



THE FUTURE OF TECHNOLOGY APCUG

Major technological trends and how
they are going to affect the human race.

Dave Dockery

doc@synergypublishing.com

11/9/2019

Bad Predictions Abound

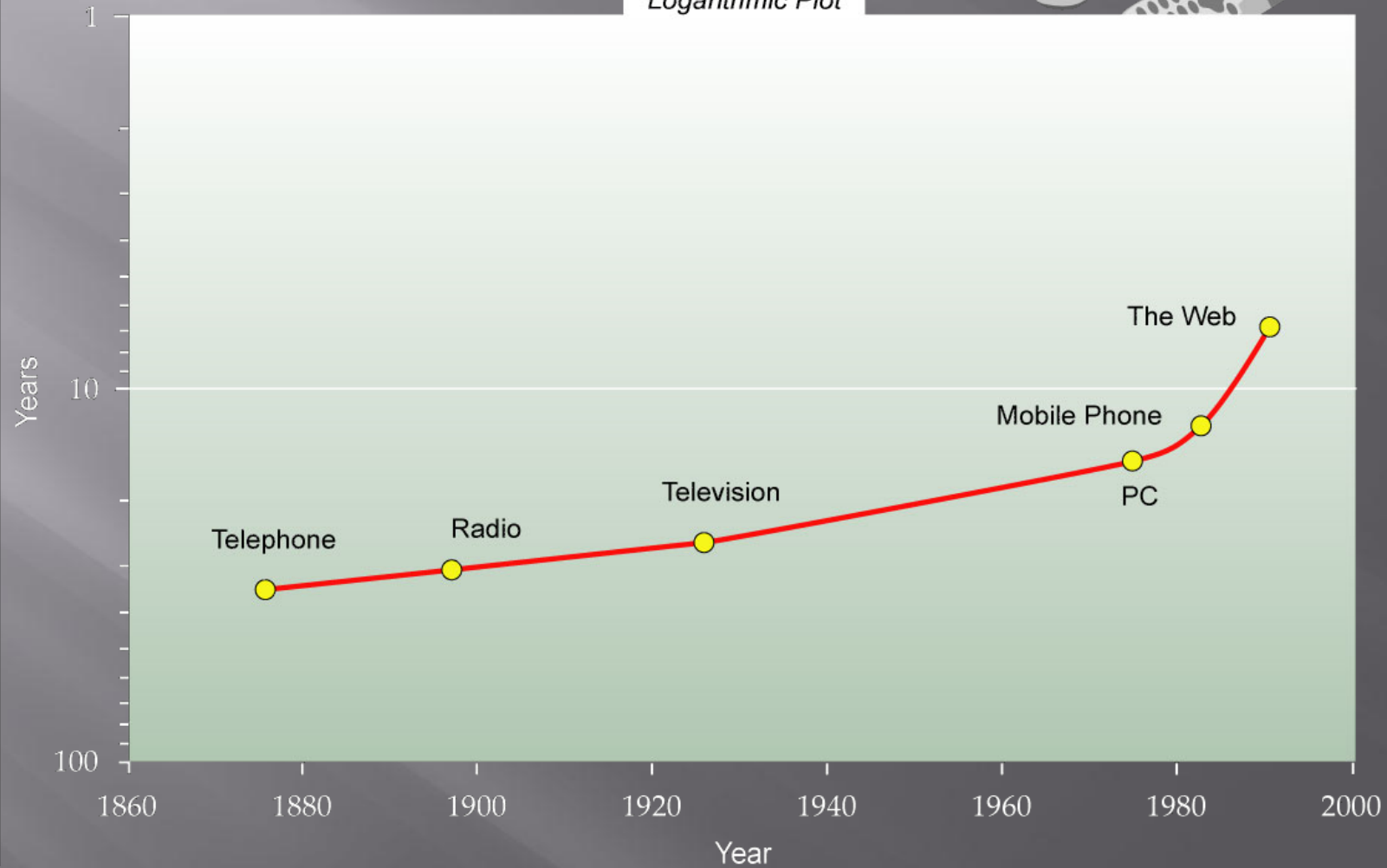
- ▣ “Despite the trend to compactness and lower costs, it is unlikely everyone will have his own computer any time soon.” *Reporter Stanley Penn, The Wall Street Journal, 1966*
- ▣ “I predict the Internet . . . will go spectacularly supernova and in 1996, catastrophically collapse.” *Bob Metcalfe, InfoWorld, 1995.*

