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**COMMENT: GREEN WARFARE: AN AMERICAN GRAND  
STRATEGY FOR THE 21ST CENTURY**

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**I. A CALL TO ARMS: IN SEARCH OF A GRAND  
STRATEGY FOR THE AMERICAN FUTURE**

Grand strategy, a concept studied both in business management as well as statecraft, refers to the overall distribution of the entirety of an organization's resources toward an overarching objective.<sup>1</sup> For nation-states, grand strategy attempts to make sense of the seemingly random variables that drive global politics by bringing them to life, giving them a meaning that transcends any mechanical analysis of the data.<sup>2</sup> At the same time, however, it attempts to do so in a way that realistically reflects the limited nature of the resources at hand.<sup>3</sup>

As one of the seminal thinkers of international relations – Carl von Clausewitz – saw it, in the most fundamental sense, grand strategy requires both intuition and imagination; it requires the ability to perceive, in a holistic sense, the essence of a given problem by piercing the many layers that comprise it.<sup>4</sup> Indeed, “Clausewitz called

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<sup>1</sup> See generally COLIN GRAY, *WAR, PEACE AND INTERNATIONAL RELATIONS: AN INTRODUCTION TO STRATEGIC HISTORY* 283 (2007) (defining grand strategy as “[t]he purposeful employment of all instruments of power available to a security community.”).

<sup>2</sup> CHARLES HILL, *GRAND STRATEGIES: LITERATURE, STATECRAFT, AND WORLD ORDER* 6 (2010) (“Literature lives in the realm grand strategy requires, beyond rational calculation, in acts of the imagination.”).

<sup>3</sup> See HENRY KISSINGER, *DIPLOMACY* 812 (1994) (“The precise balance between the moral and the strategic elements of American foreign policy cannot be prescribed in the abstract . . . . However powerful America is, no country has the capacity to impose all its preferences on the rest of mankind; priorities must be established.”).

<sup>4</sup> See HILL, *supra* note 2, at 6.

[this type of visionary thinking] the *coup d'oeil*: an integration of experience, observation, and imagination that ‘constructs a whole of the fragments that the eye can see.’”<sup>5</sup> In this sense, grand strategy takes on an almost literary quality as it attempts to provide a narrative that will resonate with, and mobilize, a country’s population.<sup>6</sup>

The United States is in desperate need of such farsighted leadership. This country is in the midst of an identity crisis, having struggled to define itself since the end of the Cold War. As the world’s lone superpower, the United States has learned the hard way that along with its strong standing comes immense responsibility in terms of leading efforts to eliminate climate change, nonproliferation, and global poverty.<sup>7</sup> Recent developments in international affairs, sustained economic woes, and partisan gridlock have divided the nation’s attention and resources. Lawmakers are currently playing whack-a-mole with America’s priorities,<sup>8</sup> lacking both the vision and direction needed to combat the long-term challenges that await.

However, all is not lost. Despite increasing (and oftentimes overblown) fears of “American decline,” the United States remains the world’s top dog in terms of economic and military power.<sup>9</sup> What these fears reflect, however, is the very real sentiment that the United States can no longer sustain itself as the head of a purely unipolar world.<sup>10</sup> Economies in emerging markets such as China, India, and Brazil have shaken off their lethargy and are growing in a manner which suggests a global realignment of wealth is beginning to take place, shifting from West to East and from North to South.<sup>11</sup> Because

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<sup>5</sup> *Id.*

<sup>6</sup> *Id.* at 5 (“Perhaps most profoundly through literary lenses, ‘America’ as a new idea for the world revealed layers of meaning, mainly in a democratic direction, for the project of constructing a modern international system.”).

<sup>7</sup> See ROBERT D. KAPLAN, *MONSOON: THE INDIAN OCEAN AND THE FUTURE OF AMERICAN POWER* 143 (2010) (“Because it is the world’s greatest power, the United States must be seen to take the lead in the struggle against global warming or suffer the fate of being blamed for it.”).

<sup>8</sup> See Matthew Weaver, *Barack Obama Facing Two Years of Political Gridlock*, [GUARDIAN.CO.UK](http://www.guardian.co.uk), Nov. 5, 2010, available at 2010 WLNR 22055371 (discussing the partisan gridlock facing the country over the next two years).

<sup>9</sup> See Fareed Zakaria, *Are America’s Best Days Behind Us?*, *TIME* (Mar. 3, 2011), <http://www.time.com/time/nation/article/0,8599,2056610,00.html> (“Yes, the U.S. remains the world’s largest economy, and we have the largest military by far, the most dynamic technology companies and a highly entrepreneurial climate.”).

<sup>10</sup> See KISSINGER, *supra* note 3, at 809–10 (“[V]ast global forces are at work that, over the course of time, will render the United States less exceptional. . . . Americans should not view this as a humbling of America or as a symptom of national decline.”).

<sup>11</sup> RAGHAV BAHL, *SUPERPOWER?: THE AMAZING RACE BETWEEN CHINA’S HARE*

this new wealth begets power, it is clear that the United States will face increasing competition in the coming decades.<sup>12</sup>

This is a departure point in American history. Increasingly burdened by the prosecution of two wars, a historic financial crisis, and ever-mounting interest on the national debt, the United States faces deep and painful cuts in spending in order to restore its fiscal health.<sup>13</sup> Yet American politicians must take care not to sacrifice long-term programs in pursuit of short-term political gains. It is said that the most dangerous animal in the woods is the wounded one; as the U.S. begins to recapture its economic momentum, it will be poised to make radical changes in terms of aligning the nation's policy objectives.

President Obama presented a vision of "Winning the Future" in his 2011 State of the Union address, offering a feel-good story that was ultimately short on detail and made vague calls for investment in high-speed rail and clean energy.<sup>14</sup> As the United States emerges from this economic crisis, it should not fall back on piecemeal measures and disjointed policies. This is a time for a fundamental realignment of American resources toward a defined and overarching national objective.<sup>15</sup> The crafting of a grand strategy for the United States will require radical thought and near-panoramic insight. This Comment seeks to offer a glimpse of what such a grand strategy could look like, drawing on the strengths of the American model to fundamentally reshape the way the U.S. produces, supports, and defends its way of life.

In short, this Comment advocates an Apollo Program-type mentality in terms of "greening" American society from the top

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AND INDIA'S TORTOISE 10 (2010) ("[Within twenty years, Brazil, Russia, India, and China] could increase their share of global equity markets by over five times, to 17 per cent—close to Europe's share—causing a tectonic shift in world capital markets.").

<sup>12</sup> See KISSINGER, *supra* note 3, at 809 ("The United States will likely have the world's most powerful economy well into the next century. Yet wealth will become more widely spread, as will the technology for generating wealth. The United States will face economic competition of a kind it never experienced during the Cold War.").

<sup>13</sup> See Richard Wolf, *Deficit Panel Outlines Savings Plan Reaching Deal on Cuts, Caps May be Hard*, USA TODAY, Nov. 11, 2010, at 6A, available at 2010 WLNR 22517079.

<sup>14</sup> See generally President Barack Obama, *State of the Union Address* (Jan. 25, 2011), available at <http://www.whitehouse.gov/photos-and-video/video/2011/01/26/2011-state-union-address-enhanced-version>.

<sup>15</sup> See KISSINGER, *supra* note 3, at 718 ("Segmented into a series of individual, and at times isolated, initiatives geared to highly specific problems, American foreign policy is rarely approached from the point of view of an overall concept. . . . It takes an unusually strong and determined president . . . to break this pattern.").

down—beginning with the military—in order to break the country’s addiction to fossil fuels. In embracing a broad-based “green” strategy, the United States can weave together a number of priorities heretofore thought irreconcilable: national security, environmental protection, and economic growth. In defining a clear “enemy” – our dependence on fossil fuels—the U.S. can unite various segments of society around a value-neutral and universally beneficial policy objective. By calling upon the resources of academia, the military, and the business community, the government can harness the institutions in which America has traditionally had the most palpable innovative advantages.<sup>16</sup> By becoming the international leader in green technology invention, production, and deployment, the United States can help ameliorate the effects of its last industrial revolution while triggering a new one in the process.

