SIMULTECH'17,
Madrid, Spain, July 26, 2017

Opening Panel:

Challenges and Directions in

Modeling and Simulation of

Computer Networks and Systems

(Organized by Prof. M. Obaidat)

An invited panelist:
Tuncer Ören, University of Ottawa, Canada

http://www.site.uottawa.ca/~oren/y/2017/07-26-panel_Madrid

Picture from Internet

➤ *Computer networks* (Exascale computers, laptops, telephones, cameras, smart devices, cars, smart systems … ?)

➤ In the connected world ([Internet of Everything](#)), computers, humans, things, systems, as well as reality and simulations (augmented reality) are wirelessly and dynamically connected.

Lets put things in perspectives (1 / 3):

- Start of my career as an IBM systems engineer (1963)
- I have been active in modeling and simulation since 1965
  (about 50 years ago)

- At the early days of my career, I worked with punched card machines.
   -- How many of you have seen "punched card machines"?
- In a computer science conference, in early 1970s:
   -- During a demonstration of a "remote access to a computer"
   …
- At the beginning of my career, I couldn't have
   -- a personal computer, a laser printer, or Internet access.
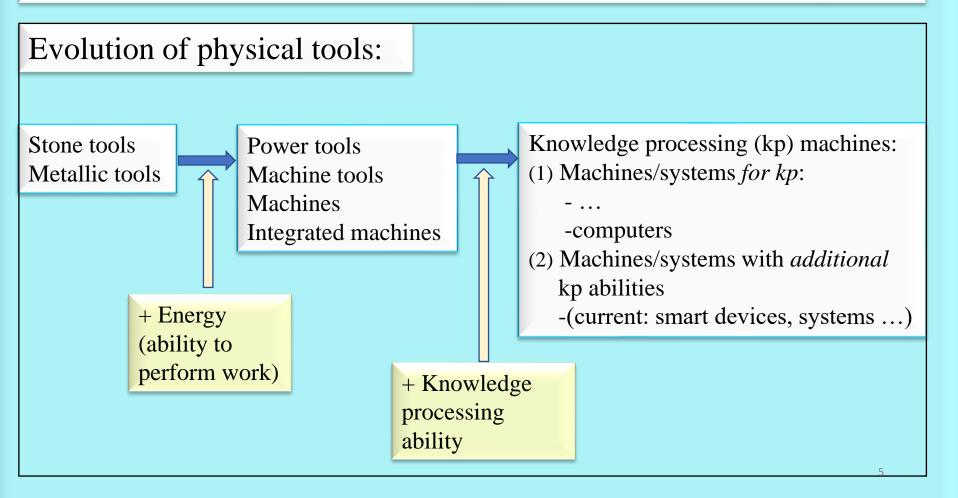   -- (None of them were *not yet invented*!)

Lets put things in perspectives (2 / 3):

Artificial Intelligence Winter (1973):

"In 1973, in response to the criticism of James Lighthill and ongoing pressure from congress, the U.S. and British Governments stopped funding undirected research into artificial intelligence, and the difficult years that followed would later be known as an 'AI winter'."

Lets put things in perspectives (3 / 3):

Ören, T.I. (1990). A Paradigm for Artificial Intelligence in Software Engineering. In: Advances in Artificial Intelligence in Software Engineering - Vol. 1, T.I. Ören (ed.), JAI Press, Greenwich, Connecticut, pp. 1-55.

Evolution of physical tools:

Stone tools
Metallic tools

→

Power tools
Machine tools
Machines
Integrated machines

→

Knowledge processing (kp) machines:
(1) Machines/systems *for kp*:
  - …
   -computers
(2) Machines/systems with *additional* kp abilities
   -(current: smart devices, systems …)

+ Energy (ability to perform work)

+ Knowledge processing ability

The historic perspective was about 50 years ago.

Can we *predict** the state-of-the art:
   in 50 years (2067), or
   in 40 years (2057), or
   in 30 years (2047), …?

* and/or express what we desire and what we don't desire.

"The best way to predict the future is to create it!"
Abraham Lincoln

Some questions:

- When shall we have "unhackable communications network?"

- What will be the *value of knowledge*, when,

  thought-controlled, wirelessly and dynamically connected devices, machines and search engines are available?

- The *difference* between:

  Being knowledgeable and being able to use knowledge.

- What would be "*the values*" of a desirable future?

- Do we want a *civilized future*? (my personal bias!)

- Will access to knowledge without ethical and civility values be sufficient for a *civilized world?*

Further info:

Ören, T., L. Yilmaz (2017 - In Press – end of July):

"The Age of the Connected World of Intelligent Computational Entities: Reliability Issues including Ethics, Autonomy and Cooperation of Agents."

(Invited ebook chapter), F.N. Mofakham (ed.) Frontiers in Artificial Intelligence - Intelligent Computational Systems. Bentham Science Publishers.