Asia, and the Middle East, which has happened in many areas throughout history and recently in Bosnia and Rwanda.[35 36] Pivotal states—countries whose fate determines the survival and success of the surrounding region and ultimately the stability of the international system—will likely be in crisis. The list currently includes Mexico, Brazil, Algeria, Egypt, South Africa, Turkey, India, Pakistan, and Indonesia, but could be modified and grow with time. Virtual narco-states (host states dominated by drug organizations—Mexico and Columbia are examples) exist in regions of Latin, South, and Central America and Southeast Asia. Weapons of mass destruction and other high-tech weapons and their means of delivery could become widely available to those who have the money to buy them. Unchecked massive migrations and failing municipal infrastructures accelerate urban chaos as municipal population increase, causing subsequent strain on both critical infrastructure and distribution systems, particularly power and water, and also economic strain due to increasing unemployment and subsequent reduced tax revenues from local to national levels. This can be seen today in "sanctuary" cities and states within the U.S. that are having difficult economic problems as a result of such influx, primarily illegal immigration.[37, 38] It is likely that the United States and Europe could be in danger of losing much of their resolve and ability to influence international events as countries such as China, Russia, Iran, and alliance countries against NATO and the West become more influential as a result of global resource distributions, economics, and security dilemmas. The withdrawal strategy of Britain and other allies from Iraq may signify the beginning of

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[33] Jeffrey Sachs, *War Climates* (Global Policy Forum, 2006 [cited January 19, 2007]); available from http://www.globalpolicy.org/socecon/hunger/environment/2006/1023sachsclimate.htm.

[34] (J. Tindall, and Campbell, A., 2009)

[35] CRS Summary: A resolution expressing the sense of the Senate regarding the massacre at Srebrenica in July 1995 sponsored by Senator Gordon H. Smith. Library of Congress, Congressional Research Service (June 22, 2005 [cited July 28, 2008]); available from http://thomas.loc.gov/cgi-bin/bdquery/z?d109:SE00134:@@@D&summ2=m&.

[36] William Ferroggiaro. The U.S. and the Genocide in Rwanda 1994: Information, Intelligence and the U.S. Response. The National Security Archive (March 24, 2004 [cited July 31, 2008]); available from http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB117/index.htm.

[37] *"Illegal Immigrants Cost Millions in N.J. Tax Dollars."* PressofAtlanticCity.com. January 15, 2008: http://www.pressofatlanticcity.com/156/story/58524.html (accessed June 18, 2008).

[38] Coleman, D.A. *"Why Borders Cannot Be Open."* In "International Union for the Scientific Study of Population. XXIV General Population Conference, Salvador da Bahia, Brazil, Plenary Debate no 4. Friday 24 August 2001*:* www.populationenvironmentresearch.org/papers/Colemanmigration.pdf (accessed June 19, 2008).

this type of world future.[39]   In this future, the U.S. public, as an example—perceiving little chance of influencing the chaos abroad—may become preoccupied with domestic security and the economy as non-state actors increasingly penetrate the United States with illegal drugs, terrorism, weapons of mass destruction, cyber intrusions and attacks on U.S. industry and critical infrastructure, transnational crime from across the southern U.S. border with Mexico and maritime boundaries, as well as across the northern border with Canada and, as Internet crime continues to grow. More pernicious still would be massive civil unrest due to increasing taxation, lack of jobs, failed economy, and overall failure of leadership, accountability, and responsibility of the three branches of U.S. government that would likely spur such action.

IMPLICATIONS

In considering these trends and the various world futures and, possible strategic environments that may be faced, several implications emerge. The nation-state, although still the dominant entity of the international system, is increasingly affected by the growing power of multinational corporations and international organizations, transnational encroachments on national sovereignty, and demographic pressures that stress the abilities of governments to meet their citizens' needs. The addition of organized criminal groups and terrorist organizations to this mix, as well as possible significant social unrest due to poor global economic conditions, failure of governments to adequately respond, and disparate global resources distributions creates an uncertain future. This is readily observed in developed cultures with better economic status and thus, access to viable clients such as Europe and particularly the U.S. that is experiencing a severe economic downturn and a significant growth of gangs.[40] [41] Thus, new organizations and even country level strategic-alliance structures may develop that reflect concerns about these evolving challenges, while less relevant alliance relationships will decline.

Technology, geopolitical developments, and economic and social trends will fundamentally alter the realities of today and most certainly impact security trends and processes of tomorrow. However, it is likely the real test will be caused by water-security issues due to shortages and distribution patterns and the consequent affects on food and agricultural production, as well as related power and energy problems. As an example, resulting from these problems is the plausibility that within the U.S., specific government agencies, such as the United States Geological Survey (USGS) (whose mission is to provide water information that benefits the Nation's citizens) could face far-reaching programmatic and policy change(s) forced by new international water resource issues and assignments related to world-wide water problems and scarcity and overall water security. Because the USGS is one of the best equipped organizations to cope with such complex issues their entire role could be adjusted and modified from a forcing of global and therefore, national security concerns, despite the fact the USGS is not an intelligence or defense related agency. Other agencies in the U.S.