Disagreement exists as to whether the U.S. should be run more akin to a business. Regardless of whether it is governed as a corporation or as a state, America direly needs to redefine its brand. “Going Green” should be more than just a slogan – it should be a national business model. Implementing a grand strategy of this magnitude will require confronting institutional biases across multiple levels of governance, and this President utilizing the bully pulpit to continue framing the debate.<sup>17</sup> Such an undertaking will not come without its difficulties, as overcoming orthodoxy demands not only intellectual rigor but unshakable political courage. The United States cannot view the goals of military superiority, environmental protection, and economic growth as mutually exclusive any longer. Indeed, as F. Scott Fitzgerald put it, “The test of a first-rate intelligence is the ability to hold two opposed ideas in the mind at the same time and still retain the ability to function.”<sup>18</sup> Keeping this

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<sup>16</sup> See Press Release, U.S. Dep’t of Commerce, U.S. Dep’t of Commerce Announced Series of Forums on Innovation (June 28, 2010), *available at* <http://www.commerce.gov/news/press-releases/2010/06/28/us-department-commerce-announces-series-forums-american-innovation> (“The U.S. Department of Commerce and its Office of Innovation and Entrepreneurship at the Economic Development Administration today announced four innovation forums to be held . . . with university leaders and key stakeholders to discuss the role of universities in innovation, economic development, job creation and commercialization of federally funded research.”).

<sup>17</sup> KISSINGER, *supra* note 3, at 741 (“All great departures in American foreign policy have resulted from strong presidents interacting with America’s other institutions. The president serves as the educator whose moral vision provides the framework for the debate.”).

<sup>18</sup> HILL, *supra* note 2, at 3.

sentiment in mind, the engine that will drive American business growth in the coming decades must, by design, be a hybrid one.

## II. FRAMING THE PROBLEM: AMERICA'S ADDICTION TO FOSSIL FUELS

Any mention of “green technology” inevitably invokes thoughts and discussion about climate change. As of late, however, these discussions have become increasingly uncivil as climate change has become a lightning rod for many in the political sphere.<sup>19</sup> As a result, most major attempts at environmental legislation have ground to a halt. If it was difficult enough before, the results of the 2010 elections have effectively rendered any prospects for meaningful “cap and trade” legislation dead on arrival.<sup>20</sup> The Environmental Protection Agency, which recently declared its intent to promulgate new rules for greenhouse gas emissions, is under siege with new threats to block the rules and even revoke the agency’s funding growing by the week.<sup>21</sup> For whatever reason, environmentalism for environmentalism’s sake appears to no longer be politically palatable. Thus, this Comment will not discuss green technology primarily in the context of climate change; in essence, the issue must be reframed in order to better capture the public spirit.

Indeed, even apart from purely environmental concerns, green technology represents one of the most profitable avenues for economic growth in the foreseeable future. Markets for green technology exist in a variety of economic sectors as private demand has begun to shift businesses’ focus toward becoming more environmentally friendly.<sup>22</sup> Due at least in part to its system of intellectual property protection, the United States has much to gain from the expansion of green technology.<sup>23</sup>

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<sup>19</sup> See Kim Chipman & Jim Snyder, *Republicans Introduce Bill to Block EPA Greenhouse Gas Rule*, BUS. WK. (Mar. 3, 2011, 9:36 PM), <http://www.businessweek.com/news/2011-03-03/republicans-introduce-bill-to-block-epa-greenhouse-gas-rule.html>.

<sup>20</sup> See John M. Broder, *Tracing the Demise of Cap and Trade*, N.Y. TIMES, Mar. 26, 2010, at A13, available at [http://www.nytimes.com/2010/03/26/science/earth/26climate.html?\\_r=1](http://www.nytimes.com/2010/03/26/science/earth/26climate.html?_r=1).

<sup>21</sup> Chipman & Snyder, *supra* note 19.

<sup>22</sup> See Michael Hasper, *Green Technology in Developing Countries: Creating Accessibility Through A Global Exchange Forum*, 2009 DUKE L. & TECH. REV. 1, 5 (2009) (“It is hardly surprising that many companies see product differentiation as a benefit of going green. A major driving force behind the ability to garner a profit is the opportunity to capture an untapped market, stimulate productive activity, and secure that market share through intellectual property rights on innovation.”).

<sup>23</sup> See Paul Gupta & Stephanie Carpenter, *IP Aspects of Green Technology and Strategies for Building and Investing in Green Technology Companies*, 1718

In addition to the potential for economic growth, even the most ardent climate change skeptics will concede that the United States' dependence on fossil fuels has implications for national security and foreign policy. Security analysts have made the case for framing this debate in terms of "natural security," as the scarcity of natural resources will inevitably affect the United States' foreign policy calculus for years to come.<sup>24</sup>

Despite the fact that the U.S. imports most of its oil from Canada and Latin America<sup>25</sup> - not the Middle East - many emerging markets are just beginning their love affair with the sticky, black hydrocarbon.<sup>26</sup> The corresponding increase in demand from emerging economies will continue to drive up energy prices, necessitating importation of oil from countries with less friendly dispositions toward the United States.<sup>27</sup>

It is important to note how energy policy intersects with virtually all other aspects of governance. Not only will increased prices constrain U.S. *fiscal policy* and make it more expensive to project American power around the globe, they create pressures that will heavily influence American *foreign policy* in the coming decades, whether through resource wars or climate-induced humanitarian crises.<sup>28</sup> International trade and maritime policy in particular will be

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PLI/CORP 11, 22 (2009) ("The future is bright for the green technology industry in the U.S. Currently U.S. green technology patent applications are on the rise. Foreign companies, particularly from Japan and Germany, are also being granted U.S. patent protection, evidencing a desire to protect clean technology on U.S. soil.") (footnotes omitted).

<sup>24</sup> See generally Sharon Burke, *Natural Security* 7 (June 11, 2009) (working paper) (Center for a New American Security), available at, [http://www.cnas.org/files/documents/publications/CNAS\\_Working%20Paper\\_Natural%20Security\\_SBurke\\_June2009\\_OnlineNEW\\_0.pdf](http://www.cnas.org/files/documents/publications/CNAS_Working%20Paper_Natural%20Security_SBurke_June2009_OnlineNEW_0.pdf).

<sup>25</sup> Mauricio Cárdenas, *Think Again: Latin America*, FOREIGN POL'Y (Mar. 17, 2011), [http://www.foreignpolicy.com/articles/2011/03/17/think\\_again\\_latina\\_merica?page=0,4](http://www.foreignpolicy.com/articles/2011/03/17/think_again_latina_merica?page=0,4) ("Saudi Arabia, Iraq, and Kuwait combined make up only 20 percent of U.S. oil imports. Latin American countries—specifically Venezuela, Mexico, Ecuador, Colombia, and Trinidad and Tobago—account for one third of U.S imports.").

<sup>26</sup> See Clifford Krauss & Elisabeth Rosenthal, *Reliance on Oil Sands Grows Despite Environmental Risks*, N.Y. TIMES, May 19, 2010, at B1, available at 2010 WLNR 13772327.

<sup>27</sup> See KAPLAN, *supra* note 7, at 7-10 ("The world's energy needs will rise by 50 percent by 2030, and almost half of that consumption will come from India and China.").

<sup>28</sup> See P.W. SINGER, WIRED FOR WAR: THE ROBOTICS REVOLUTION AND CONFLICT IN THE 21ST CENTURY 285 (2009) ("This is not just about the world running out of oil, something many worry is happening as production rates fall by 7 percent annually, despite booming demand . . . . [W]ater shortages and a competition

greatly affected. Because “90 percent of global commerce and two thirds of all petroleum supplies travel by sea,” and global energy demand will continue its inexorable rise, the Indian Ocean – already heavily used by “nuclearized” powers such as Pakistan, India, China, and Israel – will dramatically increase in strategic importance to the world’s great powers.<sup>29</sup> The proximity of nuclear states in the Asia-Pacific region, along with increased pressures commensurate with rising energy demand, are already heightening military tensions among the major players in the region, including China and Russia in particular.<sup>30</sup> Geopolitical constraints will become increasingly difficult to manage as fuel prices continue to rise, and intervention will be needed to combat piracy and protect merchant shipping.<sup>31</sup>

Make no mistake, the United States’ continued dependence on fossil fuels poses significant problems for the national interest. The strategic implications are clear as U.S. foreign policy throughout entire regions is framed in the context of energy.<sup>32</sup>

Take, for example, one of the many intriguing subplots of the revolutions unfolding in the Middle East: the degree to which civil unrest in the Arab world would affect global oil prices.<sup>33</sup> While the revolutions in Tunisia and Egypt were relatively mild in terms of impacting global oil output, the brewing civil war in Libya has driven prices much higher.<sup>34</sup> Oil prices have not yet reached crisis levels, but these uprisings have thrown much of the Middle East into chaos, illustrating just how quickly international political events can destabilize an entire region, if not the entire world.<sup>35</sup>

At the tactical level, reducing the military’s fuel oil dependence could literally save lives. Recalling the old adage that “an

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over grazing lands . . . sparked the slaughter in Darfur . . .”).

