

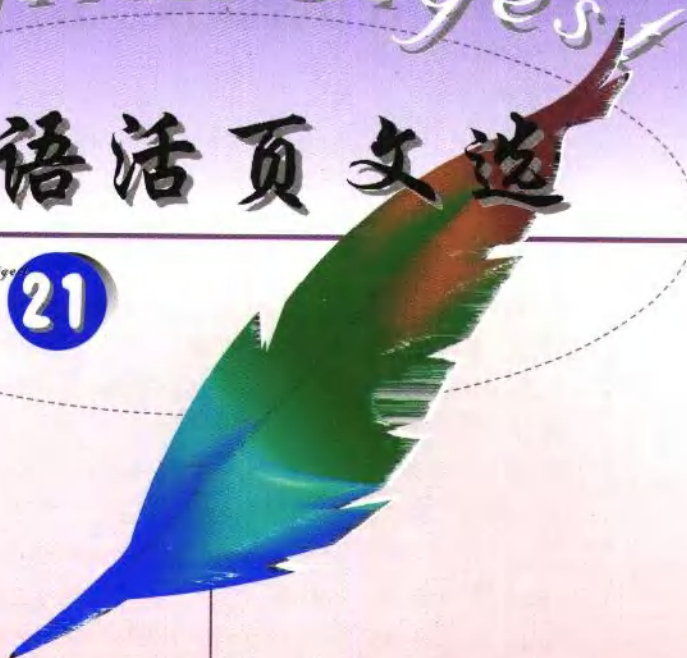
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北京大学出版社

Machines Will Be Smarter Than We Are

我们难以展望今后的 1000 年,但敢于正视未来 100 年的事情,想像一下看似缥缈虚幻的未来,如同尼尔·阿姆斯特朗首次登上月球那样。

工程技术、医药科技等的发展将使机器变得比人还要聪明,并使其在各方面都替代人类。到那时,人类生命的本质也会发生变化,神经植入在增强人类知识和思考能力的同时,也使人与机器难以区分开来。

At the moment, computers show no sign of intelligence. This is not surprising, because our present computers are less complex than the brain of an earthworm^①. But it seems to me that if very complicated chemical molecules^② can operate in humans to make them intelligent, then equally complicated electronic circuits can also make computers act in an intelligent way.

—Stephen W. Hawking, physicist, 1998

Intelligent computers are now considered as inevitable as Moore's Law^③—the 1965 dictum^④ predicting the geometric growth^⑤ of semiconductor power. The lawgiver himself agrees. "Silicon intelligence is going to evolve

① earthworm: 蚯蚓

② molecule: 分子

③ Moore's Law: 摩尔定律

④ dictum: 定律

⑤ geometric growth: 几何增长



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to the point where it'll get hard to tell computers from human beings," says Gordon E. Moore, chairman emeritus^⑥ of Intel Corp.

But computer intelligence won't stop there. Many scientists assert that machines will rapidly become far smarter than Albert Einstein and Hawking rolled into^⑦ one. Just as humans can design computers with superior number-crunching capabilities, Hawking figures savvy machines^⑧ will create still better computers. At least by mid-century, and probably much sooner, computers could have smarts way beyond our ken^⑨.

Silicon will even give birth to new kinds of life, predicts Robert E. Newnham, a materials scientist at Pennsylvania State University. And the advantages of this silicon life—chiefly immortality and unimaginable brainpower—could inspire scientists to forge composite human-silicon life forms “with a common consciousness that transcends^⑩ all living beings.”

A NIGHTMARE^⑪? These wild notions no longer come just from science-fiction writers. They're slowly creeping into^⑫ mainstream science. And researchers are waking up to the implications of the monumental^⑬ event that's coming within many of their lifetimes; our first contact with an alien intelligence.

The arrival of silicon life will transform

⑥ chairman emeritus: 名誉董事长

⑦ roll into: 使合为一体

⑧ savvy machines: 智能机器

⑨ ken: 知识领域, 见地

⑩ transcend: 超越, 胜过

⑪ nightmare: 噩梦

⑫ creep into: 慢慢地潜入

⑬ monumental: 纪念碑的, 不朽的

civilization. All our science and art, even our concept of self^⑭, stems ultimately from what our senses tell us about the world. But beings that can see radio waves and listen to starlight, that can feel the vast empty spaces in atoms of steel, will have a very different perception^⑮ of reality. What we learn from them could be more wondrous than all the discoveries made with microscopes, telescopes, X-ray machines, and other high-tech tools for amplifying our senses.

