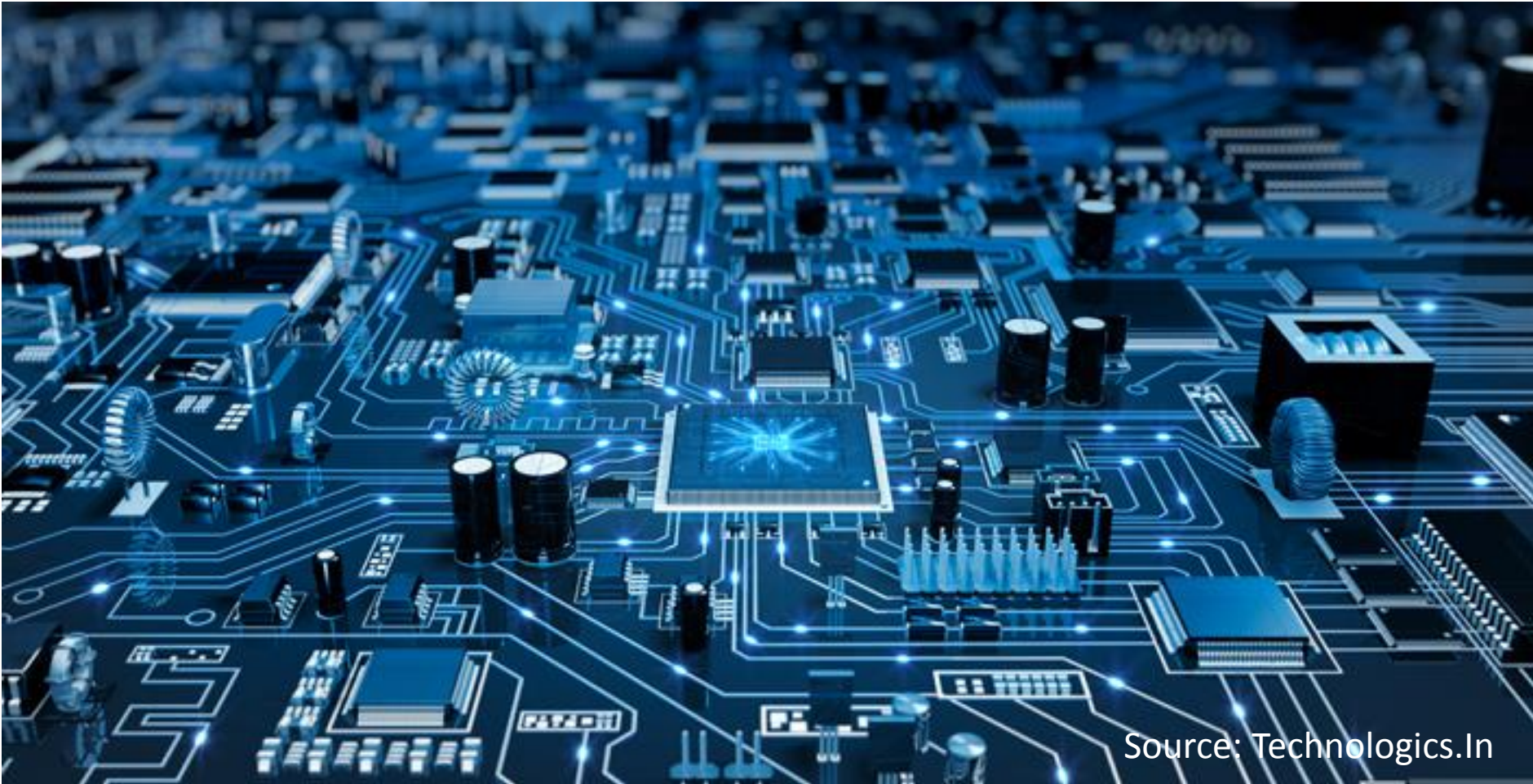


The System Question



What is a System?