<sup>29</sup> KAPLAN, *supra* note 7, at 7-8.

<sup>30</sup> See Thomas Grove, *Analysis: Russia Turns Military Gaze East to Counter China*, REUTERS NEWS, Mar. 1, 2011, available at 3/1/11 Reuters 11:39:52 (Westlaw).

<sup>31</sup> See KAPLAN, *supra* note 7, at 16 (“After all, this is a world where raw material from Indonesia are manufactured into component parts . . . from Singapore, financed by the United Arab Emirates: a process dependent on safe sea-lanes that are defended by U.S. and various naval coalitions.”).

<sup>32</sup> See Peter Fedynsky, *Is Alternative Energy Viable in U.S. Market?*, VOICE OF AMERICA, Mar. 3, 2011, available at 2011 WLNR 4281112 (“Traditionally, higher prices have prompted calls for American energy independence through alternative energy. But skeptics say such calls amount to little more than talk in a nation heavily dependent on cheap foreign oil.”).

<sup>33</sup> See Greg Pidgy, *How High Will Oil Prices Go?*, FOREIGN POL’Y (Mar. 3, 2011, 1:33PM), [http://eurasia.foreignpolicy.com/posts/2011/03/03/how\\_high\\_will\\_oil\\_prices\\_go](http://eurasia.foreignpolicy.com/posts/2011/03/03/how_high_will_oil_prices_go).

<sup>34</sup> See *id.*

<sup>35</sup> See *id.*

army marches on its stomach,” it is easy to overlook the critical role logistics play in the use of our armed forces.<sup>36</sup> NATO forces in Afghanistan have been at their most vulnerable, guarding fuel convoys through chokepoints at the Pakistani border.<sup>37</sup> Because the Department of Defense relies on petroleum for more than 70% of its energy needs,<sup>38</sup> reducing the logistics burden on the armed forces will allow a greater ability to project American power.

### III. THE CATALYST FOR CONVERSION: A ROBUST INTELLECTUAL PROPERTY FRAMEWORK

#### A. *Patents Reducing Pollution: Why Intellectual Property is Key*

While grand strategy calls for a high level of government involvement in order to coordinate resources, the long-term potential for sustainable growth in green technology lies largely in the private sector.<sup>39</sup> Thus, the business community is a key constituency in the implementation of a green technology strategy. Unfortunately, corporations are hesitant to commit wholesale investment into new technologies without being assured of a reasonable rate of return.<sup>40</sup> The advent of the Internet, for better or worse, has made corporations and governments alike vastly more transparent and has driven down the costs of corporate espionage, digital piracy, and reverse-engineering of developed technology.<sup>41</sup> Absent sizeable public demand, the risks of substantial research and development in green technology – itself already cost-prohibitive<sup>42</sup> – are simply too great for

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<sup>36</sup> See Jessica Leber, *The Pentagon Tries to Tuck in Its Logistics Tail*, N.Y. TIMES (July 27, 2009), <http://www.nytimes.com/cwire/2009/07/27/27climatewire-the-pentagon-strives-to-tuck-in-its-long-log-39016.html?pagewanted=1%22> (discussing the critical role that logistics play in military operations and attempts to use green technology to reduce the logistics burden).

<sup>37</sup> CHRISTINE PARTHMORE & JOHN NAGL, CTR. FOR A NEW AM. SEC., *FUELING THE FUTURE FORCE: PREPARING THE DEPARTMENT OF DEFENSE FOR A POST-PETROLEUM ERA* 6 (2010), available at [http://www.cnas.org/files/documents/publications/CNAS\\_Fueling the Future Force\\_NaglParthemore.pdf](http://www.cnas.org/files/documents/publications/CNAS_Fueling the Future Force_NaglParthemore.pdf).

<sup>38</sup> *Id.*

<sup>39</sup> See Hasper, *supra* note 22, at 5.

<sup>40</sup> See Robert Fair, *Does Climate Change Justify Compulsory Licensing of Green Technology?*, 6 B.Y.U. INT'L L. & MGMT. REV. 21, 22 (2009) (discussing the barriers for companies to innovate).

<sup>41</sup> See Michael Bowman, *Greater Policing of Internet Piracy Urged*, VOICE OF AMERICA, (Feb. 23, 2011), <http://www.voanews.com/english/news/science-technology/Greater-Policing-of-Internet-Piracy-Urged-116755519.html> (discussing the vulnerability of merchants and consumers to acts of internet piracy).

<sup>42</sup> See Matthew L. Wald & Tom Zeller, Jr., *Green Power's High Cost Scuttles Projects*, N.Y. TIMES, Nov. 8, 2010, at A1, available at 2010 WLNR 22290373.

companies to overcome their inertia and embark on radical projects of their own accord.

It is precisely these risks that make a robust intellectual property framework all the more vital to a strategy of mass-producing green technology. Several scholars have observed that such a framework can provide the protection and incentives necessary to induce the sort of investment required for such radical technological change.<sup>43</sup> Because current patent law requires full disclosure, the patent system appears to be one of the most simple and cost-effective methods of encouraging innovation by deepening the knowledge pool itself.<sup>44</sup> After all, the Constitution explicitly calls for measures “[t]o promote the Progress of Science and useful Arts.”<sup>45</sup> In this era of economic uncertainty and international instability, green technology appears as useful as ever.

### *B. Innovation and Dissemination: The Flaws of Compulsory Licensing*

Because green technology discussions are typically framed in the context of climate change, any discussion about green technology will inevitably need to address the dissemination problem of how to ensure enough green technology is deployed in order to actually combat climate change. It is important to remember that green technology comes with a complex web of highly contentious issues in both the developed and the developing world, especially regarding intellectual property rights.<sup>46</sup> Some argue that the magnitude of climate change—akin to achieving an important pharmaceutical breakthrough in a time of pandemic disease—necessitates compulsory licensing in order to share green technology for free with the developing world.<sup>47</sup> Some take the argument even further, positing that strong intellectual property protection acts as a *barrier* to green

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<sup>43</sup> See Fair, *supra* note 40 (“To offset these significant costs, most innovative firms and individuals seek to protect their inventions with patents, which give them a statutory monopoly over the use and dissemination of the technology for at least twenty years.”) (footnote omitted).

<sup>44</sup> See Deborah Behles, *The New Race: Speeding up Climate Change Innovation*, 11 N.C. J. L. & TECH. 1, 29 (2009) (“In contrast with trade secrets, patents are disclosed to the public. This disclosure can help spur additional innovation, as well as allow the invention to be used by the public after the patent term expires.”) (footnote omitted).

<sup>45</sup> U.S. CONST. art. I § 8, cl. 8.

<sup>46</sup> See Mark Weisbrot, *Green Technology Should Be Shared*, THE GUARDIAN (May 20, 2009, 2:00PM), <http://www.guardian.co.uk/commentisfree/cifamerica/2009/may/19/wto-climate-change-intellectual-property>.

<sup>47</sup> See *id.*

technology development, and instead calling for “socially responsible licensing policies” that would make “nonpatenting or nonexclusive licenses the default” for federally funded green technologies.<sup>48</sup>

A compulsory licensing statute would certainly be allowed under the WTO’s Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) if climate change were held to be an “emergency.”<sup>49</sup> Despite the probable legality of compulsory licensing, the prospects of implementing such a policy, not to mention the wisdom of it, are murky at best. While securing the short-term gains of mass distributing currently patented technologies, such a compulsory licensing scheme would likely fail to secure the long-term innovation necessary to resolve a complex and ever-changing problem such as climate change.<sup>50</sup>

Additionally, one of the most obvious problems with a compulsory licensing scheme would involve drawing a bright line for what would constitute “green technology” subject to compulsory licensing. As one author has noted, “Any patented technology that accomplishes its goal with a little more efficiency or with a slightly longer lifespan could be considered ‘green.’ Granting compulsory licenses for every technology that fits such a definition may effectively eliminate intellectual property rights on most innovative technologies and the incentives those rights create.”<sup>51</sup> Indeed, it is exactly this “product differentiation” that makes green technology such an attractive growth model.<sup>52</sup> While efforts to develop a singular definition of “green” for intellectual property purposes are in the works,<sup>53</sup> definitional issues will inevitably plague any compulsory licensing scheme.

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<sup>48</sup> Lisa Larrimore Ouellette, Comment, *Addressing the Green Patent Global Deadlock through Bayh-Dole Reform*, 119 YALE L.J. 1727, 1734 (2010).

