

A GIFT OF FIRE

A close-up photograph of a human hand, palm up, holding a large quantity of small, glowing golden-yellow particles. The particles are concentrated in the center of the palm and are beginning to drift upwards, creating a sense of magic or wonder. The background is dark, making the glowing particles stand out. The hand is positioned in the center of the frame, with fingers slightly spread.

CHAPTER 1: UNWRAPPING THE GIFT

WHAT WE WILL COVER

- ✓ **Rapid Pace of Change**
- ✓ **New Developments and Dramatic Impacts**
- ✓ **Issues and Themes**
- ✓ **Ethics**

RAPID PACE OF CHANGE

1940s: The first computer was built.

1956: First hard-disk drive weighed a ton and stored five megabytes.

1991: Space shuttle had a one-megahertz computer.

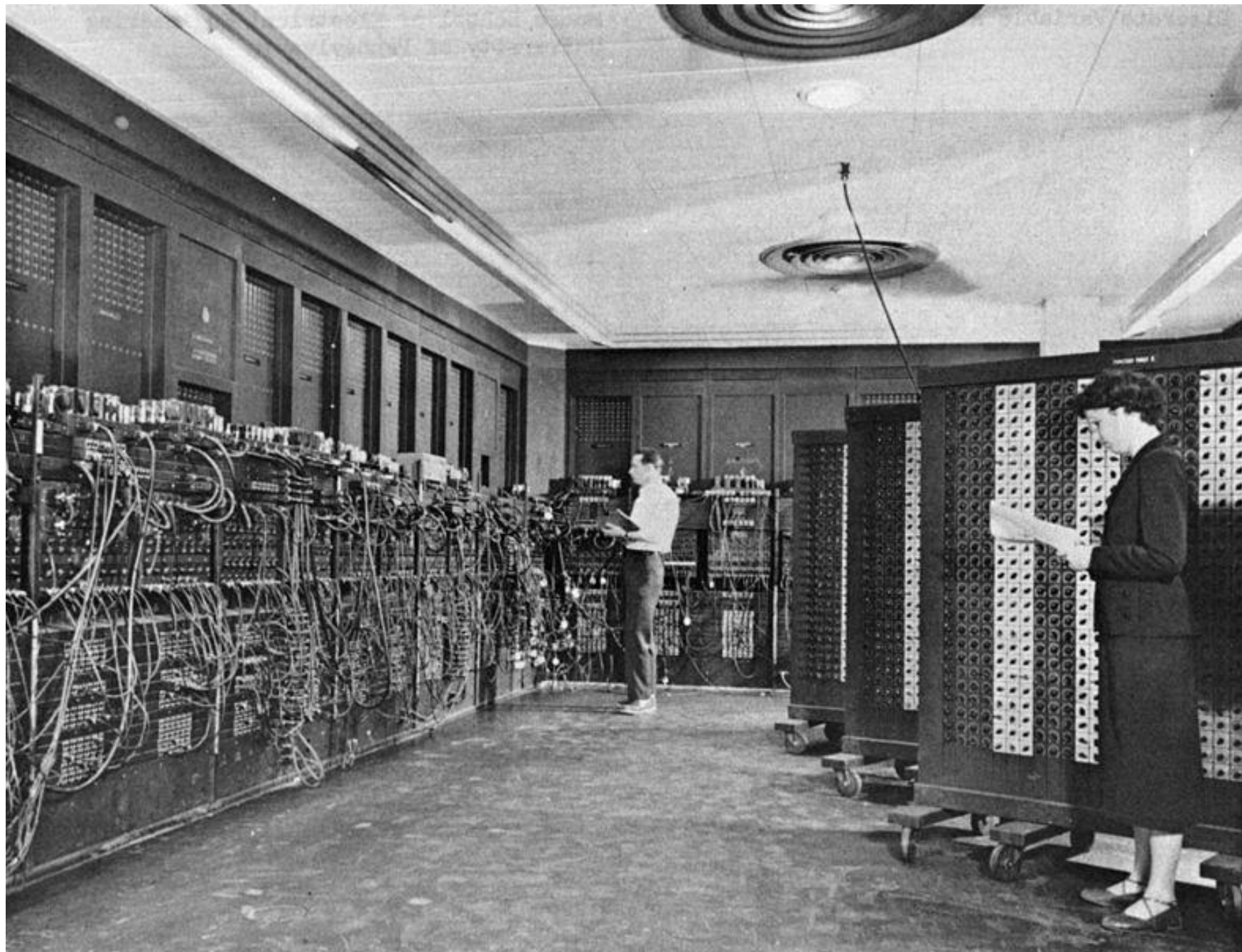
2006: Pocket devices hold a terabyte (one trillion bytes) of data.

