Lecture title:	**Lecture 5B: The 4th Industrial Revolution**

Margin notes

– four industrial revolutions:
1) 1760 – 1820 new manufacturing processes; steam and water power; mechanization
2) 1870 – 1914 electricity and mass production
3) 1950s – 'digital revolution'; computers and automation
4) near future – cyber-physical systems

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3. Skills for the new era

1. The 4th Industrial Revolution

4th Industrial Revolution → merging physical, digital and biological fields

→ technologies will become ingrained in day-to-day lives
- bionic man already happening → *e.g.* 3D printed bones, bionic arm

Future: AI, autonomous vehicles, voice activated virtual assistants, face ID recognition

Technology is changing faster than ever
e.g. it took 75 years for 100 million users to adopt the phone
Instagram → 100 million users in just 2 years
Pokemon Go → same number in a month

2. Implications for society → Problems

Greater inequality

- some companies/ governments struggling to keep up

- innovators, investors, shareholders benefit the most from innovation

    o *e.g.* study → billionaires → 80% of the 40 breakthroughs in the last 40 years

        → 'winner takes it all' economy
        → high skilled workers are rewarded with high pay, the others are left behind

AI will eliminate jobs

- demand new skills that workers do not have now
- new job types are not created fast enough → only 0.5% employed today in industries that did not exist at the beginning of the 2000s
- new jobs = higher level of education & specialized study
- physical/ routine tasks risk becoming obsolete

	<mark>3. Skills for the new era</mark>
	
	a) <mark>higher cognitive skills</mark>
	    - advanced literacy skills
	    - statistical skills
	    - critical thinking
	    - complex info processing
	
	b) <mark>social & emotional skills ("soft skills")</mark>
	    - advanced communication & negotiation
	    - empathy
	    - ability to learn continuously
	    - manage others
	    - be adaptable
	e.g. Google: creativity, leadership, communication skills = top prerequisite for employees
	
	- in the future:
	    o <mark>combining skills / collaborative problem solving</mark>
	      = more common
	
	    o BUT, many students lack these skills because
	      these skills are not taught in school
	
	c) <mark>technological literacy</mark>
	    - basic IT skills
	    - data analysis
	    - engineering
	    - research
	- more software developers, engineers & robotics/scientific experts
	
	China – leading innovators → pioneering role in the 4th Industrial Revolution

Summary	The 4th Industrial Revolution will be the use of cyber-physical systems in our day-to-day lives. People will need to prepare for this by acquiring new skills, in order to avoid being left behind. Fortunately, China is among the leading innovators in new, society-changing technology, and is likely to play a pioneering role in the way the 4th Industrial Revolution develops.