<sup>49</sup> See Fair, *supra* note 40, at 25 (citing Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, Marrakesh Agreement establishing the World Trade Organization, Annex 1C, 1869 U.N.T.S. 229, 33 I.L.M. 1125, 1208 art. 31 (1994), available at [http://www.wto.org/english/docs\\_e/legal\\_e/27-trips\\_01\\_e.htm](http://www.wto.org/english/docs_e/legal_e/27-trips_01_e.htm)).

<sup>50</sup> See *id.* at 35 (“While compulsory licensing might be attractive for the short-term diffusion of a particular energy-efficient technology, it decreases long-term investment in the creation of more innovative technology, and discourages the diffusion of technology for which compulsory licenses are not granted.”).

<sup>51</sup> *Id.* at 38 (footnote omitted).

<sup>52</sup> See Hasper, *supra* note 22, at 5 (“It is hardly surprising that many companies see product differentiation as a benefit of going green.”).

<sup>53</sup> See Maureen Beacom Gorman, *What Does It Mean to be Green: A Short Analysis of Emerging IP Issues in “Green Marketing,”* 9 J. MARSHALL REV. INTELL. PROP. L. 774, 796 (2010) (“With consensus about what it means to be ‘green,’ the

Compulsory licensing is an ill-advised route for wide-scale green technology dissemination. Moreover, the discussion of compulsory licensing underscores the need for long-term strategic thinking with respect to the nation's policies. Instead of merely aiming to appease global critics of the United States' green technology licensing practices,<sup>54</sup> it is important to ask what the implications are for the United States' national interest. If we take the typical case, U.S. taxpayer money will have funded the research,<sup>55</sup> which would most likely be conducted in U.S. research universities or national laboratories, developed and commercialized using capital from U.S. firms, and distributed as prior art for free to the rest of the world.

Compulsory licensing would seem like an excellent deal to a country like China, a country that for years has not only refused to become a party to international carbon agreements – citing the need to have its own Industrial Revolution – but has frustrated the attempts of *other* countries to join climate change treaties as well.<sup>56</sup> China's use of environmentalism as a moral high ground against the U.S., deriding green technology patents as some sort of sinister trade barrier, is laughable in the context of China's decades-long practices of currency manipulation,<sup>57</sup> intellectual property theft,<sup>58</sup> and lax environmental protection.<sup>59</sup> China understands the stakes of the game and will

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Executive Branch, through the position of the IP Czar, might then be able to undertake the awesome task of coordinating global 'green' intellectual property enforcement efforts to advance U.S. 'green' technologies.”).

<sup>54</sup> See BAH, *supra* note 11, at 101 (“Four weeks later, at the Copenhagen Climate Summit, the Americans were given another grim reminder of Chinese belligerence when President Obama broke into a side-meeting between the ‘hold-out leaders’ from China, India, Brazil, and South Africa.”).

<sup>55</sup> See Ouellette, *supra* note 48, at 1729 (“In 2006, sixty percent of basic research in the United States was funded by the federal government, twenty-one percent was funded directly by universities and other nonprofits, and only fifteen percent was funded by industry.”).

<sup>56</sup> See BAH, *supra* note 11, at 36 (“India [at Copenhagen] agreed to cap its emissions at developed country norms. . . . (As against this, the *Economist* called China ‘churlish’ for insisting that ‘all numerical targets be stripped out of the final accord, even those that did not apply to China.’)”).

<sup>57</sup> See Heidi B. Malhotra, *Chinese Currency Manipulation Hurts US Exports*, THE EPOCH TIMES (Oct. 3, 2010), <http://www.theepochtimes.com/n2/business/chinese-currency-manipulation-us-exports-yuan-dollar-corporate-lawmakers-43353.html>.

<sup>58</sup> See *Foreign Companies Concerned over Intellectual Property Theft from China*, THE EPOCH TIMES (Jan. 20, 2010), <http://www.theepochtimes.com/n2/content/view/28270/>.

<sup>59</sup> See generally Xiaofan Li, *Environmental Concerns in China: Problems, Policies, and Global Implications*, 81 INT'L. SOC. SCI. REV. 43, 83 (2006) (“[M]arket-driven emphasis on economic prosperity, insufficient coordination between national and local governments and environmental agencies, inadequate enforcement of environmental protection laws and regulations, lack of public

continue to press the U.S. as far as it can by casting the debate in purely environmental terms. Thus, the United States must be careful not to cede its strategic advantages on a whim.

While dissemination remains a problem, some evidence suggests that green technology licensing will occur efficiently enough without resorting to universal compulsory licensing requirements.<sup>60</sup> Put frankly, green technology companies would be ill-advised to put in the hard work of innovating only to refuse to allow anyone to use the technology or to completely price out every market by charging exorbitant royalties. Voluntary international efforts, such as the Eco-Patent Commons, have demonstrated a degree of success in green technology transfer without excessive licensing requirements.<sup>61</sup> In sum, there simply is no urgent need to implement a compulsory licensing scheme; to do so would only allow our economic competitors to secure benefits without assuming the commensurate amount of risk.

### *C. Incentivizing Innovation: Alternatives to Forced Licensing*

The goal of a grand strategy is not to prescribe a panacea, but to provide a narrative arc to a *set of policies*, which are engineered to achieve a certain outcome.<sup>62</sup> Thus, in the context of green technology, the goal of strengthening intellectual property protection is to incentivize innovation, not demand dissemination. Instead of restrictive compulsory licensing or nonpatentability schemes, there are a number of alternatives to encourage private-sector green technology development and dissemination.

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awareness, and limited financial support all threaten to impede China's progress in environmental management.”).

<sup>60</sup> Gregory N. Mandel, *Promoting Environmental Innovation with Intellectual Property Innovation: A New Basis for Patent Rewards*, 24 TEMP. J. SCI. TECH. & ENVTL. L. 51, 60 (2005) (“Despite the existence of these compulsory licensing provisions since the Clean Air Act was enacted thirty-five years ago, they apparently have never been used. This supports the conclusion that environmental innovation will be licensed relatively efficiently without the necessity of compulsory licensing.”) (footnotes omitted).

<sup>61</sup> See Estelle Derclaye, *Not Only Innovation but also Collaboration, Funding, Goodwill and Commitment: Which Role for Patent Laws in Post-Copenhagen Climate Change Action*, 9 J. MARSHALL REV. INTELL. PROP. L. 657, 663-64 (2010) (“These patent pools and other voluntary models, including public pledges . . . are great alternative solutions to substantive changes (i.e., to the law) as they can transfer technology in a quicker and more flexible way . . .”).

<sup>62</sup> See KISSINGER, *supra* note 3, at 717 (“The statesman’s role is to recognize . . . [and] create a network of incentives and penalties to produce the most favorable outcome.”).

The Obama administration, recognizing the link between intellectual property and green technology innovation, has begun to implement some component policies of a grand strategy by recently implementing a pilot program through the United States Patent and Trademark Office (USPTO) to expedite the process by which certain green technology patents are reviewed.<sup>63</sup> An invention seeking expedited review under the “Green Technology Pilot Program” must be one which “materially enhances the quality of the environment, or that materially contributes to: (1) The discovery or development of renewable energy resources; (2) the more efficient utilization and conservation of energy resources; or (3) greenhouse gas emission reduction . . . .”<sup>64</sup> The first 3,000 applicants meeting the program’s requirements are granted “special status” and are allowed to bypass the ordinary patent examination process, which operates on a first-come, first-served basis.

If it leads to a robust network of incentives, the Green Technology Pilot Program represents an important first step in implementing a grand strategy for America’s post-petroleum future. The program is already having some effect. Originally set to expire at the end of 2010, the USPTO extended the program to continue processing applications until 3,000 petitions have been granted or until December 31, 2011, whichever is earlier.<sup>65</sup> The extension also expanded the number of eligible inventions by eliminating a classification requirement that barred a number of applicants from receiving grants.<sup>66</sup> As of November 2010, the program has seen marked success, with 94 patents having been issued and processing times having improved dramatically.<sup>67</sup>

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<sup>63</sup> Pilot Program for Green Technologies Including Greenhouse Gas Reduction, 74 Fed. Reg. 64,666 (Dec. 8, 2009).

<sup>64</sup> *Id.* at 64,667.

<sup>65</sup> Expansion and Extension of the Green Technology Pilot Program, 75 Fed. Reg. 69,049, 69,050 (Nov. 10, 2010).