Some researchers fear super-brainy machines will be a science-fiction nightmare come true. Kevin Warwick, head of cybernetics^⑯ research at Britain's University of Reading, is convinced that machines will subjugate^⑰ humanity by 2050. And Hugo de Garis, head of a project to build silicon brains at Japan's Advanced Telecommunications Research Institute International (ATR), admits he is haunted by the prospect that his creations might "swat^⑱ me like a fly."

Other researchers figure such beings would be too wise not to respect life in all its myriad^⑲ forms. The idea of malevolent^⑳ machines is based on the mistaken assumption that intelligent machines would behave pretty much like people, "foibles^㉑ and all," scoffs^㉒ Igor Aleksander, head of neural systems engineering at London's Imperial College of Science, Technology & Medicine. But sexless

⑭ self: 自我

⑮ perception: 理解, 认知

⑯ cybernetics: 控制论

⑰ subjugate: 征服

⑱ swat: 拍, 打

⑲ myriad: 许多的, 无数的

⑳ malevolent: 恶毒的

㉑ foible: 弱点, 缺点

㉒ scoff: 以嘲弄的口吻说

creatures that know they are machines and can exist essentially forever wouldn't be driven to compete for territory²³ and mates—two main sources of human inhumanity and maltreatment²⁴ of lower life forms. So, if supersmart machines come to regard people as unfit²⁵ company, perhaps they'll just build cylinders around themselves and blast into space. Some may do so anyhow, seeking new knowledge, since space travel will be a breeze²⁶ for them.

BRAINS IN A BOX. Either way, the human brain has only a short time left as the smartest thing on earth. The speed and complexity of computers will continue to double every 18 months through 2012. By then the density of computer circuits will have jumped 1,000-fold²⁷, and the raw processing power of a human brain will fit into a shoe box. With luck, that milestone²⁸ might come a lot sooner—perhaps as early as 2005, says John C. Carson, chief technology officer at Irvine Sensors Corp., a Silicon Valley chip company.

Beyond 2012, chips that exploit the quirky²⁹ world of quantum mechanics³⁰ promise far bigger leaps³¹ in complexity. Because such chips won't need wires, which now occupy most of the space on silicon, it won't take long to duplicate a human brain fully—not only its 100 billion neurons³² but also its trillions of synapses³³, or interconnections. This dense maze³⁴ of interconnections is regarded as es-

②③ territory: 地盘

②④ maltreatment:
虐待, 粗暴对待

②⑤ unfit: 不合适的, 不相宜的

②⑥ breeze: 轻而易举的工作

②⑦ 1000-fold: 1000倍(数)

②⑧ milestone: 里程碑

②⑨ quirky: 离奇的, 古怪的

③⑩ quantum mechanics: 量子力学

③⑪ leap: 飞跃

③⑫ neuron: 神经元

③⑬ synapse: 神经突触

③⑭ maze: 错综复杂的曲径, 迷宫

sential for intelligence to emerge. Hardware brains will get there by 2020, predicts Raymond C. Kurzweil, founder of Kurzweil Technologies Inc.

Then they'll soar way past human "wetware." A billion human brains could soon be crammed^{③⑤} into a cubic inch^{③⑥} of quantum circuitry, Kurzweil says. And the size of artificial brains won't be constrained by the human skull^{③⑦}. They could grow as big as trucks. De Garis of ATR even sees brains the size of satellites orbiting the earth.

Critics contend that no matter how big computers get, they can't become intelligent until we know how to emulate^{③⑧} the brain's functions in software. Not so, retorts^{③⑨} Inman Harvey, a mathematician turned roboticist^{④①} at Britain's University of Sussex. By mimicking^{④②} evolution, "it's possible to create artificial brains without really understanding how they work," he says. In other words, they could evolve their own internal programming, just as human brains have.