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[39] CBS News Staff, *U.K. To Start Iraq Withdrawal* (CBS News, February 21, 2007 [cited February 28, 2007]); available from http://www.cbsnews.com/stories/2007/02/21/world/main2496920.shtml.

[40] Delgadillo, Rocky. *"Going Global to Fight Gangs."* Los Angeles Times (August 18, 2008): http://www.latimes.com/news/opinion/la-oe-delgadillo18-2008aug18,0,1640811.story (accessed October 20, 2008).

[41] Cone, Tracie. *"Mexican Drug Gangs Invade U.S. National Forest Land."* Denver Post (October 12, 2008): http://www.denverpost.com/nationworld/ci_10698914 (accessed October 20, 2008).

such as the Department of Energy, as well as a variety of global governments may be tasked with additional duties they were not originally organized to fulfill, but which their expertise greatly qualifies them for as a result of these complex issues and cascading problematic effects. However, to do so would require forward thinking and a fundamental shift of leadership that currently does not exist in these groups or organizations.

The range of possible outcomes is impossible to predict with any certainty. Each will present unique conditions, many very different from those of today. The central challenge to security structure is to move forward in a manner that enables effective response to risks, whether from the programmatic level of a company or agency or the strategic level of a nation. This strongly suggests a hedging approach for preparing for the future. Therefore, there are likely four major security implications: 1) to hedge against uncertainty; 2) curtail outdated and less useful security concepts; 3) explore new security concepts and be prepared to be rapidly adaptable; and 4) adapt to and with changing technologies. All of these will be applied against relations with not only security issues of current concern, but far more significant issues that related to critical infrastructure, mass sustainability, and hazards (anthropogenic, natural, and technological) that affect them. For best results, current security capabilities could be both maintained and advanced where possible as adaption proceeds to reduce near-term risks. For long-term risks, knowledge about evolving challenges and competitors will yield a better understanding of security needs and requirements. During this time a continued adaptation of improved, strategic security processes and policy would be prudent.

CONCLUSIONS

Many other areas should be considered for future security and operational success, but there is insufficient room in this report to discuss them. A partial list might include a broad security approach that allows adaption of future alliances to new security environments, considering new avenues of interoperability with partners, institutionalizing innovation and change, incorporation of security convergence processes, and for large organizations, pursuing avenues that create resiliency and adaptability, as well as many others.

The challenges an organization or government are apt to be confronted with in the future differ substantially from those of the past simply because of the global landscape that allows even small firms and countries to compete effectively with goliaths—terrorist confrontation with many government is an apt demonstration of this principle. The recent downfall of Lehman Brothers, an economic giant, who had done business for 158 years, is another key example.[42] The collapse of the Soviet Union and advent of the Internet began an unstoppable process that has changed the major fault lines of international business and governmental policy, security, specific agencies responsible for critical resources, and geopolitical systems around the globe. Concurrently, ongoing technological revolution in computers, through hardware and software innovations, has restructured government alliances, global business and economic patterns and promises to alter dramatically government, corporate, and security operations and the character of security in regard to business-as-usual and societal functions. Increasingly, sophisticated high-tech weapons promise to multiply advanced attack

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[42] Story, Louise, and Ben White. *"Lost Chances Marked Lehman's Downfall."* International Herald Tribune – The Global Edition of the New York Times (October 6, 2008): http://www.nytimes.com/2008/10/06/business/worldbusiness/06iht-lehman.1.16717802.html?pagewanted=all&_r=0 (accessed October 31, 2008, updated April 27, 2013).

capabilities for anyone with the money to buy them, with the two potential adversaries being organized crime and transnational terrorists who appear currently to be money rather than ideologically motivated. Existing and emerging security challenges are occurring in an international environment where commercial, financial, cultural, and communication links often transcend geographic borders creating strong interdependencies and domino failure or success effects. But perhaps most critical, intertwined among all of these complex issues, is the greater complexity of global resources, such as water, food and energy, and how they relate to the overall strategic security issue at corporate, local, regional, national, and global levels, as well as the necessity of world defense departments to consider these in both short and long-term national security strategies.

New technologies have diminished the importance of geographic distance but increased the importance of time and consequently, the ability and necessity to respond quickly to emerging problems. This would imply that addressing such issues will require a heightened flexibility and adaptability—this will prove problematic for hierarchal organizations, as well as governments. The new global landscape and the effects of economic, trade, social, and other issues, particularly water supply and security, power, and agricultural and food production in relation to the overall scope will result in reaching operational resiliency boundaries much faster and with dire consequences if resiliency breaks. This could result in a quick cessation of operations. In such an environment, being able not only to respond, but also to anticipate and to diffuse problems before they reach the point of collapse, will be more important than ever before to agency, governmental, or organizational security and continuity of operations. This also implies that the relation of strategic, complex issues of hazards, critical infrastructure, and others that can affect continuity of operations must be well understood.