<sup>66</sup> Press Release, U.S. Patent & Trademark Office, USPTO Expands Green Tech. Pilot Program to More Inventions (May 21, 2010), [http://www.uspto.gov/news/pr/2010/10\\_21.jsp](http://www.uspto.gov/news/pr/2010/10_21.jsp) (“To date, more than 950 requests have been filed by applicants who wish for their application to be eligible for the Green Technology Pilot Program. Only 342 of those have been granted, primarily because many of the inventions weren’t in classifications that were eligible.”).

<sup>67</sup> See Gene Quinn, *USPTO Extends Green Technology Pilot Program Through 2011*, IPWATCHDOG (Nov. 10, 2010, 3:55PM), <http://ipwatchdog.com/2010/11/10/uspto-extends-green-technology-pilot-program/id=13273/> (“Program statistics show that applicants who use the program can obtain a patent much more quickly as compared to the standard examination process. . . . In several cases, patent applications in the green technology program have been issued within a year of the filing date.”).

In addition to expediting review of patents, some authors have called for the creation of a new type of “green” patent with requirements tailored specifically to green technology and climate change issues.<sup>68</sup> One suggestion is relaxing the non-obvious requirement, which requires an inventor to demonstrate that the invention would not be obvious to a person having ordinary skill in the art based on what was available at the time in the public domain.<sup>69</sup> One scholar noted that because companies primarily engage in small-scale refinements of current technologies, many innovations related to climate change would fail to overcome the non-obviousness standard.<sup>70</sup> Another suggestion includes shortening the exclusivity period,<sup>71</sup> which at present gives inventors exclusivity rights for twenty years from the filing date.<sup>72</sup>

Of the more intriguing proposals is the suggestion of implementing a “patent rewards” system. Traditionally, such a patent rewards system would allow the government to keep the rights of a patentable invention while compensating the inventor based on the expected profit of the invention.<sup>73</sup> One way to implement this system in a manner tailored to green technology is to compensate the inventor based on the amount of environmental benefit the invention provides.<sup>74</sup> Additionally, by incorporating standards currently used in regulatory requirements, the government can achieve a carbon pricing system by replacing the concept of a “carbon tax” with a form of “carbon bounty.”<sup>75</sup> Through a combination of these strategies, adjustments to the patent system will produce the incentives necessary to spur private sector growth in green technology.

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<sup>68</sup> See Behles, *supra* note 44, at 34.

<sup>69</sup> See *id.* at 28-29; 35 U.S.C. § 103(a) (2006).

<sup>70</sup> See Behles, *supra* note 44, at 28-29.

<sup>71</sup> See *id.* at 34-35.

<sup>72</sup> 35 U.S.C. § 154 (2006).

<sup>73</sup> See Mandel, *supra* note 60, at 64.

<sup>74</sup> See *id.* (“The proposed patent rewards system would shift an inventor's expected invention profits from compensation based on market profits to compensation based on the social benefit provided by the invention. This shift would accomplish to [sic] desired goal of internalizing the positive externalities of environmental innovation.”).

<sup>75</sup> See generally Behles, *supra* note 44, at 43 (“Tying the invention to this value will directly link innovation incentives to regulatory mandates. The value of the innovation can be tied to the value of the reduction in two ways: (1) the innovation can be valued by how large the reduction is; and (2) the innovation can be valued according to the need for the reduction.”) (footnote omitted).

#### IV. THE ENGINE: HARNESSING THE POWER OF THE MILITARY-INDUSTRIAL COMPLEX

##### A. *Chain of Command: The Civilian/Military Disconnect on Green Technology*

The problem with scaling up green technology as a national strategy is that large companies with the vast resources required for green technology R&D are most inclined to be involved in piecemeal, incremental innovation.<sup>76</sup> While such technologies are welcome, high-risk/high-reward research needs to be conducted. Thus, a robust intellectual property framework can only incentivize the private sector so far. Wide dissemination of green technologies will likely be a slow process absent involvement from other U.S. institutions. In these nascent stages, it is important not to choke off innovation by implementing compulsory licensing or similar schemes, which would undermine the very protections that intellectual property rights require.<sup>77</sup>

Instead, a better way to reduce costs and begin large-scale deployment of green technologies would be to provide the demand the private sector currently lacks. Public investment can provide the resources necessary to encourage the type of game-changing technological innovation needed to fundamentally alter the nation's energy supply.<sup>78</sup> With its incredible purchasing power, supply-chain infrastructure, and global presence, perhaps no better agent is equipped for coordinating large-scale investment, procurement, and deployment of green technologies than the United States military.<sup>79</sup> Yet, while the idea of "greening" the military has been advocated at times, very few clear visions for such a policy have been articulated.

In May 2010, the White House released an updated National Security Strategy, a document, which had not been revised since 2006

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<sup>76</sup> See Behles, *supra* note 44, at 28-29; *cf.* Fair, *supra* note 40, at 37 ("The current green technology patents are predominantly for minor, specific improvements on the prior art, and as such, strong IPR may inhibit technological development of these sorts of innovations.") (emphasis added).

<sup>77</sup> See Fair, *supra* note 40.

<sup>78</sup> See SINGER, *supra* note 28, at 140 ("For all the claims that 'big government' can never match the private sector, DARPA is the ultimate rebuttal.")

<sup>79</sup> See Eben Harrell, *Will the Military Lead the Way to Greener Technology?*, TIME (Mar. 23, 2009), <http://www.time.com/time/business/article/0,8599,1886116,00.html> ("Although Britain has a strong arms and defense industry, environmentalists say a revolution in substitute fuels and renewables requires the backing of the U.S. military, whose procurement and R&D budgets dwarf those of other nations.")

under President Bush.<sup>80</sup> The administration's communiqué reflected the idea that "the nation that leads the world in building a clean energy economy will enjoy a substantial economic and security advantage" and highlighted the nation's increased vulnerability to "energy supply disruptions and manipulation and to changes in the environment on an unprecedented scale."<sup>81</sup>

While this sentiment has resonated with the military, the public-relations campaign between the White House and the Pentagon remains discordant. Indeed, the Defense Department's National Military Strategy, published February 8, 2011, takes a much more subdued stand on the issue of green technology by merely noting the need to reduce fuel consumption.<sup>82</sup> The difference in tone is striking, evidencing a disconnect between the White House and military leadership in terms of framing the need to evolve into a greener force. In order to mobilize the private sector and the population at large, these signals need to be loud, public, and in harmony - not disjointed and off-message.

### *B. Supplying Demand: Closing the Loop for Green Technology Innovation*

As arguably the world's largest polluter,<sup>83</sup> the United States military represents one of the largest potential markets for green technology, particularly in the field of clean energy.<sup>84</sup> Moreover, the

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<sup>80</sup> See Josh Rogin, *Experts Call on Obama to Put Forth New National Security Strategy*, FOREIGN POL'Y (Oct. 27, 2009, 5:04 PM), [http://thecable.foreignpolicy.com/posts/2009/10/27/experts\\_call\\_on\\_obama\\_to\\_put\\_forth\\_new\\_national\\_security\\_strategy](http://thecable.foreignpolicy.com/posts/2009/10/27/experts_call_on_obama_to_put_forth_new_national_security_strategy).

<sup>81</sup> THE WHITE HOUSE, NAT'L SECURITY STRATEGY 30 (2010), available at [http://www.whitehouse.gov/sites/default/files/rss\\_viewer/national\\_security\\_strategy.pdf](http://www.whitehouse.gov/sites/default/files/rss_viewer/national_security_strategy.pdf).

<sup>82</sup> See DEP'T OF DEFENSE, THE NAT'L MILITARY STRATEGY OF THE UNITED STATES OF AMERICA 3, 18 (2011), available at [http://www.jcs.mil/content/files/2011-02/020811084800\\_2011\\_NMS\\_-\\_08\\_FEB\\_2011.pdf](http://www.jcs.mil/content/files/2011-02/020811084800_2011_NMS_-_08_FEB_2011.pdf) ("Joint Forces must become more expeditionary in nature and will require a smaller logistical footprint *in part* by reducing large fuel and energy demands.") (emphasis added).

<sup>83</sup> See Lucinda Marshall, *Military Pollution: The Quintessential Universal Soldier*, COMMONDREAMS.ORG (Mar. 27, 2005), <http://www.commondreams.org/views/05/0327-21.htm> ("The U.S. Department of Defense is the largest polluter in the world, producing more hazardous waste than the five largest U.S. chemical companies combined.").