2006: Automobiles can have 100-megahertz computers onboard.

RAPID PACE OF CHANGE

Huge changes in :

- **Size**
- **Storage**
- **Cost**
- **Performance**



5 MB Hard Disk Drive, **1956**



In September 1956 IBM launched the 305 RAMAC, the first 'SUPER' computer with a hard disk drive (HDD). The HDD weighed over a ton and stored a whopping 5 MB of data.

256 GB Flash Thumb Drive, **2011**



256 GB: That's 262,144 MB or 52,428 times the storage of the 1956 device! BOOM!

RAPID PACE OF CHANGE: DISCUSSION QUESTION

- **What devices are now computerized that were not originally?**
- **Think back 10, 20, 50 years ago.**

New Developments



NEW DEVELOPMENTS

Blogs (*'web log'*):

- Began as outlets for amateurs who want to express ideas or creativity.
- Appealing because present personal views, are funny and creative, and present a quirky perspective on current events.

NEW DEVELOPMENTS (CONT.)

Blogs (cont.):

- **Now used as alternatives to mainstream news and for business public relations**
- **Popular blogs have 100,000 to 500,000 readers per day and can peak at several million views per day**



vimeo

You Tube
Broadcast Yourself™

 **blip.tv**

NEW DEVELOPMENTS (CONT.)

Video Sharing:

- **Rise of amateur videos on the web**
- **Boom of websites like Youtube, vimeo and Myspace**
- **Many videos on the web can infringe copyrights owned by entertainment companies**



www.TopMobilesBank.com

NEW DEVELOPMENTS (CONT.)

Cell Phones:

- **Can now be used for travel, last minute planning, taking pictures and downloading music**
- **Talking on cell phones while driving is a problem**
- **Cell phones can interfere with solitude, quiet and concentration**
- **Cameras in cell phones and privacy issues**

Without my cell phone, I wouldn't:

1. know what time it is
2. be able to solve a math question
3. know a single phone number
4. know the date
5. be able to text my friend when I'm at their house
6. take a snap shot at a picture perfect time
7. be able to wake up from an alarm in the morning
8. find my way in the dark

facebook

orkut

LinkedIn

bebo

hi5

myspace.com
UK

friendster

NEW DEVELOPMENTS (CONT.)

Social Networking:

- **First online social networking site was www.classmates.com in 1995**
- **Myspace, founded in 2003 had roughly 100 million member profiles by 2006**
- **Facebook was started at Harvard as an online version of student directories**

THIS MODERN LIFE:

WORK



HOME



PLAY



SLEEP





WIKIPEDIA
La enciclopedia libre

NEW DEVELOPMENTS (CONT.)

Collaboration:

- **Wikipedia, the online, collaborative encyclopedia**
- **Open Directory Project (ODP)**
- **Collaboration between scientists in different states or countries**

NEW DEVELOPMENTS (CONT.)

E-commerce :

- **www.Amazon.com started in 1994 and 10 years later annual sales reached \$8.5 billion**
- **It saves time and effort for both sellers and customers.**
- **Security and trust is an issue.**

NEW DEVELOPMENTS (CONT.)

Free Stuff:

- **Email, books, newspapers, games, etc.**
- **Free email accounts, browsers, firewalls, antivirus, etc.**
- **Concerts and TV show episodes are available to view on the Web.**
- **Free video of lectures, lectures notes, exams, etc.**

NEW DEVELOPMENTS (CONT.)

Free Stuff:

- **Generosity and public service flourish in the web development.**
- **How do you think advertising on the web is different from traditional advertising?**

NEW DEVELOPMENTS (CONT.)

Artificial Intelligence (AI), Robotics, and Motion:

- **AI is a branch on CS that aims to make computers think and perform tasks the same way as human begins.**
- **AI suited to narrow, specialized skills.**
- **Robotic devices often special-purpose devices, and may require AI to function.**

NEW DEVELOPMENTS (CONT.)

Artificial Intelligence (AI), Robotics, and Motion:

- **AI is used in complex strategy games like chess, in language translation, voice recognition, face matching, fingerprints matching, etc.**
- **AI is also used in surveillance systems, it may saves people's lives. How?**

NEW DEVELOPMENTS (CONT.)

Artificial Intelligence (AI), Robotics, and Motion:

- **Motion sensing devices are used to give robots the ability to walk, trigger airbags in a crash and cushion laptops when dropped.**

NEW DEVELOPMENTS (CONT.)

Tools for Disabled People:

- **Restoration of abilities, productivity and independence.**
- **Screen readers and scanners enable a blind person to use documents and web-pages like ordinary people.**

NEW DEVELOPMENTS (CONT.)