- A system is a set of **interrelated parts** forming a complex whole
- Systems have **boundaries** and can overlap
- A system can be **nested** inside another system

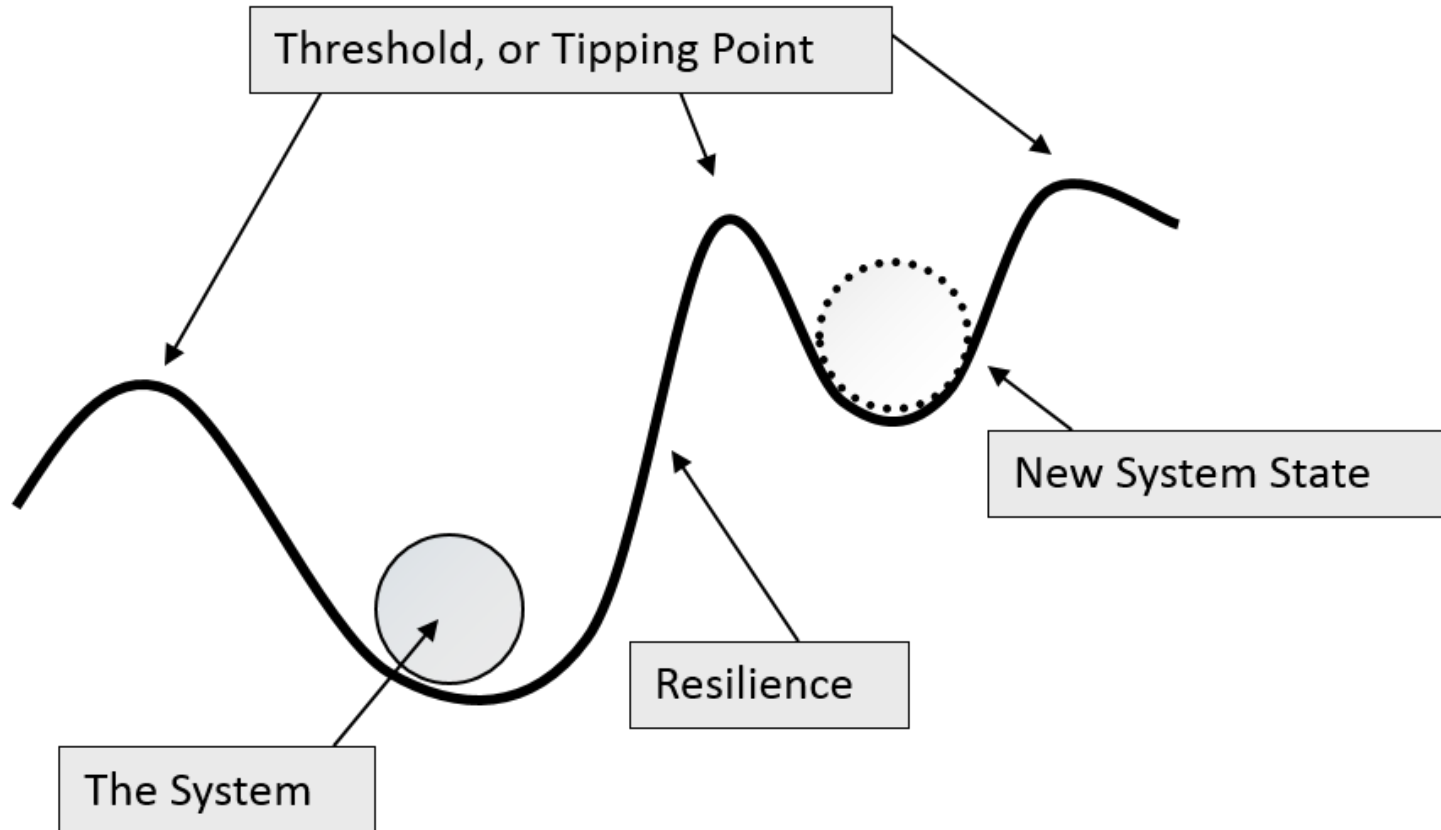


Key Concepts in Systems Thinking

- A **feedback loop** is a circular process in which the output of a system feeds back into the system as input.
- A **tipping point** is a threshold which, when crossed, causes the system to irreversibly change into a different state.



Tipping Points



The Human System



Source: Inside the Great Pyramid of Egypt Documentary

Fun Facts about the Planetary System

- The universe is 13 billion years old
- The Earth is 4.5 billion years old
- The Earth's surface area is 126 billion acres. Only **one quarter** of the surface area is productive space that can support life.
- Water is an essential ingredient for life. 2.5% of the water on the planet is **freshwater**. Only 1% of that freshwater is accessible.
- In the Earth's history, there have been five Mass Extinctions. The last one occurred when the dinosaurs died out 65 million years ago.
- Modern human beings have existed for 200,000 years
- For the past 10,000 years, we have been in a stable geological era called the **Holocene**