ROBOTIC ROAD RAGE? These super-brains will change everything. Previously intractable problems in science, engineering, and medicine will be a snap^{④③}. After 2025, Kurzweil says, robots will rapidly displace humans from factories and farms, and they'll provide basic human necessities to all people. Cars, planes, and trains will operate them-

③⑤ cram: 填塞, 塞入

③⑥ cubic inch: 立方英寸

③⑦ skull: 头颅, 脑壳

③⑧ emulate: 模拟, 模仿

③⑨ retort: 反驳

④① roboticist: 机器人专家

④② mimicking: 模仿

④③ snap: 轻而易举

selves, and the carnage^{④③} on the highways will end in the 2030s.

Even the nature of human life itself will be changing by mid-century. Neural implants^{④④} will expand human knowledge and thinking powers—and begin a transition to composite man-machine relationships that will gradually phase out^{④⑤} the need for biological bodies. Swarms of microscopic robots will take up positions in the brain's sensory areas and create virtual-reality^{④⑥} simulations that are impossible to distinguish from real reality. Communicating with family and friends won't require your physical presence. The best food you've ever eaten can be enjoyed time and again with different companions. And traveling to Mt. Fuji or the Louvre will be pointless^{④⑦}, because your body won't be able to do or sense anything that can't be provided by in-brain simulations.

So, come 2099, Kurzweil figures only a very small group of people will still inhabit biological bodies. Most humans will have transferred their minds into electronic circuits—and attained immortality as a result.

[Selected from *Business Week*, August 30, 1999, written by Otis Port]

④③ carnage: 残杀, 流血 (这儿指交通意外)

④④ neural implant: 神经植入

④⑤ phase out: 使逐步淘汰, 逐渐取消

④⑥ virtual-reality: 虚拟现实

④⑦ pointless: 无意义的

We Will Have a King over Us

乔治 W. 仅是一个响亮的姓氏呢, 还是预示着另一个政治王朝, 如同肯尼迪王朝一样? 美国也许很容易摆脱独裁统治, 但要脱离一个家族王朝的影响就不那么容易了。

When Edward M. Kennedy first ran for his brother John's Senate seat in 1962, his opponent famously said of this youngest, least distinguished^① Kennedy, "If his name were Edward Moore, [his] candidacy^② would be a joke." In this season of George W. Bush, a pleasant enough Governor of modest achievement, one is forced to ask, "If his name were George Walker, would he be a presidential candidate, let alone^③ the runaway front runner for the Republican nomination^④?"

A nation can abolish monarchy, as America did with zest^⑤ in 1776. But it cannot so easily abolish the dynastic impulse. The American fascination with royalty shows itself most flagrantly^⑥ in our obsession^⑦ with the Kennedys, but familial^⑧ succession permeates^⑨ American political life. Look no further than the glamour races for election year 2000. The top two Republican candidates are the son

① distinguished: 卓越的, 高贵的

② candidacy: 候选人的地位, 候选资格

③ let alone: 更不用说

④ nomination: 提名

⑤ zest: 热情

⑥ flagrantly: 罪恶昭彰, 臭名远扬

⑦ obsession: 迷恋

⑧ familial: 家族的

⑨ permeate: 渗透, 弥漫

of a former President and the wife of the party's last presidential candidate (joined at the top by the son of a famous plutocrat^⑩).

Even more impressive is the aura^⑪ surrounding Hillary Clinton's Senate bid^⑫. It has been widely noted how her "listening tour" of New York State resembles the periodic descent^⑬ of Britain's Queen among the commoners—taking tea, giving chat, laying on hands. Mrs. Clinton evokes the starryeyed^⑭ hem^⑮ touching that one associates with royal visits, and once associated with the campaign of another dynastic candidate, also descended upon New York State in pursuit of its Senate seat. In 1964 excited crowds tore at the outstretched^⑯ arms of Robert Kennedy, often coming away with pieces of royal raiment^⑰.

By no means, however, is the dynastic impulse a purely American phenomenon. In Indonesia, Megawati Sukarnoputri^⑱ led her party to victory in the recent elections. She came out of nowhere. She has no political experience. And her political views are almost unknown. No matter—she is the daughter of Sukarno, founder of the Indonesian state.

