In the midst of rapid scientific and technological change, national security issues increasingly are subjects of national policy discussions. In the coming years, the United States faces a series of critical national security challenges, including the potential for nuclear confrontation, the threat of traditional and non-traditional forms of terrorism, the proliferation of weapons of mass destruction, and the rapid development of new technologies that could change the balance of power. Artificial intelligence and computer systems are becoming powerful tools, with potential implications for the military and the civilian domain.

One hundred nanometers is about one-thousandth the width of a human hair. Such revolutionary capabilities will produce change that can be unintended consequences of military action. The power of technology represents a shift in the capabilities that were the subject of horizons for the military. It was not technology, but policy, that dictated the outcome of decisive military operations. Technology today includes the technology of the atomic age. But the common elements that are necessary for the two: the ability to move and combine individual atoms and molecules into complex systems.

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Since the discovery of the laser in 1960, the ability to move and combine individual atoms and molecules into complex systems has become a reality. These systems are the building blocks of modern technology, and the ability to move and combine individual atoms and molecules into complex systems is a necessary condition for the development of advanced technologies. The ability to move and combine individual atoms and molecules into complex systems is a necessary condition for the development of advanced technologies.

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1. REPORT DATE  
MAR 2002

2. REPORT TYPE  
N/A

3. DATES COVERED  
-

4. TITLE AND SUBTITLE  
Small Security: Nanotechnology and Future Defense

5a. CONTRACT NUMBER  
-

5b. GRANT NUMBER  
-

5c. PROGRAM ELEMENT NUMBER  
-

5d. PROJECT NUMBER  
-

5e. TASK NUMBER  
-

5f. WORK UNIT NUMBER  
-

6. AUTHOR(S)  
-

8. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)  
National Defense University Center for Technology and National Security Policy Fort McNair Washington, DC 20319

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)  
-

10. SPONSOR/MONITOR'S ACRONYM(S)  
-

11. SPONSOR/MONITOR'S REPORT NUMBER(S)  
-

12. DISTRIBUTION/AVAILABILITY STATEMENT  
Approved for public release, distribution unlimited

13. SUPPLEMENTARY NOTES  
The original document contains color images.

14. ABSTRACT  
-

15. SUBJECT TERMS  
-

16. SECURITY CLASSIFICATION OF:  

<table>
<thead>
<tr>
<th>a. REPORT</th>
<th>b. ABSTRACT</th>
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<td>unclassified</td>
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17. LIMITATION OF ABSTRACT  
UU

18. NUMBER OF PAGES  
6

19a. NAME OF RESPONSIBLE PERSON  
-

Form Approved  
OMB No. 0704-0188

Standard Form 298 (Rev. 8-98)  
Prescribed by ANSI Std Z39-18
defensive applications

Microelectromechanical Systems

Defence Applications

Microelectronics is not happening in a vacuum. This technology is developing within a rapidly evolving, dynamic complex. New problems and threats are posing new challenges as we gear up for an era of extraordinary scale. Most analysts believe that Moore’s Law (the exponential increase in the number of transistors on a microprocessor chip) may well continue for at least another 14 years, so the expected doubling of computing capacity every 18 months will continue. But when small, intelligent nanobots can replicate themselves to produce billions of copies of the same device, the ability to mass-produce the enemy’s technologies will become a serious threat.

Conventional weapons are vulnerable to become obsolete. As the range of conventional weapons increases, the technology for producing them also increases. Nanotechnology is a new opportunity for producing relatively low-cost, high-performance weapons. Nanotechnology will also allow for the creation of new weapons systems that are not easily detectable.

One potential consequence of this revolution could be a growing military in a world where vastly powerful weapons are invisible. This could be a strategic advantage, especially for nations that are strong competitors with America for advances in nanotechnology.

The Range of Some Potential Interacting Areas and Effects of the Technology

Effects

Facilitates

Improved drug delivery

Integrated communication/entertainment

Improved life quality and health

Global information utilities

Improved life span

Seamless virtual reality

Facilitates

Targeted, noninvasive drug delivery

Facilitates

Integrated communication/entertainment

Improved crop yields and drought tolerance

Improved life quality and health

Longer life span

Improved transportation and logistics

National Security in the World of the Small

All of these trends are changing the world in ways that are difficult to predict. The challenge is to be aware of these changes and to be prepared to adapt to them. It is not enough to simply wait for the revolution to happen; we must be proactive in shaping the future.

The future will almost certainly be shaped by autonomous, intelligent systems that can serve as an integral part of the global economy. These systems can provide a major advantage in the global competition for resources and power.

The potential applications of these extraordinary tools can be seen in the development of new technologies in medicine, manufacturing, and transportation. These technologies can be used to improve existing systems or to create entirely new ones.

The potential impact of these technologies will be significant. The ability to create new tools and systems can lead to significant improvements in the quality of life. However, the potential drawbacks of these technologies must also be considered.

The potential uses of these technologies must be carefully examined to ensure that they are used for the benefit of humanity. It is important to ensure that these technologies are used in a responsible manner and that they are not misused.

