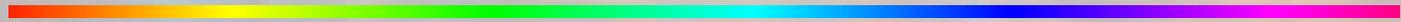


Technical English

For Information and Communication
Engineering

2011/9/11

Unit Five



National Security in the
Information Age



概述

- 知识经济和信息时代
- 信息时代的特征
- **Toffler**的第三次浪潮理论
- 信息时代国家安全概念的变化和面临的问题



reliance	信任，依赖
infrastructure	基础设施
incapacitate	使无能
offensive	攻击性的，令人不快的
vulnerability	易受攻击性，易受损
catastrophe	灾难
thesis	论文
paradigm	范例，式样
deterrent	威慑的，威慑力
school	学派
prescription	处方
agenda	议程



terminology

术语

crest

冠，头盔的顶部

hierarchical

分层次的，分等级的

printing press

印刷机

encyclopedia

百科全书

interconnectivity

互联性

sentiment

感情，情绪

strategic

战略的

transaction

交割，交易

conflict

冲突

premiere

初次露面，首演

vulnerable

易受攻击、伤害的



会改变而且确实变了

Conceptions of national security **can and do** change. A series of new threats to the national security have developed with the transition into the Information Age. New technological developments and an increased reliance on computer-based technology will cause **a shift in conceptions of national security for the post-industrial societies.**

后工业化社会中国家
安全概念的改变



信息基础设施遭到新型攻击技术的破坏、修改，或陷入瘫痪的危险

Nations face the danger of having their information infrastructures destroyed, altered, or incapacitated by new offensive technologies. Accordingly, grand strategies must integrate these new threats and vulnerabilities into their general framework. Although Eugene Skolnikoff argues that the vulnerability of large systems is rarely noticed until disruption or catastrophe occurs, these issues must be dealt with to minimize their economic and political costs.

在崩溃和灾难来临之前大系统的易受攻击性几乎不被人们注意



新技术带来的威胁

它将如何影响国家和国际政治关系

Scientists and political leaders must recognize and examine the threats posed by new technology and how it will affect both national and international political relationships. Here we provide an introduction to these new technologies and suggests ways they have been utilized in the past to threaten security of the society.

说明这些技术以往是如何被利用来威胁社会安全的



其吸引力和威慑力
是什么

它是如何与以往改变基本面貌
的重大技术相联系的

The threat is also placed in a theoretical political context by examining **how it relates to paradigm-shifting technologies of the past, what its attractions and deterrents are, and how it would be analyzed and addressed within traditional realist/liberal national security schools.**¹ It concludes with policy prescriptions to assist policy makers in the transition to a new national security agenda.

最后以提出若干政策建议作为结论，在过渡到新的国家安全计划的时期对政策制订者提供协助

是如何在传统的现实主义或自由主义国家安全学派内部进行分析和讨论的



The need for work in this area is great. Very little work has been done to examine security issues related to information technology. David Ronfeldt argues that “with few exceptions, policy makers and analysts are just beginning to discern how government and politics may ultimately be affected by the information revolution.”

政策制定者和分析人士现在刚刚开始了解政府和政治生活最终会受到信息革命怎样的影响



从来自多学科的广泛材料中吸取素材

As a result, we will **draw from a wide range of material that has been taken from multiple disciplines and weaves it all to reveal national security vulnerabilities and what can be done about them.**²

将它们组织在一起，揭示国家安全隐患并指出对此我们可以做些什么



The world is making a transition to a new age. Alvin Toffler referred to this transition as the Third Wave, in his 1980 book of the same title. According to Toffler, the pattern of societal development follows a series of waves, each of a lesser time span than the previous.

社会发展的模式遵循一系列的浪潮，每一次都比前一次的时间跨度更小



其中每一次都将以往的文化或文明冲刷干净，
代之以过去难以想象的生活方式

Toffler writes: *Until now the human race has undergone two great waves of change, each one largely obliterating earlier cultures or civilizations and replacing them with ways of life inconceivable to those who came before.*³ *The First Wave of change —the agricultural revolution —took thousands of years to play itself out. The Second Wave —the rise of industrial civilization —took a mere three hundred years. Today, history is even more accelerative, and it is likely that the Third Wave will sweep across history and complete itself in a few decades.*

第三次浪潮将在几十年时间里席卷历史，完成它的进程



Toffler's predictions about the coming Third Wave were written over fifteen years ago, and the societal revolution he predicted is readily acknowledged today as the Information Revolution.

他所预言的社会革命如今已经得到认同，被称为信息革命



This terminology is used by many political leaders to describe the transition to a knowledge based economy. Various scholars argue that some developed countries have already made the transition into the Information Age and a majority of our jobs are already knowledge-based. In fact the decline in industrial based jobs looks similar to the decline in agricultural jobs brought about by the transition from the First to the Second Wave. The swell of the Third Wave is already visible and its crest no longer unimaginable.