Key Turning Points

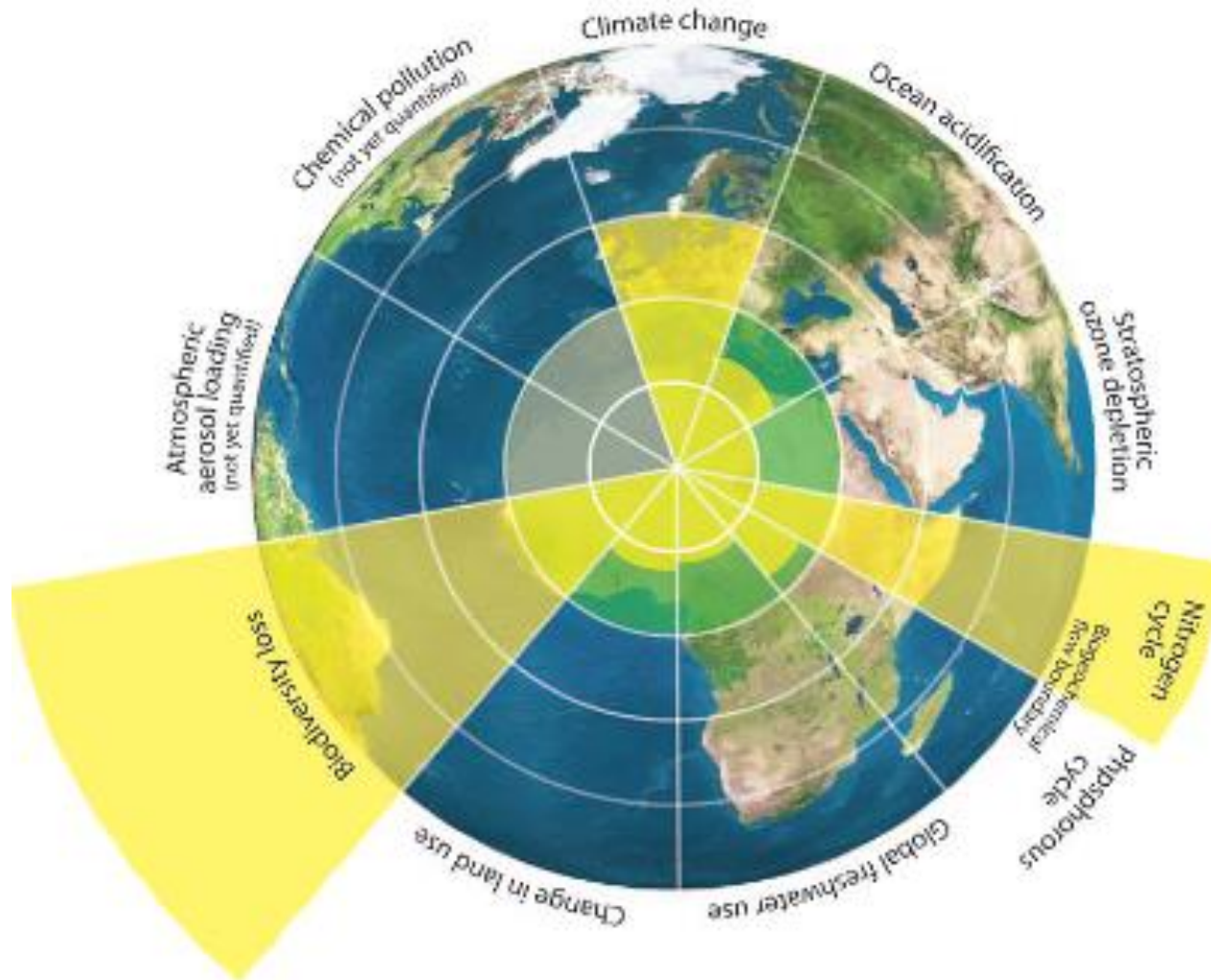
- The **Industrial Revolution**, which began mid-18th century, enabled human beings to rapidly scale up our activities
- Since the **Great Acceleration**, which began mid-20th century, the global economy has increased ten-fold (\$5.3 trillion to \$55 trillion in 2011) and the human population has tripled (2.5 billion to 7.3 billion)
- It's not yet official, but scientists believe that we are in a new geological era: the **Anthropocene**



State of the Planetary System

- Human activities today are drawing down resources faster than the planet can replace them and generating waste faster than the planet can absorb it
- 25% of large rivers no longer reach the ocean
- We have removed more than a third of the planet's forest cover
- We're now in the **Sixth Mass Extinction**: vertebrate species and marine life have declined by half since 1970

Planetary Boundaries



Source: Stockholm Resilience Centre

Reinventing Humanity

- Recognize that we are all part of an intricate system
- Tune into the Earth's natural rhythms
- Design feedback loops that regenerate the ecosystem and improve the wellbeing of all life



Sustainable World Initiative