Mass Use of Inventions

Years Until Use by 1/4 U.S. Population

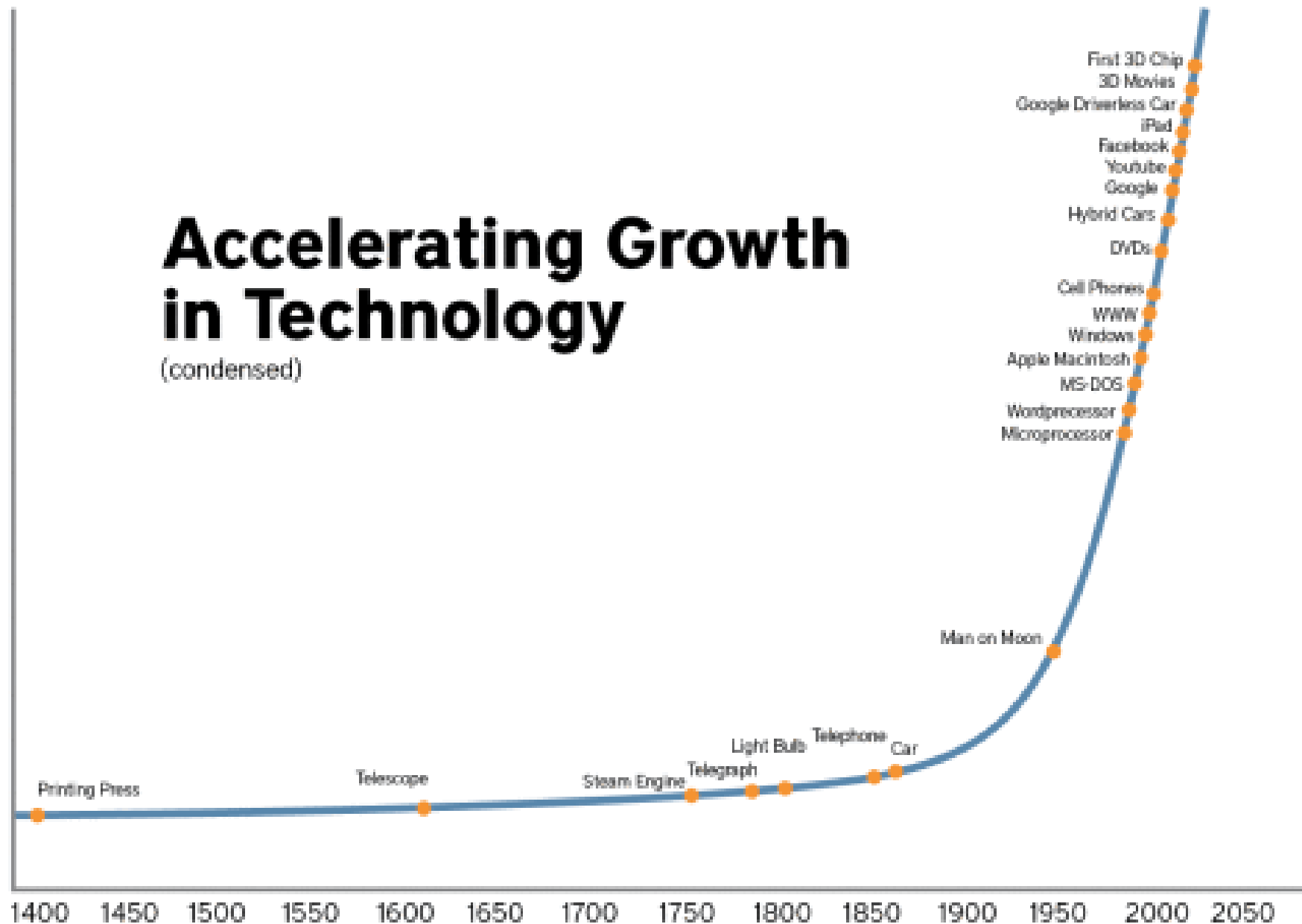


Logarithmic Plot



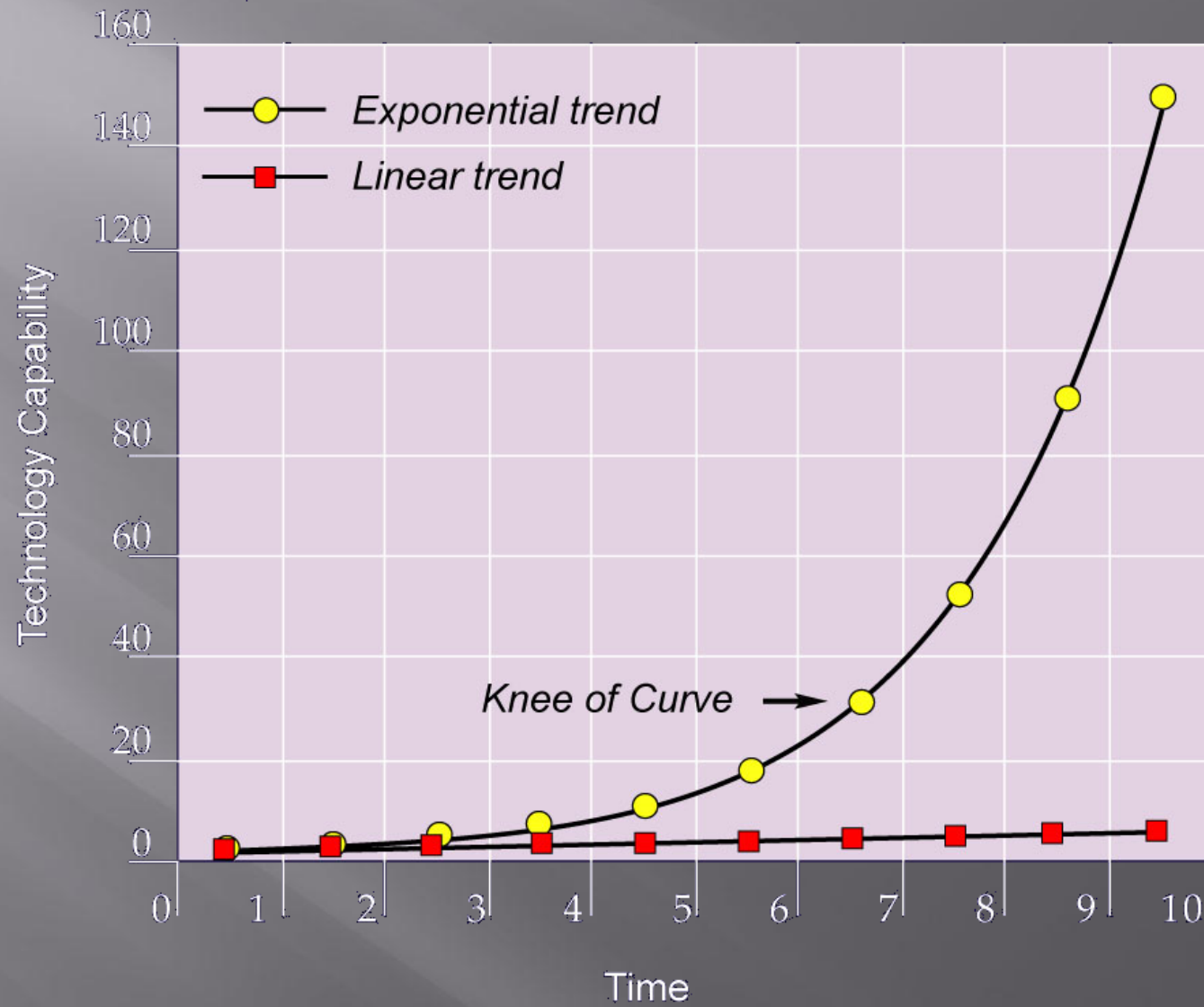
Accelerating Growth in Technology

(condensed)



Linear vs. Exponential Growth:

Linear Plot



Knowledge Doubling Curve

- ▣ Buckminster Fuller created: he noticed that, until 1900, **human knowledge doubled** approximately every century.
- ▣ On average, **human knowledge is doubling** every 12 months.
- ▣ According to IBM, the build out of the “internet of things” will lead to the **doubling of knowledge** every 12 hours by 2020.

