Systems Thinker:

Jay Wright Forrester

Presented by:

Mahsa H. Sadi
Department of Computer Science
- Electrical Engineer
- Systems scientist
  - Hard systems viewpoint in Systems Thinking
- Research assistant in MIT from 1939; working on feedback control systems

- Developing control systems for radar antennas and guns during World War II
- After world-war II, he began to **build aircraft flight simulators** for the Air Force

- Forrester continued research in Electrical Engineering until 1956.
- Then he moved to MIT Sloan School of Management, where he is currently a professor.

- **Born in 1918.** (He is 95 years old)
He brought his background in electrical engineering and his hard systems viewpoint to the field of management and human systems.
- Founder of system dynamics
  - Human systems need flight simulators
    - Human systems can be predicted and controlled
  - Defining mathematical relationships between elements of human systems
  - Simulating the interaction of objects in dynamic systems
- Applying feedback control system ideas to management
  - Positive feedbacks, negative feedbacks
  - Stocks (Capacitors), and flows (electrical currents)
Figure 2.1 Complete diagram of the world model interrelating the five level variables — population, natural resources, capital investment, capital-investment-in-agriculture fraction, and pollution.
- System Dynamics, Climate Change and Intergovernmental Panel on Climate Change
System Dynamics and Simulation

- Well-Adopted in hard systems areas:
  - Energy systems
  - Economics
  - Supply chains

- Weak in Soft systems
  - Unpredictable
  - Complex and complicated

How human systems can be solve by differential equations?

Even simulation is impossible
THANK YOU