<sup>84</sup> See Elisabeth Rosenthal, *The Military: Green Energy Champion*, N.Y. TIMES GREEN, Oct. 5, 2010, available at 2010 WLNR 19749142 ("And there is great hope that some of the renewable energy technology being developed for battle will double back and play a role in civilian life. After all, the military has huge purchasing power, enough to create genuine markets.").

lure of lucrative government contracts sends a strong signal for businesses to compete.<sup>85</sup>

Defense spending, while no longer the “sacred cow” it appeared to be prior to the 2010 elections, generally remains one of the last items to find itself on the Congressional chopping block.<sup>86</sup> The prospect of government-funded innovation, strong intellectual property protection, and guaranteed back-end demand – while not exactly a closed loop – certainly presents an environment ripe for business expansion. Thus, instead of implementing a compulsory licensing framework for green technology patents or tinkering with the nation’s environmental regulatory scheme, perhaps the better way to ensure dissemination of green technology is to simply procure and deploy it *en masse*.

To date, the United States’ competitors have seized the initiative with respect to military applications of green technology. In particular, China has made green technology a centerpiece of its military strategy with an understanding that along with geopolitical implications involving natural resources, climate change could fundamentally alter the way wars are fought; indeed, the People’s Republic has been treating the search for alternative energy as the 21<sup>st</sup> century’s arms race.<sup>87</sup> China’s involvement further underscores the need for adequate intellectual property protections, as intellectual property theft concerns have already frustrated Western companies’ attempts to exchange technologies on their own accord.<sup>88</sup>

While some authors call into question the extent of China’s lead in this new venture, they agree that it will be the differences in innovation frameworks that will determine the outcome.<sup>89</sup> Frankly

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<sup>85</sup> See SINGER, *supra* note 28, at 61 (“From 2002 to 2008, the annual defense budget has risen by 74 percent, to \$515 billion. . . . Research and development (R&D) and procurement costs, what it takes to design and build new weapon systems, have thus experienced an equivalent boom . . .”).

<sup>86</sup> See generally *id.*

<sup>87</sup> See John Naish, *Lean Green Killing Machines*, NEW STATESMAN, May 13, 2010, available at 2010 WLNR 17294388 (“In a report posted on the Chinese ministry of national defence’s website, [Major General Zeng Fanxiang] also predicted that climate change could alter the way battles are fought and called on the military to become more fuel-efficient.”).

<sup>88</sup> See LINTON BROOKS, JOSHUA W. BUSBY, ET. AL., CHINA’S ARRIVAL: A STRATEGIC FRAMEWORK FOR A GLOBAL RELATIONSHIP 24 (Abraham Denmark & Nirav Patel eds., 2009), available at [http://www.cnas.org/files/documents/publications/CNAS%20China%27s%20Arrival\\_Final%20Report.pdf](http://www.cnas.org/files/documents/publications/CNAS%20China%27s%20Arrival_Final%20Report.pdf) (“Concerns about intellectual property theft have kept Western technology firms, in some cases, from exporting the most advanced, efficient equipment to China.”).

<sup>89</sup> Michael Levi, *Tilting at Wind Turbines*, FOREIGN POL’Y (Jan. 19, 2011), [http://www.foreignpolicy.com/articles/2011/01/19/tilting\\_at\\_wind\\_turbines](http://www.foreignpolicy.com/articles/2011/01/19/tilting_at_wind_turbines) (“Massive deployment of clean energy will give the Chinese government leverage

put, the race is on: either the United States' government, its researchers, and its business leaders can coordinate their resources toward a national grand strategy of green technology, or they can continue to let the People's Republic of China run away with the idea.

This is not to say that the United States has thus far completely ignored the potential for military green technology. Think-tanks and other observers have floated potential goals for greening the nation's armed forces. For instance, the Center for a New American Security – perhaps best known for its work with General David Petraeus in formulating the military's counterinsurgency (COIN) doctrine – has recommended the Department of Defense implement a thirty-year plan for operating all of its systems on non-petroleum fuels by 2040.<sup>90</sup> Whatever the future holds in terms of alternative energy, the military has proven to be inseparable from the process of incorporating, if not itself developing, advanced technology. Despite the institutional rigidity typically associated with militaries, they have been quick to adjust their expectations and have readily embraced paradigm-breaking technologies when they have come along.

### *C. The Civilian-Military Complex: Ensuring Technological Cooperation and Coordination*

Throughout history, the U.S. military has been at the fore of technological innovation. The twenty-first century has been no exception as the last decade has seen a marked increase in the military's use of high-technology weapons systems with varying effect.<sup>91</sup> There certainly have been miscalculations regarding the extent to which the American military can use high-technology systems in the current international security environment where low-tech insurgencies and asymmetric warfare remain the norm.<sup>92</sup> Yet, for every questionable investment like the Air Force's F-22 Raptor or the Army's Future Combat Systems program,<sup>93</sup> there has been a game-

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with foreign firms . . . and provide opportunities for incremental innovation. But the cutting edge is, in most cases, far away: The Chinese innovation system still has enormous difficulty moving ideas from the laboratory to commercial application.”).

<sup>90</sup> PARTHMORE & NAGL, *supra* note 37, at 3.

<sup>91</sup> See SINGER, *supra* note 28, at 61.

<sup>92</sup> See generally MARTIN VAN CREVELD, *THE CHANGING FACE OF WAR: COMBAT FROM THE MARNE TO IRAQ 268-69* (2008) (“[C]ounterinsurgency, and not major war, is the most important military problem facing humanity in the present and the foreseeable future . . .”).

<sup>93</sup> See Fred Kaplan, *The Transformer*, FOREIGN POL’Y, Sept. 1, 2010, available at 2010 WLNR 17484073 (“[Defense Secretary] Gates decided to kill, slash, or restructure 33 of them, including some of the services' most cherished weapons

changing improvement that few saw coming. The most visible example is the meteoric rise of the Predator drone as a tool of American foreign policy. Originally derided as nothing more than science-fiction fantasy, the development of unmanned aerial vehicles (UAVs), and the Predator drone in particular,<sup>94</sup> has caused unmanned robotics technology to become a cornerstone of the United States' strategy in the Afghanistan/Pakistan region and beyond.<sup>95</sup> In addition to new devices themselves, technological spillovers are not uncommon, particularly in terms of making existing systems or technologies more efficient. Indeed, as unmanned systems become more mainstream, it will become all the more important to make them more self-sustaining.<sup>96</sup>

As to the question of whether the military ought to be involved in such a "civilian" concern as environmental protection, it is important to note the degree to which military technology has affected civilian life. Nearly fifty years ago, the Defense Advanced Research Projects Agency (DARPA), the government's primary research agency for military technology, along with scientists from four United States research universities, created a system to allow computers to communicate among one another using signal transmissions.<sup>97</sup> This system became the backbone of what we know today as the Internet.<sup>98</sup> It is this civilian spillover effect that shows the true contradiction of military technology at work – the same agency that played such vital roles in the development of the atomic bomb and intercontinental ballistic missiles gave the world technology now used by students in the Middle East to help liberate their countries from military dictatorships.<sup>99</sup>

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systems. . . . Gates stopped the Air Force's F-22 Raptor stealth fighter plane [and] killed whole sections of the Army's multiplatform Future Combat Systems . . . .").

<sup>94</sup> See generally SINGER, *supra* note 28, at 32-36 (discussing the development of the Predator drone).

<sup>95</sup> See *id.* at 62 ("The Teal Group is a defense consultancy firm that specializes in forecasting the financial trends for war. As clients turn to Teal for investment ideas, it is not known for zany thinking. And yet Teal describes unmanned planes with zeal, as 'the most dynamic growth sector of the world aerospace industry.'").

<sup>96</sup> See generally *id.* at 117 ("Not having pilots who need to be replaced every ten hours or so will also allow unmanned planes to have greater endurance . . . . For example, Boeing is at work on a glider powered by solar energy and liquid hydrogen that could stay aloft for seven to ten days.").

<sup>97</sup> George K. Walker, *Information Warfare and Neutrality*, 33 VAND. J. TRANSNAT'L L. 1079, 1094-95 (2000) (discussing the military origins of the Internet).

<sup>98</sup> *Id.*

<sup>99</sup> See Evgeny Morozov, *First Thoughts on Tunisia and the Role of the Internet*, FOREIGN POL'Y (Jan. 14, 2011, 2:16 PM), [http://neteffect.foreignpolicy.com/posts/2011/01/14/first\\_thoughts\\_on\\_tunisia\\_and\\_the\\_role\\_of\\_the\\_internet](http://neteffect.foreignpolicy.com/posts/2011/01/14/first_thoughts_on_tunisia_and_the_role_of_the_internet).