The future will almost certainly be shaped by autonomous, intelligent systems that can serve as an integral part of the global economy. These systems can provide a major advantage in the global competition for resources and power. The potential applications of these extraordinary tools can be seen in the development of new technologies in medicine, manufacturing, and transportation. These technologies can be used to improve existing systems or to create entirely new ones.
Defense Applications

Nanotechnology offers a broad spectrum of possible military uses that have the potential to revolutionize national security and future warfare. A three-dimensional assembly of nanomaterials can allow for the development of smaller, lighter, and; therefore, more maneuverable weapons. Smaller, lighter, and more maneuverable weapons would increase the precision and accuracy of delivery, allow for the production of higher explosive yields, improve the speed and efficacy of chemical, biological, and nuclear weapons, and enable the creation of new defensive systems. Microelectromechanical Systems

Nanotechnology systems are inherently unique to ren as an intelligence. They are very scalable, which gives them the potential to achieve superhuman powers in certain applications. A nanobot is defined as a small robot (typically less than 1 micrometer in length) designed to perform a specific task. Nanobots are the primary focus of research in nanotechnology, as they have the potential to revolutionize the field of medicine. They can be programmed to perform a wide range of tasks, including the repair of damaged tissues, the delivery of drugs, and the destruction of cancer cells. Nanobots are also being developed for use in military applications, such as the detection and removal of landmines.
information dominance through advanced nanoelectronics
March 2002

improvements in chemical/biological/nuclear sensing and in concomitant enhancements in command, control, communications, intelligence, surveillance, and reconnaissance (C4ISR) purposes. In the nuclear area, minuscule objects made of inorganic materials (e.g., lithium fluoride) could be employed for identification, due to their abundance and nonvolatility. Such devices could be incorporated into watches, computers, and all sorts of products, not to mention the benefits of enhanced security and safety. They are inconceivable today.

In the nanomedicine area, nanoscale objects made of inorganic materials (e.g., lithium fluoride) could be employed for identification, due to their abundance and nonvolatility. Such devices could be incorporated into watches, computers, and all sorts of products, not to mention the benefits of enhanced security and safety. They are inconceivable today.

Nanoelectronics: driving the singularity

Singularity

The Range of Some Potential Interacting Areas and Effects of the Technology Revolution by 2015


National Security in the World of the Small

In all these cases, the principle remains the same: the development of nanoelectronics is relatively independent from the advancement of any other science or technology. On the contrary, it is possible that the world of the near future will be characterized by a larger focus on nanoelectronics.
There were many technologies that made the industrial revolution possible, but none more powerful than the steam engine. The steam engine allowed for the efficient conversion of heat energy into mechanical work, enabling the development of steam-powered machinery that could perform laborious tasks much more quickly and with less human effort. This led to a significant increase in productivity and economic growth, paving the way for the industrial revolution.

The steam engine was a technological breakthrough that transformed the way goods were produced and distributed. Prior to the development of the steam engine, most production was done by hand or by using animal power. The steam engine allowed for the mass production of goods, leading to lower prices and greater availability.

In addition to its impact on manufacturing, the steam engine also had significant implications for transportation. The first practical steam-powered locomotive was built in the early 19th century, and this led to the development of railways. Railways revolutionized transportation, allowing for the rapid and efficient movement of goods and people across long distances.

The steam engine also played a role in the development of power generation. Early steam-powered generators were used to produce electricity, which allowed for the widespread use of electric lighting and other electrical devices.

The steam engine was a transformative technology that had far-reaching implications for society. It enabled the creation of new industries, drove economic growth, and facilitated the development of new forms of transportation and power. Its legacy continues to be felt today, as we continue to harness and innovate with the technologies of the industrial revolution.
The growing potential of nanotechnology to reshape the balance of power in international politics could plausibly undermine long-established military organizations. The developing nations of the world—especially China, India, and Brazil—have become aware of this new potential threat. The very existence of nanotechnology as a new strategic technology is more than a concern about the development of new weapons. It presents challenges to the traditional balance of political and military power.

General John Howard (ret.), former Commander in Chief, Allied Command Europe, and Chief of the Defense Staff, has pointed out that even the military organizations of the North Atlantic Treaty Organization (NATO) have not integrated their military strategies to respond to the possibilities that the new technology presents. Yet, NATO, as a military alliance, cannot afford to ignore the possibilities. If nanotechnology can present a new kind of weapon, it must be anticipated and countered.

We must recognize, however, that this impact on the military platform of the U.S. armed forces is likely to be much more far-reaching than is at first apparent. In fact, the profound changes that are occurring in the global political economy are not limited to the military. The implications for human society will be equally profound.

For example, it may be argued that the globalization of economic and financial systems has been the greatest single factor influencing the international political landscape for the last two decades. We are likely to see more changes in the next 30 years than we saw in all of the last century. The growth of global economies and the power of multinational corporations will have an influence on the political landscape that the Cold War never did.

Nanotechnology offers some extraordinary opportunities for converting to a new security paradigm. By its very nature, this is a “bottom-up” revolution that can be applied to transform the entire fabric of modern society—military, economic, social, and international. Nanotechnology can be a powerful tool for the creation of new forms of global capabilities and new forms of global power. For example, it may be used to create new forms of global power that are designed to be more efficient and more effective than the current models. If nanotechnology is used in this way, it could provide new forms of global power that are designed to be more efficient and more effective than the current models.

One example of this is the use of nanotechnology in the field of defense. The development of nanotechnology could provide new forms of global power that are designed to be more efficient and more effective than the current models. For example, it could be used to create new forms of global power that are designed to be more efficient and more effective than the current models. The development of nanotechnology could provide new forms of global power that are designed to be more efficient and more effective than the current models.

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