In India, an Italian woman who did not even become an Indian citizen until her mid-30s has suddenly been elevated to head of the Congress Party and leading candidate for Prime Minister. Yet Sonia Gandhi^⑲ is not even a member of Parliament^⑳. Her chief

⑩ plutocrat: 富豪, 财阀

⑪ aura: 气氛

⑫ bid: 参选

⑬ descent: 造访

⑭ starryeyed: 幻想的, 不切实际的

⑮ hem: 哼! (为唤起别人的注意等)

⑯ outstretched: 伸出的, 伸展的

⑰ raiment: 衣服, 服饰

⑱ Megawati Sukarnoputri:
梅加瓦蒂·苏加诺

⑲ Sonia Gandhi:
索尼娅·甘地

⑳ parliament: 国会

qualification? Choice of spouse^{②①}. Her late husband was Rajiv Gandhi, slain^{②②} Prime Minister, himself the most recent example of India's experiment in monarchical rule within a democratic shell. The line is almost unbroken. The first Prime Minister (Nehru) begat^{②③} a Prime Minister (daughter Indira) who begat another (son Rajiv). His children being too young to reign, India's Congress Party is proposing what in the Middle Ages was called a regency^{②④}; let the widow rule for now.

Sonia, however, is no pioneer of spousal succession. Corazon Aquino and Violeta Chamorro, both widows of assassinated opposition leaders, became Presidents, respectively, of the Philippines and Nicaragua. They did not, however, get there by default^{②⑤}. They ascended by courageously^{②⑥} making themselves the rallying point of a revolution. The one who did ascend for no other discernible^{②⑦} reason than having shared the great one's bed is one Mrs. Perón of Argentina. Not Evita, who became a saint after her death but never actually ruled—no, the sorriest modern case of rule by consort^{②⑧} is Perón's third wife, Isabel, a cabaret dancer he met during one of his exiles in Spain, who turned in one of the most disastrous presidencies in Argentine history.

With so many republics turning so slavishly^{②⑨} to blood and bed partners for political salvation^{③⑩}, it is refreshing to find places like

②① spouse: 配偶

②② slay: 杀死

②③ beget: 产生

②④ regency: 摄政
统治

②⑤ by default: 预先设定地, 默认地

②⑥ courageously: 勇敢地

②⑦ discernible: 可辨别的

②⑧ consort: 配偶

②⑨ slavishly: 奴隶般地

③⑩ salvation: 拯救, 救援工具

Jordan and Morocco, which are open and honest about the whole thing. The leader dies; the eldest son becomes leader. No muss^{③①}. No fuss.

Of course, totalitarian^{③②} states do dynastic succession best of all. Assad of Syria and Saddam of Iraq are currently grooming sons to succeed them. Rulers always want their heirs to rule, but why do the ruled want it too? Why is the dynastic impulse^{③③} so popular, so powerful in democracies^{③④}?

Perhaps in advanced capitalist countries like the U. S., the attraction to a Bush or a Dole has less to do with bloodline^{③⑤} than with branding. The scions^{③⑥} and consorts of the great carry trusted names. You buy Diet Pepsi because you know and trust Pepsi. You figure that if the Pepsi people are making a diet soda, it is bound to be O. K. People know and like—particularly in late-Clinton retrospect^{③⑦}—Bush the elder. Knowing the Bush brand, they are willing to try Bush the younger.

Well, perhaps. But the branding rationale^{③⑧} lets us all off too easily. After all, monarchy long predates^{③⑨} capitalism. The dynastic impulse in the modern world is less an expression of advanced consumerism^{④①} than a recrudescence^{④②} of the most primitive political impulse: “Nay, but we will have a king over us” (*I Samuel 8:19*). In America we only

③① muss: 混乱

③② totalitarian: 极权主义的

③③ impulse: 冲动

③④ democracy: 民主国家

③⑤ bloodline: 血统

③⑥ scion: (名门望族的) 后裔, 子孙

③⑦ retrospect: 回顾, 追溯

③⑧ rationale: 基本原理, 用三段论法推论

③⑨ predate: 居先

④① consumerism: 用户至上主义

④② recrudescence: 复发, 再发作

lend the throne^②, for a four-or eight-year stretch. Progress, I suppose, from the endless tenure^③ of the Henrys and the Edwards, when your pig in a poke^④ was for life. But less progress than we think.