以工业为基础的职业的衰落看上去与当初由第一次到第二次浪潮转换期间农业职业的衰落很相像



从这一次阅读中

If this Sunday, anyone were to sit down and read the entire New York Times, he/she would absorb more information **in that one reading than the average person absorbed in a lifetime in Thomas Jefferson's Day.**



使普通人能拥有像圣经那样以往难得一见的文字材料

Information revolutions are not new. Gutenberg's printing press launched an information revolution over five hundred years ago. His invention **allowed for the mass distribution of information, permitting common men to possess otherwise scarce texts like the Bible.**⁴ **This created less reliance on hierarchical sources of authority for interpretation of texts and granted anyone with the resources to operate a printing press access to large audiences.**⁵

这减少了对文字解释的等级制权威的依赖



提供了一种可能的空间，使人们的思想和身体得以转换功能从而使过去用体力进行的工作今后变成通过文化（智力）的方式来实现

To take the argument even further, author Kevin Kelly argues that cultural advances, like the printing press **“prepared a possibility space that allowed human minds and bodies to shift so that some of what it once did biologically would afterwards be done culturally.”**⁶ Under this view, the printing press served a dual purpose.



减少大脑需要记忆的信息量

It revolutionized the way human beings interact and it contributed to our evolution by **decreasing the amount of information our minds needed to store. In this regard**, the Information Revolution is similar to the printing revolution. Computers increase our capacity to store and search for information **externally**.



人们只要想一想 ... 所带来的变化就能了解 ...

Other mediums of communication might be considered revolutionary as well. One need only think of the changes brought about by the invention of the telephone, radio, and television to realize that information revolutions have their place in history. Each of these technologies increased our capacity to communicate over great distances.



In some cases, the communication took place over physical cables, and in other cases the communication took place over frequency waves with no physical connection required. How does this information revolution promise to be different?

这一信息革命是如何先前不同的呢？



在极短的时间里访问、分发以及存储大得不可思议的信息量的能力

The difference is our increased **ability to access, distribute and store incredibly large quantities of information in very little time**. It is now possible to send the entire Encyclopedia Britanica across the country in about two seconds. Access to large quantities of information through electronic communications is a realizable goal **anywhere there is access to a standard phone line or cellular cell**.

在任何有标准电话线或蜂窝式电话覆盖的地方



以每月25%的速率增长

In the near future, a series of low orbit satellites will allow electronic communications technology to be utilized from any location on earth. In addition to this, the Internet, currently the world's information backbone, **is increasing at a rate of twenty-five percent per month** and **the World Wide Web has been experiencing growth rates of 341,634 percent per year.**

万维网（WWW）则经历着每年314,634%的增长率



With this increase in interconnectivity and information resources, the labor force of a Third Wave nation becomes knowledge-based. Peter Drucker writes:

劳动力在一个属于第三次浪潮的国家里变成了知识型的



财富创造的核心将既不是用于生产的
资本配置，也不是劳动力

*The basic economic resource — “the means of production,” to use the economist’s term — is no longer capital, nor natural resources, nor labor. It is and will be knowledge. The central wealth making activities will be neither the allocation of capital to productive uses, nor labor — the two poles of nineteenth and twentieth century economic theory, whether classical, Marxist, Keynesian, or neo-classical.*⁷

十九世纪和二十世纪经济理论中无论是经典派，马克思主义，凯恩斯学派，还是新经典主义的两个基本要素



价值是由劳动生产率和创新所创造的，这两者都是知识在工作中的应用

Value is now created by productivity and innovation, both applications of knowledge to work. The leading social groups of the knowledge society will be knowledge workers and knowledge executives who know how to allocate knowledge to productive use, just as the capitalists knew how to allocate capital to productive use... Yet, unlike the employees under Capitalism, they will own both the means of production and the tools of production.

知识社会的领导集团将是知识的生产者和知识的管理者，他们知道如何配置知识得到高的产出



表达过类似的意见

Other scholars **have expressed similar sentiments**. Daniel Bell echoes Drucker's argument when he proposes that **“the crucial point about a post-industrial society is that knowledge and information become the strategic and transforming resources of the society, just as capital and labor have been the strategic and transforming resources of the industrial society.”**

后工业时代的关键点在于知识和信息成为社会中战略和改造的源泉



资金或者是资金的物理代表形式

The key financial institutions of knowledge-based societies also become information-based. Today, a majority of the financial transactions in many countries do not involve the **physical transfer of capital or physical representations of money** such as gold or currency, but rather the transfer of information. For example, when money is loaned between institutions no physical transfer of funds takes place. Instead, the informational representation of money is exchanged.



在工业社会里人们关心 ...
而信息社会必须关注 ...

Information now represents money and “finance no longer has anything to do with money, but with information.” **Whereas industrial societies were concerned with** protecting physical capital and providing safe routes for the transport of resources, **information societies must be concerned with** protecting information and the transfer of information.



= Whereas

Where the destruction of bridges was a threat to the national security of an industrial society, the destruction of information networks, especially those involved with financial transactions, is a threat to the national security of information societies.