Human Genome Project

- ▣ The Human Genome Project started in 1990
- ▣ Goal of identifying all three billion chemical units in the human genetic instruction set
- ▣ Expected to take 15 years and \$3 billion

Protein Folding

- ▣ HIV Scientists had studied for 17 years
- ▣ Gamers created online game called Foldit
- ▣ Solved problem in 15 days

IoT Projected Growth

- ▣ IOT will have arrived when there are more things on the Internet than people – that occurred in 2008.
- ▣ 2017 – 15 billion devices (2 per person)
- ▣ 2020 – 50 - 70 billion devices (8 per person)

Internet of Things Examples

- ▣ Healthcare: wearable sensor detects heart problem, calls ambulance, and sends vitals to nearby hospital.
- ▣ Building Management: buildings emit 40% of greenhouse gases
 - Automated management of light & temperature
 - Track inventory, people, & equipment in real time
- ▣ Trucks & Autos
 - Traffic can be re-routed
 - Each auto communicates with its own internal systems: brakes, oil, air, etc.
- ▣ Monitor our environment: water & air sensors



Game Changing Technologies

Big Data

Machine
Learning

Artificial
Intelligence

CRISPR

Virtual
Reality

Augmented
Reality

Crowdsourcing
Crowdfunding

Internet of Things (IOT)

Sharing
Borrowing

Blockchain

Search
Intelligence

Swarm
Intelligence

Voice Assistants:
Siri, Alexa, Cortana, Google Home

Internet of Things (IoT) - Personal

▣ Wearable Tech:

- Fitbit
- Smartwatch
- Augmented Reality (Google Glass 2.0)
- Virtual Reality
- Contact lenses: cameras & glucose monitors
- Speech translation earbuds



▣ Electronic Fabrics



IoT - Home

- ▣ Thermostats
- ▣ Refrigerators
- ▣ TV Sets
- ▣ Kitchen appliances
- ▣ Washer & Dryer
- ▣ Garage Door Opener
- ▣ Digital Assistants:
Amazon Echo (Alexa), Google Home,
Siri, Cortana



IoT - Business

- ▣ Improve decision-making
- ▣ Understand customers
- ▣ Deliver new customer value propositions
- ▣ Improve and optimize operations
- ▣ Generate an income and improve the value of the business



HOW TO UNDERSTAND YOUR
CUSTOMER
AND FEEL THEIR PAIN

"Your most **unhappy** customers are
your greatest source of learning."

- Bill Gates



Drones



- ▣ Inspect a Tower
- ▣ Save Lives
- ▣ Deliver Packages
- ▣ Involve Children in Science
- ▣ Make a Movie
- ▣ Paint a Ship
- ▣ Sport
- ▣ Monitor Elephants & Whales