Tools for Disabled People:

- **Speech recognition help deaf people to understand what others says, by reading their spoken words on a monitor.**
- **People who can't use their hands can dictate documents to a word processor.**

NEW DEVELOPMENTS (CONT.)

Tools for Disabled People:

- **Prosthetics devices and motion sensors, like artificial arms and legs.**
- **They help a disabled person to walk, set , etc.**
- **Knees have sensors, to control bending and straightening the knee and support body movements.**

NEW DEVELOPMENTS (CONT.) DISCUSSION QUESTION

- **What changes and new developments do you expect in the next 50 years?**
- **How will life be different than it is today?**

NEW DEVELOPMENTS (CONT.)

What's Next?

- **3-D images that can be manipulated with hands movements.**
- **Where can they be used?**

NEW DEVELOPMENTS (CONT.)

What's Next?

- **Chips (smaller than a grain of rice) that stores 5 Megabits and can be read wirelessly.**
- **Where can they be used?**

NEW DEVELOPMENTS (CONT.)

What's Next?

- **Wear-ware are wearable computers displays in eye glasses, contact lenses and smart sensors in clothing.**
- **What impact do they have?**

NEW DEVELOPMENTS (CONT.)

What's Next?

- **Tiny flying sensors/ computers that communicate wirelessly.**
- **What impact do they have?**

NEW DEVELOPMENTS (CONT.)

What's Next?

- **Biological and computer sciences will combine new ways to insert micro-processors or controlled devices on human bodies.**

ISSUES AND THEMES

- **Analyzing and evaluating the impact of new technology can be difficult.**
- **Some of the changes are obvious, some are not.**
- **Even when benefits are obvious, their costs and side-effects might not be and vice versa.**

ISSUES AND THEMES

Issues:

- **Unemployment**
- **Alienation and customer service**
- **Crime**
- **Loss of privacy**
- **Errors**

ISSUES AND THEMES (CONT.)

Themes:

- **Old problems in a new context: crime, violent fiction and games, copyright infringement**
- **Adapting to new technology: thinking in a new way**
- **Varied sources of solutions to problems: natural part of change and life**

ISSUES AND THEMES (CONT.)

Themes (cont.):

- **Global reach of net: ease of communication with distant countries**
- **Trade-offs controversy: increasing security means reducing convenience**
- **Difference between personal choices, business policies, and law**

ETHICS

What is Ethics?

- **Study of what it means to “do the right thing”**
- **Assumes people are rational and make free choices**
- **Rules to follow in our interactions and our actions that affect others**

ETHICS (CONT.)

- ✓ **Ethical Views:**
- ✓ **Deontological**
- ✓ **Utilitarianism**
- ✓ **Natural rights**
- ✓ **No simple answers**
 - Do organizations (businesses) have ethics?

Deontological Theories:

- Philosopher Immanuel Kant
- Emphasize Rules and Duty (despite consequences)
- Three ethical ideas:
 1. Universality: ethical rules apply to everyone “Do unto others as you would have them do unto you”
 2. Rationality: logic determines ethical behavior
 3. People are not means to ends but ends themselves

Deontological Theories:

The philosopher Immanuel Kant said that rational human beings should be treated as an end in themselves and not as a means to something else. The fact that we are human has value in itself.

If a person is an end-in-themselves it means their inherent value doesn't depend on anything else - it doesn't depend on whether the person is enjoying their life, or making other people's lives better. We exist, so we have value.

Utilitarianism

- Focus on consequences
- Increase social “utility”, happiness
- Two ethical ideas:
 1. Act utilitarianism:
judge an action by its impact
 2. Rule utilitarianism:
define rules with good social outcome “Do not lie”

Natural Rights

- Come from nature of humanity
 - Life
 - Liberty
 - Property
- Two ethical views:
 - Focus on **Process** of human interaction
 - Focus on **Result** of human interaction

ETHICS (CONT.)

Important Distinctions:

Right, wrong and okay

Negative rights (liberties)

- The right to act without interference

Positive rights (claim-rights)

- An obligation of some people to provide certain things for others

Negative Rights:

- Liberties
- Rights to act without interference
- Examples:
 - Right to life
 - Right to be free from assault
 - Right to use your property
- Declaration of Independence:

“Life, liberty, and the pursuit of happiness”

Positive rights

- Claims rights
- Obligation to provide to others
- Examples:
 - Positive right to job: someone must hire you
 - Positive right to life: someone must pay for your food

ETHICS (CONT.)

- **Important Distinctions (cont.):**
- **Difference between wrong and harm**
- **Personal preference and ethics**
- **Law and Ethics**

ETHICS

DISCUSSION QUESTION

- **Can you think of examples of liberties (negative rights) and claim-rights (positive rights) that are at opposition to each other?**