过去一百年的政治学围绕着工业时代的技术

This is the nature of conflict of the Information Age. While the politics of the last one hundred years centered around Industrial Age technology, the politics of the future will be based on Information Age concerns oriented towards the storage, protection and exchange of information.⁸ The premiere issue of the magazine designed for the Information Age, appropriately named **Wired**, had this to say about the emergence of new technology:

为信息时代而策划设计的一本名字起得恰到好处的杂志《互联》（Wired）在它的创刊号上关于新技术的出现发表了以下的论述：



改造和重新构建社会的相互依存关系以及我们个人生活的每一个方面

The medium, or process, of our time — electronic technology — is reshaping and restructuring patterns of social interdependence and every aspect of our personal life. It is forcing us to reconsider and re-evaluate practically every thought, every action, and every institution formerly taken for granted.

迫使我们重新考虑和估价以往想当然是正确的实际上每一种思想，每一个行动，每一项制度



随着信息时代的到来，出现了对社会基本结构的新威胁

Our purpose is to take this concept one step further. We will demonstrate that **with the Information Age come new threats to the infrastructure of the society**. Our reliance on computer technology and the quick transition into a knowledge-based economy **have left us vulnerable to attack**, and **that vulnerability creates difficult political dilemmas that must be dealt with should we wish to continue following the currents of the Third Wave.**⁹

这种脆弱性导致政治抉择的困难，而只要我们想不断跟上第三次浪潮的大流就要面对这种抉择



一种基于对信息基础设施恶意攻击的冲突新形式

On this account, the following issues must be further studied. **First, a new paradigm for conflicts based upon hostile attacks against information infrastructures and how this new paradigm is rapidly developing to threaten the security of Third Wave nations** must be considered.

这种新形式是如何很快地发展起来威胁到第三次浪潮国家的安全的



考察对于那些为攻击目的而利用新技术的国家，我们所具有的优势和威慑力

This issue should be placed in a theoretical context by examining the political advantages and deterrents to nations utilizing the capabilities of new technology for offensive purposes. This can be examined from both the realist and liberal perspective to speculate how each side would respond to the acknowledged national security threat.

可以从现实主义和自由主义观点来进行考察，推测各方会如何应对确认的国家安全威胁



需要揭示与历史上技术发展的相似性，将它与新技术进行对比，

Similarities to historical technological developments need to be explored and contrasted with new technology to develop hypotheses regarding the future strategic impacts that these new technologies will have.¹⁰ Finally prescriptions and solutions may be proposed for integrating these concerns into the framework of a grand strategy in order to decrease the security threat and facilitate international cooperation in this area.

将这些考虑与总体战略框架结合起来

以做出关于这些新技术会对未来产生的战略冲击的假设



结合课文的思考题

- **What is the Third Wave?**
- **What is the major threat an information society faces?**
- **What was the role capitals played in an industrialized nation?**
- **How do financial transactions take place in the information age?**

Exercises



- At the present, state of the art microwave amplifiers and oscillator tubes can operate in a frequency range up to 40GHz and solid-state microwave devices up to 100GHz.
 - A. recent and most advanced
 - B. high tech related
 - C. sophisticated
 - D. artistically manufactured



Exercises

- **If you are unable to separate man from machine then, Turing says, we will have to attribute intelligence to the computer.**
 - **A. to make an intelligent computer**
 - **B. to consider the computer as being intelligent**
 - **C. to contribute to the computer with intelligence**
 - **D. to let the computer have intelligence**

Exercises



- **As DoD urgently wanted military command and control networks that could survive a nuclear war, ARPA was charged with inventing a technology that could get data to its destination reliably even if arbitrary part of the network disappeared as a result of a nuclear attack.**
 - **DoD urgently needed networks of military command and control that would not be crippled in a nuclear war**
 - **DoD urgently needed both the military command and the control networks that could save a nuclear war**
 - **DoD desperately wanted the ability of commanding and controlling the networks in case of a nuclear war**
 - **DoD eagerly wanted to make military command, and to control the network so that they could keep working in a nuclear war**



Exercises

- **The public telephone network, which, it should be remembered, is based mostly upon outdated technology, is currently being pressed for a tremendous expansion both in capacity and in the facilities provided.**

公众电话网目前正受到压力要在容量和所提供的功能方面有一个巨大的扩展，而应当记住，这一电话网大部分是建立在过时的技术基础上的。



Exercises

- **Operation of the radar is based on the measurement of the time it takes for a pulse transmitted from an antenna to get reflected by the object to be detected and to return at the antenna and the receiver.**

雷达的工作是基于对天线发出的脉冲被所要探测的目标反射，（然后）回到天线和接收机所需时间的测量。



Exercises

- **During an experiment in December 1947, two closely spaced gold-wire probes were pressed into the surface of a germanium crystal. It was found that the voltage output at the collector probe with respect to the base was greater than the input to the emitter probe. It was immediately recognized that this was the effect to be looked for; and the solid-state amplifier was born. These first transistors, however, were very noisy and unreliable due to the metallic point contacts.**

在1947年12月的一次实验中，两个十分接近的金丝探针被压入一片锗晶体表面。人们发现在集电极探针上相对于基片的输出电压大于加在发射极上的输入电压，立刻意识到这正是寻求的效应。固体放大器就此诞生了。但由于金属接点的关系，第一批的这些晶体管噪声很大，也不可靠。