[Selected from *Time*, September 13, 1999,
written by Charles Krauthammer]

② throne: 王权, 君权

③ tenure: (官职等的)保有,任期

④ a pig in a poke: (不问好坏地)盲目赞同



Attacking Free Trade

自由贸易是人所共知的好事一桩,而备受世人关注的世贸部长级会议将于11月底在美国西雅图举行,全球贸易观察家罗莉·华莱士认为,“WTO 现已超越了它的界限,我们现在所拥有的并不是自由贸易,它被集团贸易所操纵的。假如我们拥有自由贸易,WTO 将会有相关的成文的保护制度。”从她的角度上看,WTO 应该开始“回顾及修改”当前的体制而停止考虑修订新的制度。她的观点得到了许多绿色和平组织和劳工团体的赞同与支持。

At the end of this month, government trade ministers from around the world will gather in misty^①, caffeine-laced Seattle, Washington. There, with the help of bureaucrats^② from the World Trade Organization, they'll try to launch a multiyear^③ cycle of talks—some are calling it the Millennial^④ Round—aimed at further liberalizing global trade. Trade conclaves^⑤ are notoriously dull^⑥, but this one promises to be a raucous^⑦ affair. Around 20,000 protesters will throng^⑧ the Emerald City to greet the pinstriped^⑨ set—and most intend to complain loudly about what they regard as the ugly^⑩ downside^⑪ of global trade. Environmentalists, labor group-

① misty: 薄雾笼罩的

② bureaucrat: 官员

③ multiyear: 多年的

④ Millennial: 千禧年的

⑤ conclaves: 聚会

⑥ dull: 沉闷的

⑦ raucous: 喧闹的,闹腾的

⑧ throng: 挤入,聚集,蜂拥

⑨ pinstriped: 衣着老派的,像商人样子的

⑩ ugly: 丑陋的

⑪ downside: 下降趋势

s, feminists, farmers, students, the Ruckus Society (from Berkeley, California), four nuns^⑫ from Wisconsin (who aim to promote a human-rights resolution^⑬ for their state); they'll hold an outdoor rally^⑭ at Memorial Stadium, then all march through downtown Seattle on Nov. 30, the first day of the conference.

U. S. President Bill Clinton will be there to address delegates^⑮ on the value of free trade. But he'll have to speak up; more than 1,200 nongovernmental organizations (NGOs)^⑯ will be in Seattle expressing their displeasure over everything from genetically modified crops to fishing subsidies^⑰ to child labor. Clinton, of course, has had some major successes in trade liberalization. But lately U. S. leadership^⑱ has faded—one reason why very little may be accomplished in Seattle. Clinton is a lame-duck^⑲ president who has domestic political problems; the U. S. Congress has twice defeated administration^⑳ efforts to gain so-called fast-track^㉑ negotiating authority for trade issues. Beyond that, public perceptions^㉒ have shifted around the world. Ever since the global trading system got started in 1947, it has been preoccupied^㉓ with border issues—lowering tariffs and quotas^㉔, mainly. That effort has been successful—so much so that the WTO has lately turned its attention to settling disputes and enforcing rules. But

⑫ nun: 修女

⑬ resolution: 决议, 决议

⑭ rally: 群众集会

⑮ delegate: 代表

⑯ nongovernmental organization (NGO): 非政府组织

⑰ subsidy: 补贴, 补助金

⑱ leadership: 领导地位

⑲ lame-duck: 跛脚鸭

⑳ administration: 政府

㉑ fast-track: 快速成功(之道)的

㉒ perception: 观点, 认识, 看法

㉓ preoccupied: 使全神贯注

㉔ quota: 限额

telling Americans they can't block Asian shrimp^{②⑤} and Europeans they must accept American beef^{②⑥} has pushed the trade body into sensitive issues like environmental regulations and food safety.

The American president, to an extent, has met the critics on their own ground. In recent weeks Clinton has talked frequently of the need to "put a human face on the global economy"; the president spent last week trying to drum up^{②⑦} support for U.S. policies. He donned^{②⑧} a leather jacket and toured a Harley-Davidson plant (which exports one quarter of its famous "hogs^{②⑨}"). Meanwhile his top trade and economic officials were in Beijing, trying to hammer out a last-minute deal^{③⑩} that would allow China to join the WTO. Both sides are keen to sign an accord^{③⑪}, and they were still talking early Sunday morning.

