Leading in the Era of Exponential Changes

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Dean

USCViterbi
School of Engineering

1. Talent

students, faculty, staff- and provide environment to flourish.

PEOPLE

2. Value

Continuously adding value to curriculum, programs, infrastructure.

PROGRAMS

3. Thought Leadership- Solving World Challenges

Grand Challenges: energy and sustainability, security and infrastructure, health and medicine, and scientific and technological discovery.
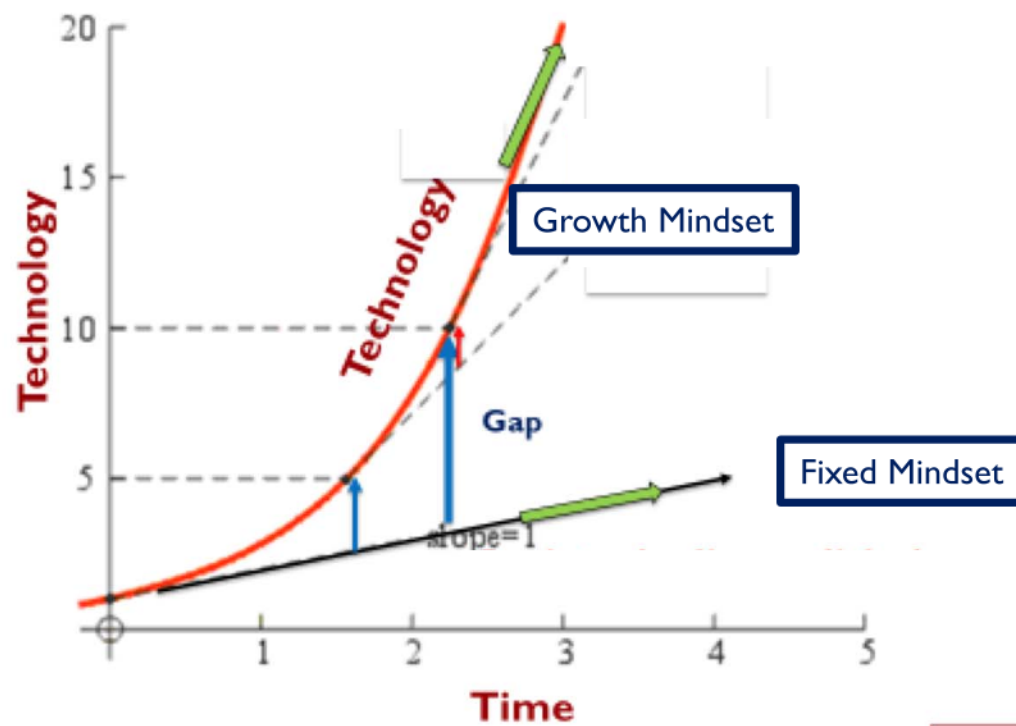
PAPERS

4. Impact: Technology Innovation and Entrepreneurship SCilicon Beach, Southern California, the United States, and the World.

PATENTS

**Exponential changes
No steady states
No steady states in growth**

TECHNOLOGY:
EXPLOITING A *PHENOMENON**
FOR *USEFUL* PURPOSES

◎ **PHYSICAL** (e.g. Photoelectric Effect)

◎ **CHEMICAL** (e.g. Catalysis)