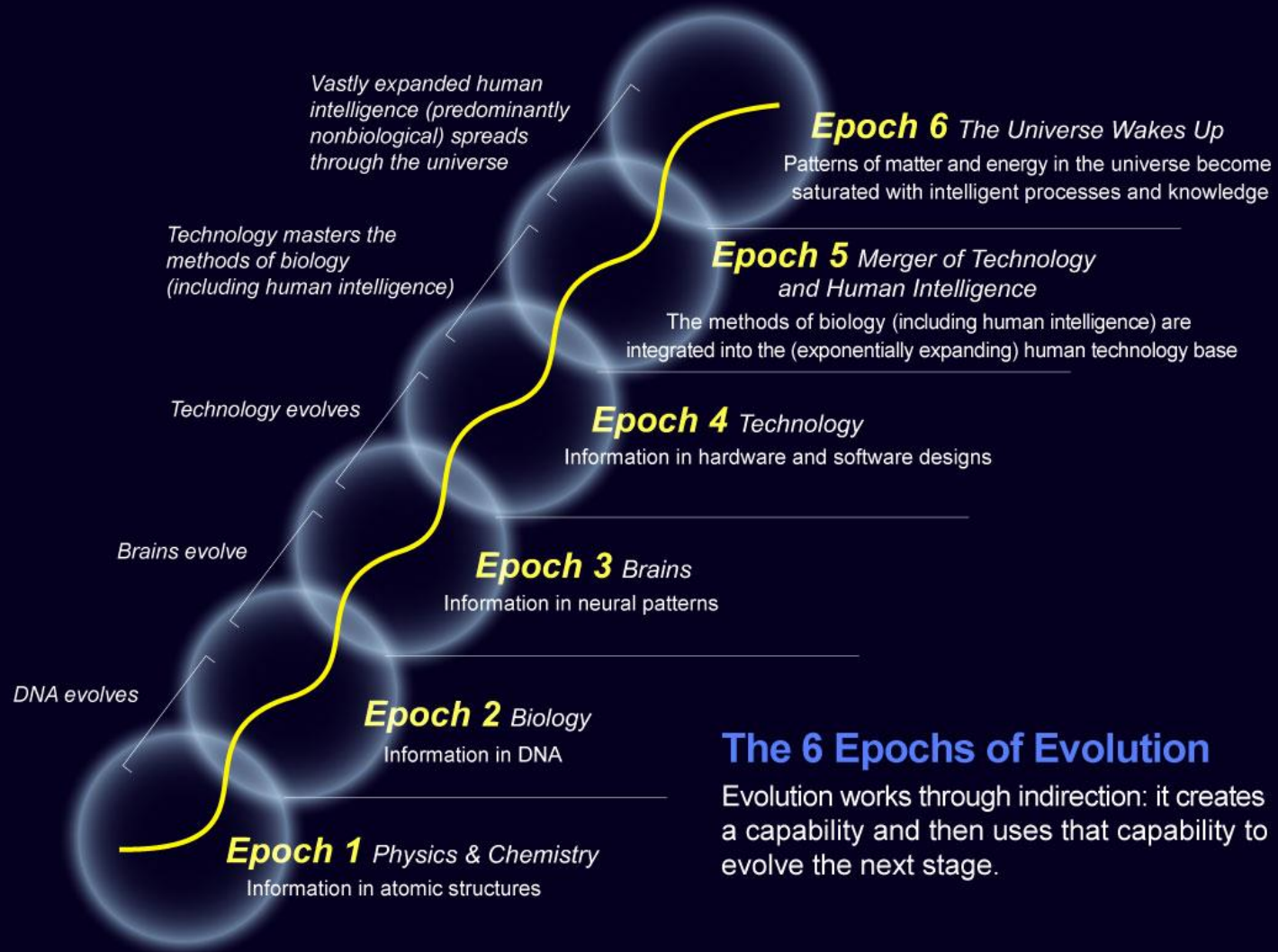
CRISPR

- ▣ 1. Remove Malaria from Mosquitos
- ▣ 2. Eliminate a Patient's Cancer
- ▣ 3. Treat Muscular Dystrophy
- ▣ 4. Treat HIV
- ▣ 5. Develop New Kinds of Drugs
- ▣ 6. Treat Blindness
- ▣ 7. Edit Humans

Artificial Intelligence (AI)

- ▣ Intelligence exhibited by machines
- ▣ Weak AI: programs are developed to perform specific tasks, that are utilized for a wide range of activities including:
 - medical diagnosis
 - electronic trading platforms
 - robot control
 - remote sensing
 - AI has been used to develop and advance numerous fields and industries, including finance, healthcare, education, transportation, and more.

Finis



The 6 Epochs of Evolution

Evolution works through indirection: it creates a capability and then uses that capability to evolve the next stage.