In a way, the WTO's goals for Seattle seem modest. The trade mandarins^{③⑫} just want to figure out what they should spend the next few years negotiating. But that's no easy thing for a group with 134 member countries. Already, the WTO has received more than 220 negotiating proposals. Agricultural and service-sector^{③⑬} reform are definitely on the agenda—but after that chaos^{③⑭} reigns. No one is even sure how long the talks should last, though the working assumption is three years.

②⑤ shrimp: 虾

②⑥ beef: 牛肉

②⑦ drum up: 争取

②⑧ don: 穿上

②⑨ hog: 肥猪

③⑩ deal: (政治上
的)密约

③⑪ accord: 协议

③⑫ mandarin: 高级
官员

③⑬ service-sector:
服务业

③⑭ chaos: 混乱

At WTO headquarters in Geneva last week, delegates struggled to put together a draft declaration for Seattle. The preliminary^{③⑤} discussions have been so divisive^{③⑥} that Mike Moore, the WTO director-general, warned last week that the new trade round might die aborning^{③⑦}. He appealed to the members for “more flexibility, sensitivity and vision^{③⑧}.”

Protesters headed for Seattle are not terribly sympathetic^{③⑨}. They contend that the WTO is undemocratic^{④⑩} and operates in secrecy^{④⑪}, that it is controlled by big business interests who exploit cheap labor abroad and that it has begun to encroach^{④⑫} on the rights of countries to protect their environment and restrict imports of unsafe foods and hazardous materials. “The WTO has overstepped its boundaries,” says Lorri Wallach, director of Global Trade Watch (an offshoot^{④⑬} of Nader’s consumerist Public Citizen lobby^{④⑭}). “What we have now is not free trade, it’s managed corporate trade. If we had free trade, the WTO would have one page of rules rather than 22,000.” In her view, the WTO should stop thinking about making new rules and start “reviewing and repairing” the current system.

Many labor groups, who tend to view trade accords suspiciously^{④⑮}, agree. “We want to see workers’ rights incorporated into^{④⑯} the WTO,” says Thea Lee, assistant director of

③⑤ preliminary: 预备的, 初步的

③⑥ divisive: 不和的

③⑦ aborning: 正在生产中的

③⑧ vision: 远见

③⑨ sympathetic: 同情的, 体谅的

④⑩ undemocratic: 不民主的

④⑪ secrecy: 秘密, 秘密状态

④⑫ encroach: 侵犯, 侵害

④⑬ offshoot: 分支

④⑭ lobby: (游说议员的) 游说团

④⑮ suspiciously: 表示怀疑地

④⑯ incorporate into: 包括, 合并, 设立

public policy for the AFL-CIO, the biggest labor group in America. “That way, trade benefits can be withdrawn^{④⑦} from countries that violate worker standards, just like the business community uses trade measures to protect their interests.” Lee says that recent free-trade accords have shifted the balance of power from labor to capital^{④⑧}. As a result, she claims, jobs have moved from high-wage Western countries to low-wage Latin and Southeast Asian nations, where workers have fewer legal protections. “If the U.S. government wanted to ban the import of goods produced by child labor, it wouldn’t be able to do so under WTO rules,” says Lee. “That is ridiculous^{④⑨}. ”

The classic case for free trade rests on the idea that it favors specialization^{⑤⑩}—so that each country produces the goods and services it is best suited to—and hence raises overall welfare^{⑤⑪}. After market-opening measures take effect, there may be some “losers”—those, for example, whose jobs are threatened—but typically far more “winners”—like those with increased access to more, better or cheaper products. Trade hoosts^{⑤⑫} economic growth, creates jobs and fosters a higher standard of living for everybody. In the United States, exports have been soaring^{⑤⑬}, and so has job growth. America’s unemployment rate is at an all-time low. And yet the prosperity

④⑦ withdraw: 收回

④⑧ capital: 资本

④⑨ ridiculous: 荒谬的, 可笑的

⑤⑩ specialization: 专业化, 专门化

⑤⑪ welfare: 福利

⑤⑫ boost: 推进

⑤⑬ soar: 飙升