◎ ***GEOLOGICAL*** *(e.g. petroleum)*

◎ **BIOLOGICAL** (e.g. Brain Imaging)
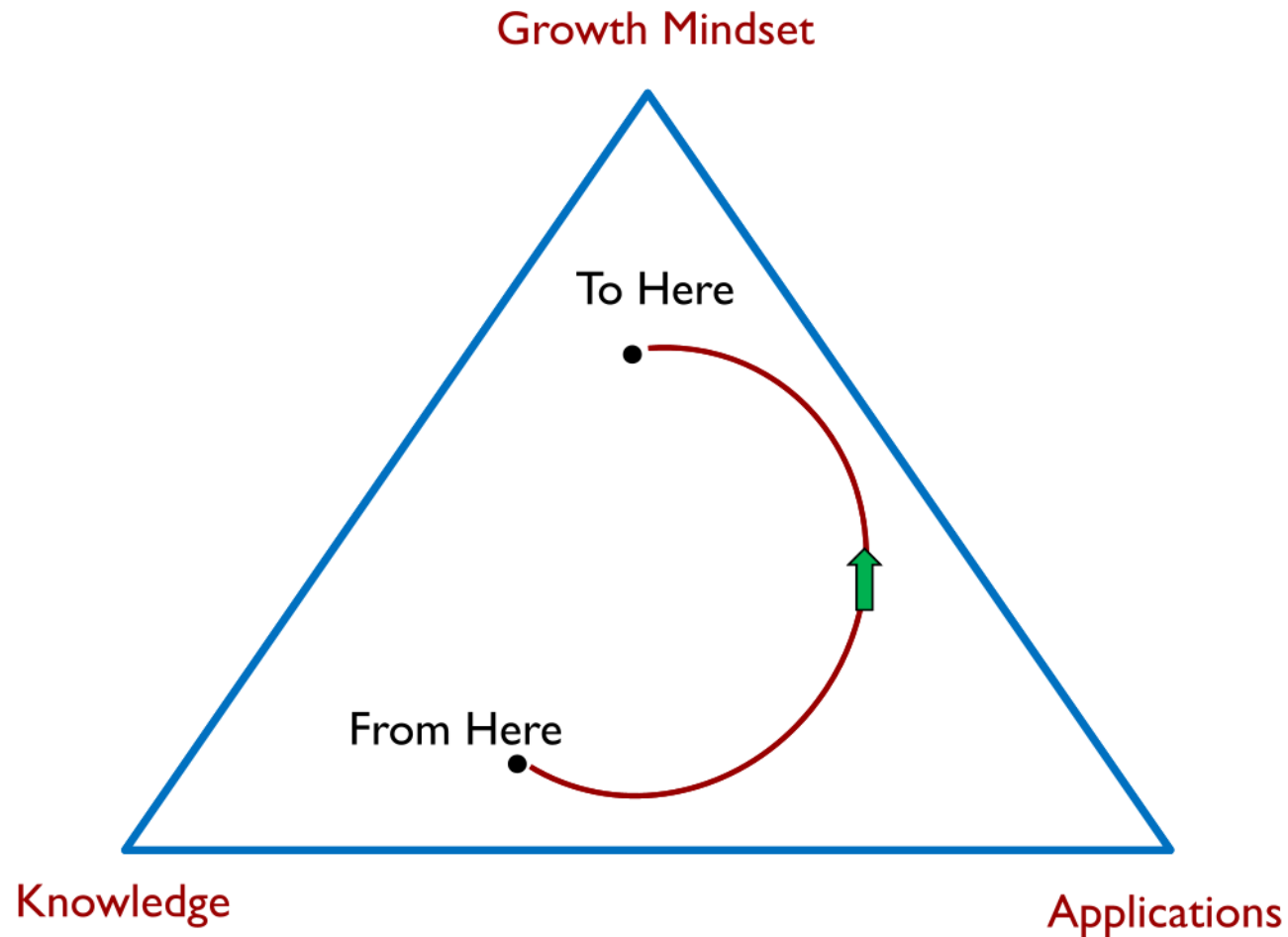
◎ ***SOCIAL-BEHAVIORAL***

Increasing complexity

*And combinations of phenomena or technologies
**Including the discovering of new phenomena

TECHNOLOGY: EXPLOITING A PHENOMENON FOR *USEFUL* PURPOSES*

- **ETHICAL-MORAL**
- **UNINTENDED CONSEQUENCES**
- **COMPLEXITY**
- **POLICY**

From Ortiz et al.

MINDSETS OF CHANGE

1. Superb Technical Skills and Knowledge to Lead the Exponential Changes
2. Engineering + X where X is anything (particularly, human-centric)
3. Innovation and Entrepreneurship, to help create the new markets, the new jobs and to design the new self.
4. Cultural Awareness (with culture broadly interpreted), to help thrive in today's fast changing world.
5. Awareness of the Impact of Engineering to Society (and the importance of technology ethics).

GCSP

Likely to be *the* engineering curriculum of the future
Consistent with WEF report on added skills for the 21st century:
Creativity, Leadership, Perseverance
Consistent with the *Engineer of 2020*

NATIONAL ACADEMY OF SCIENCES

New Faculty Orientation

Convergence at USC (many Xs =18)

USCViterbi
School of Engineering

IMSC-
Communication
Informatics

USCAnnenberg
School for Communication
and Journalism

DECIDE

USC Michelson
Center for
Convergent
Bioscience

CHARIOT
Personalized
Learning

USCPrice
Sol Price School of Public Policy

USCDornsife
Dana and David Dornsife
College of Letters, Arts and Sciences

Protein
Engineering

CREATE

*Quantum
Communications*

USCRossier
School of Education

Discovery
Informatics

Keck School of
Medicine of USC

Iovine
Center

USCViterbi
School of Engineering

Center for Body
Computing

HTE@USC

USCRoski
School of Art and Design

USCSchool
of Cinematic Arts

USCSchool
of Architecture

USCMarshall
School of Business

USC Games

HBI

USCSuzanneDworak-Peck
School of Social Work

AI for Social
Good

Maseeh
Entrepreneurship Prize
Competition

Min Family Engineering
Social Entrepreneurship
Challenge

New Faculty Orientation

August 16, 2018

SOME MNEMONIC RULES

1. Hug the Exponential
2. Engineering +
3. Innovation in the Broadest sense
4. The Cultural Mind
5. Heroic Engineering