The federal government has tried to replicate the success of DARPA by implementing an agency specifically for energy purposes: the Advanced Research Projects Agency—Energy (ARPA-E).<sup>100</sup> This agency, recently formed within the Department of Energy, will receive \$550 million if the President’s new budget is passed.<sup>101</sup> While the creation of a new energy agency certainly represents a good start, funding radical green technology research grants through DARPA itself, thereby encouraging dual-use applications, may be the better option.<sup>102</sup>

In terms of job creation, few sectors have been an economic bedrock like the defense industry. For better or worse, despite the failure of the United States to heed the warning of President Eisenhower during his farewell address,<sup>103</sup> the “military-industrial complex” has remained a dominant player in the United States economy since the end of World War II. Even amidst a slowdown in military spending, the five major defense contractors—Boeing, Northrop Grumman, Lockheed-Martin, Raytheon, and General Dynamics—represent a pillar of American economic might.<sup>104</sup> Beyond the “Big Five” defense contractors, the Department of Defense has spent millions funding and developing partnerships with entrepreneurs and small businesses through its Small Business Innovation Research (SBIR) and Small Business Tech Transfer Research programs.<sup>105</sup>

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<sup>100</sup> Implemented in the 2007 America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science Act (America COMPETES Act), ARPA-E is but a fledgling agency. For the original authorizing legislation, *see generally* Pub. L. No. 110-69, § 5012, 121 Stat. 621 (2007), 42 U.S.C.A. § 16538 (West 2007). ARPA-E was reauthorized in the 111th Congress. *See* America COMPETES Reauthorization Act of 2010, Pub. L. No. 111-358, 124 Stat. 3982 (2010).

<sup>101</sup> John M. Broder, *Few Significant Changes in Energy-Area Spending*, N.Y. TIMES, Feb. 14, 2011, at A19, *available at* 2011 WLNR 2954647.

<sup>102</sup> *See* SINGER, *supra* note 28, at 140 (“The primary player in the world of funding new research in IT, computers, and robotics is DARPA. . . . DARPA has shaped the world we live in more than any other government agency, business, or organization.”).

<sup>103</sup> *See* Harrell, *supra* note 79.

<sup>104</sup> *See* Peter Cook, Anthony Capaccio & Gopal Ratnam, *Pentagon Will Back Defense Mergers Outside Top Five Companies*, CARTER SAYS, BLOOMBERG (Feb. 9, 2011 5:02 PM), <http://www.bloomberg.com/news/2011-02-09/carter-says-pentagon-welcomes-mergers-spinoffs-within-limits.html>.

<sup>105</sup> SINGER, *supra* note 28, at 143 (“These programs provide almost \$1 billion in total grant money (given out in baskets of up to \$850,000) to help jump-start early-stage R&D for small companies and entrepreneurs working with the Pentagon and research universities.”).

In addition to sheer volume, defense procurement offers a number of advantages with respect to international trade.<sup>106</sup> Arguably, the greatest benefit to funding green technology research through military laboratories like DARPA is the ability to speed up the acquisitions process.<sup>107</sup> It is difficult to overstate the potential role the military could play in America's green technology revolution. While some think-tanks have questioned the benefits of alternative fuel sources for the military,<sup>108</sup> several government contracts have been awarded to advance military green technology applications.

The spectrum of potential uses for green technology in the military is wide in terms of both breadth and depth.<sup>109</sup> Propulsion alone, whether used to move bullets, tanks, ships, or planes, is a constant concern of any military; for example, the U.S. Navy has almost seamlessly made the transition from sail power to coal, then petroleum, and now nuclear propulsion.<sup>110</sup> Continuing the tradition, the Navy under the Obama administration has led the charge thus far with respect to alternative energy.<sup>111</sup> With a clear nod to Teddy Roosevelt's "Great White Fleet," a group of 16 warships that circumnavigated the globe and became the first true demonstration of modern American naval power,<sup>112</sup> the Naval Department has been planning a "Great Green Fleet" since fall 2009.<sup>113</sup> In October of the

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<sup>106</sup> See generally John M. Treddenick, *The Arms Race and Military Keynesianism*, 11 CANADIAN PUBLIC POLICY 77, 83-84 (1985) ("Trade considerations may also influence government attitudes toward military procurement. Because the GATT specifically exempts such procurement from restrictions on domestic discrimination, governments may easily use this opportunity to protect and foster industries producing military equipment, particularly when these include those industries most closely associated with technological advances.").

<sup>107</sup> SINGER, *supra* note 28, at 145 ("The military labs also serve a valuable function by end-running around the normal procurement system to get soldiers in the field what's already available in the stores. . . . [This process] compares quite well to the years that normal weapons development might take . . .").

<sup>108</sup> See Tom Zeller, Jr., *Alternative Fuels Don't Benefit the Military*, a RAND Report Says, N.Y. TIMES, Jan. 25, 2011, at B1, available at 2011 WLNR 1494822.

<sup>109</sup> See PARTHEMORE & NAGL, *supra* note 37, at 20.

<sup>110</sup> *Id.* at 4.

<sup>111</sup> See generally Jeremy Bloom, *US Navy is Building a Green Fleet*, CLEANTECHNICA (Mar. 2, 2011), <http://cleantechnica.com/2011/03/02/us-navy-is-building-a-green-fleet/> ("Every time we make changes to improve the efficiencies of our engines or systems or we use alternative sources of power, we get better and we make people safer," Navy Secretary Ray Mabus told the ARPA-E Energy Innovation Summit this week.").

<sup>112</sup> See generally *Great White Fleet (16 Dec 1907 - 22 Feb 1909)*, GLOBALSECURITY.ORG, <http://www.globalsecurity.org/military/agency/navy/great-white-fleet.htm> (last visited Mar. 30, 2011).

<sup>113</sup> Martin LaMonica, *Navy: Full Steam Ahead on Great Green Fleet*, CNET

first year of the Obama presidency, Secretary of the Navy Ray Mabus framed the discussion with a pitch-perfect display of symbolism: “Roosevelt sent the Great White Fleet around the world without the money to get them home . . . . ‘But he was confident that Congress would want the fleet back, so he knew the money would come. And it did. No one has ever gotten anything big done by being timid.’”<sup>114</sup> While the Navy has been the vanguard of the green military revolution, incentives exist for each of the other service branches as well. The U.S. Air Force is currently experimenting with new fuel blends<sup>115</sup> and is determined to have all its aircraft capable of operating on biofuels, or fuels made by algae and other biological processes, by 2011.<sup>116</sup> Yet vehicles are simply the beginning. Military facilities around the globe, even long after their service life, offer rich opportunities for developing green businesses and technologies.<sup>117</sup> From fully staffed bases to remote peripheral outposts, all stand to gain by becoming less dependent on civilian infrastructure for energy needs during crisis situations.<sup>118</sup> Defense contractors are even working to reduce the environmental impact of ammunition, particularly the “tracer” rounds used to help guide one’s fire onto a target.<sup>119</sup>

One potential hurdle to using the military as a proxy for large-scale green technology dissemination is the variety of export controls

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NEWS (Mar. 2, 2011, 1:01 PM), [http://news.cnet.com/8301-11128\\_3-20038428-54.html#ixzz1H0vOF8wA](http://news.cnet.com/8301-11128_3-20038428-54.html#ixzz1H0vOF8wA) (“The Navy has a program, launched in fall 2009 and called the ‘Great Green Fleet’ . . . . It’s a reference to the ‘Great White Fleet,’ the nickname used under President Theodore Roosevelt for a battle fleet which circled the globe almost 100 years ago.”).

<sup>114</sup> Philip Ewing, *SecNav: Cut Half of Oil Use by 2020*, NAVY TIMES (Oct. 19, 2009, 5:40PM), [http://www.navytimes.com/news/2009/10/navy\\_energy\\_efficiency\\_101409w/](http://www.navytimes.com/news/2009/10/navy_energy_efficiency_101409w/).

<sup>115</sup> See *First All-Engine Flight Using Biomass and Conventional Jet Fuel Blend Set*, U.S. AIR FORCE (March 24, 2010), <http://www.af.mil/news/story.asp?id=123196647>.

<sup>116</sup> See Elisabeth Rosenthal, *U.S. Military Orders Less Dependence on Fossil Fuels*, N.Y. TIMES, Oct. 5, 2010, at A1, available at 2010 WLNR 19736656.

<sup>117</sup> See Susan Wolbarst, *Green Businesses Sprouting at Closed Former California Air Force Bases*, GLOBALSECURITY.ORG (March 1, 2010), <http://www.globalsecurity.org/military/library/news/2010/03/mil-100301-afns05.htm>.

<sup>118</sup> See Jeremy Hsu, *Army Aims to Build “Zero Footprint” Camps*, POPULAR SCIENCE (July 28, 2009, 12:17PM), <http://www.popsoci.com/military-aviation-amp-space/article/2009-07/army-aims-zero-footprint-camp>.

<sup>119</sup> See Press Release, General Dynamics, General Dynamics and Cyalume Technologies Collaborate on Advanced Illumination and Marking Payloads for Ammunition Applications (April 6, 2010), available at [http://www.generaldynamics.com/news/press-releases/detail.cfm?customel\\_dataPageID\\_1811=5752](http://www.generaldynamics.com/news/press-releases/detail.cfm?customel_dataPageID_1811=5752).

to which military technology is subject.<sup>120</sup> However, oftentimes the Executive Branch is able to seek exemptions from such export control laws through bilateral trade agreements.<sup>121</sup> Moreover, many types of green technology, even if developed through military research laboratories, will be considered “dual-use,” or having civilian applications.<sup>122</sup> Licensing exemptions for certain classes of dual-use technologies, such as installation, operation, maintenance or repair equipment, would allow military technologies with minimal security impact to bypass certain export controls.<sup>123</sup> In addition, much of the developed world, where modern military technology would be exported, is already an ally or partner of the United States; relaxing export controls for these countries would make it easier to transfer this new military technology.<sup>124</sup> Indeed, if anything, the prospect of a green military revolution would underscore the need to liberalize certain aspects of the export control regime, which could act as a further boon to U.S. defense contractors.<sup>125</sup>

## V. CONCLUSION

President Obama, as a former constitutional lawyer, should know all too well that “law lives on narrative, for reasons both banal and deep.”<sup>126</sup> At this crucial juncture in American history, the Obama

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<sup>120</sup> See, e.g., Arms Export Control Act, 22 U.S.C.A. § 2778 (West 2010).

<sup>121</sup> See *id.* § 2778(j)(1)(A) (“The President may utilize the regulatory or other authority pursuant to this chapter to exempt a foreign country from the licensing requirements of this chapter with respect to exports of defense items only if the United States Government has concluded a binding bilateral agreement with the foreign country.”).

<sup>122</sup> 15 C.F.R. § 730.3 (2011).

<sup>123</sup> See generally Cecil Hunt, *Department of Commerce Export Controls*, 919 PLI/COMM 89, 107-108 (citing 15 C.F.R. § 740.13) (explaining the system of Department of Commerce export controls, and discussing possible exceptions to the licensing requirement).

<sup>124</sup> See Mark Drajem & Roger Runnigen, *Obama Proposes Easing Export Controls on Technology Products for 37 Allies*, BLOOMBERG (Dec. 9, 2010), <http://www.bloomberg.com/news/2010-12-08/obama-proposes-easing-export-controls-on-technology-products-for-37-allies.html>.

<sup>125</sup> See Robert A. Borich, Jr., *Globalization of the U.S. Defense Industrial Base: Developing Procurement Sources Abroad through Exporting Advanced Military Tech.*, 31 PUB. CONT. L.J. 623, 626-27 (“U.S. willingness to transfer advanced technology to potential European procurement sources could result in competition that creates greater efficiencies and innovations.”).

<sup>126</sup> See ANTHONY G. AMSTERDAM & JEROME BRUNER, *MINDING THE LAW: HOW COURTS RELY ON STORYTELLING, AND HOW THEIR STORIES CHANGE THE WAYS WE UNDERSTAND THE LAW—AND OURSELVES* 110-111 (2002) (“[I]ncreasingly we are coming to recognize that both the questions and the answers in such matters of ‘fact’ depend largely upon one’s choice (considered or unconsidered) of some overall

administration has the opportunity to take many disjointed policies and shape them into a narrative arc for mobilizing the populace. Flickers of hope are emerging, with the President recently unveiling the blueprint of a “SunShot” initiative.<sup>127</sup> What this document lacks, however, is any mention of the critical - and strategically advantageous - role that intellectual property protection plays in ensuring that green energy research, investment, and production takes place *on American soil*.<sup>128</sup>

While the Obama administration has tinkered with the intellectual property framework, streamlining the patent application process for “green” patents, this should just be the first step toward developing a coherent network of such policies. For example, tying these shorter application times to other incentives, such as relaxing the non-obviousness requirement and paying “carbon bounties,” could strengthen the intellectual property framework enough to generate systemic private sector innovation in the form of piecemeal incremental improvements on existing technologies. Such incentives, however, should not come without their tradeoffs, as dissemination of green technology remains a legitimate concern. Yet, rather than a compulsory licensing scheme, instituting a shortened exclusivity period or similar limitations would more properly incentivize wide dissemination.

Also absent from the President’s “blueprint” was any mention of the military’s potential for green technology deployment.<sup>129</sup> After all, a grand strategy attempts to mobilize *the entirety of an organization’s resources* and our Commander-in-Chief has much at his disposal. Indeed, the federal government should provide the resources, through targeted DARPA/ARPA-E grants and federal military contracts, to create the initial public sector demand needed to generate true interest in green technology.

Ultimately, however, all these players require thematic direction. No matter which component policies the Obama administration chooses to adopt, the success or failure of a grand strategy ultimately lies in the degree to which it resonates with the people. It is a basic principle of economics that markets respond to demand, and the amount companies are willing to invest in developing

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narrative as best describing *what happened* or *how the world works*.”).

<sup>127</sup> See generally THE WHITE HOUSE, BLUEPRINT FOR A SECURE ENERGY FUTURE (2011), available at [http://www.whitehouse.gov/sites/default/files/blueprint\\_secure\\_energy\\_future.pdf](http://www.whitehouse.gov/sites/default/files/blueprint_secure_energy_future.pdf).

<sup>128</sup> See Zakaria, *supra* note 9; See Gupta & Carpenter, *supra* note 23; See Levi, *supra* note 89.

<sup>129</sup> See THE WHITE HOUSE, *supra* note 127.

a technology is directly related to the amount of interest in the product itself. While framing the green technology revolution in terms of economic growth and national security is wise, there are larger issues at stake.

If any real action on climate change is to occur, what is truly needed is a broader cultural shift toward becoming a more environmentally friendly society. Only then will green technology become mainstream instead of merely a special-interest concern. Environmentalism must no longer be derided as a caricature of itself, a topic only for the spineless, aloof, or naive. If eliminating waste is a fundamental goal of any business operation, Americans should hold their country and their selves to a similar standard. The U.S. military has begun to take note of the dangers of fossil fuel dependence; one of our nation's most revered institutions proudly leading by example will go a long way toward persuading the populace that "going green" is a worthwhile exercise. In the end, however, the ball is in President Obama's court - this country needs a clear grand strategy to mobilize the myriad segments of society.





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**COMMENT: SHOULD FURNITURE BECOME FASHION-  
FORWARD? APPLYING FASHION'S COPYRIGHT  
PROPOSALS TO THE FURNITURE INDUSTRY**

**Kimberly Allen Richards<sup>†</sup>**

ABSTRACT

*Copycat furniture companies, which produce custom furniture “knockoffs” based on the designs of other furniture companies, are seeing growing success in the United States due to the lack of intellectual property protection for useful articles like furniture. In an industry already battered by offshore manufacturing and the depressed economy, the prevalence of copycat products further affects the sales of producers of original furniture designs. In order to preserve the incentive in the furniture industry to invest in creating original designs and protect against copycats, reform is needed.*

*As a functional article, furniture is rarely protected by intellectual property laws. Current copyright law only protects useful articles to the extent that the article’s ornamental aspects are separable from the article’s functional aspects. The various tests for conceptual separability are ambiguous and results are difficult to predict. Design patents similarly only protect new and ornamental designs where the ornamental aspect is not primarily dictated by function. The significant backlog in the Patent and Trademark Office is also a deterrent to applying for this form of protection. Trademarks and trade dress also rarely protect furniture because only a handful of designs serve as source identifiers for furniture manufacturers.*

*The fashion industry’s proposals for copyright reform may be the answer to the furniture industry’s woes. Fashion designers share furniture designers’ frustrations with current intellectual property law and have pushed for a number of reforms over the past decade to protect new and original fashion designs. The most recent bill, The Innovative Design Protection and Piracy Prevention Act, would have amended the Copyright Act to specifically protect the appearance of an article of apparel as well as its ornamentation for a three-year period. While opponents of the bill cited the strength of the fashion*

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*industry in spite of copycats, the same argument does not hold in the struggling furniture industry.*

*Recent proposals from the fashion industry could be adapted to the furniture industry to help close the industry's gap in intellectual property protection and preserve the incentive for the furniture industry to invest in creating original designs. In order to revitalize the furniture industry and protect its original and innovative designs, the furniture industry should push for their own reforms and become fashion-forward.*