



Leading in the Era of Exponential Changes

Yannis C. Yortsos
Dean



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

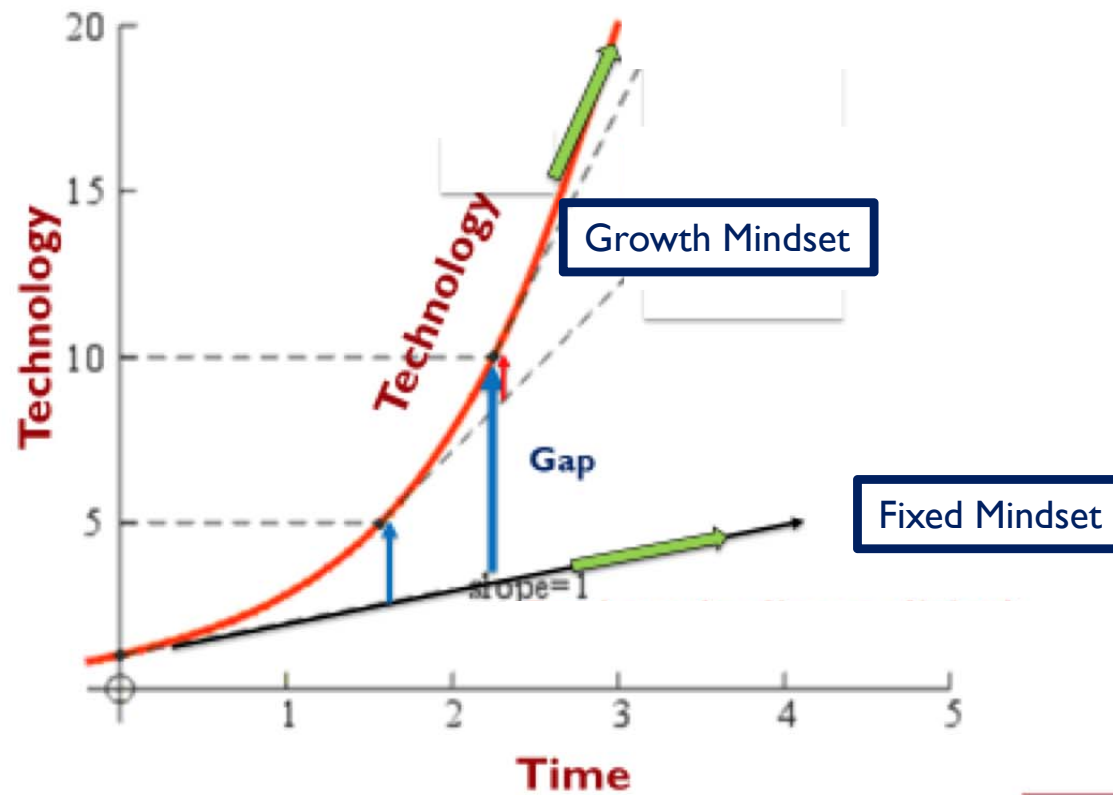
4. Impact: Technology Innovation and Entrepreneurship

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

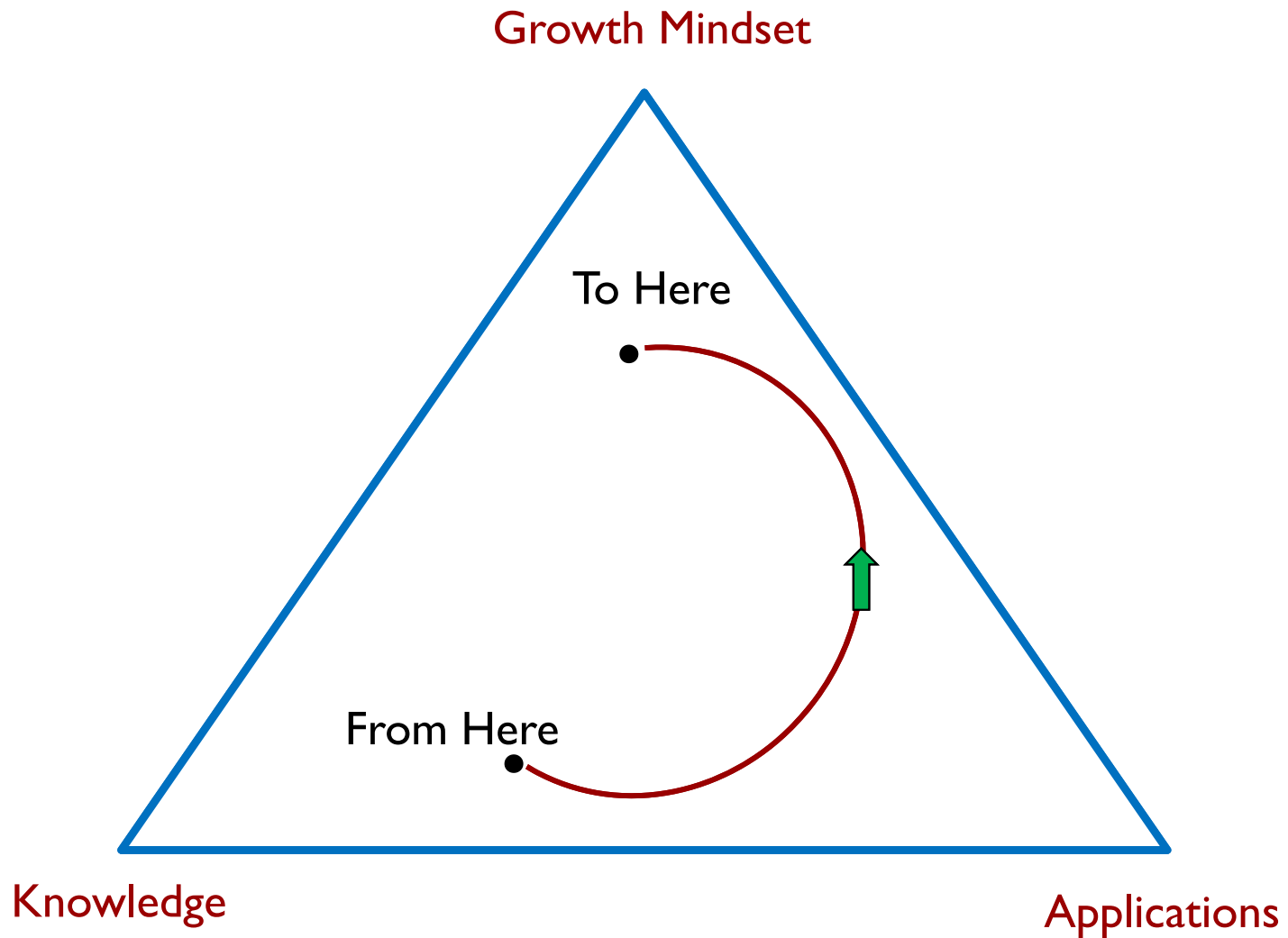
**Including the discovering of new phenomena





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*





IMSC-
Communication
Informatics

USC Annenberg
School for Communication
and Journalism

USC Price
Sol Price School of Public Policy

DECIDE

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

**USC Michelson
Center for
Convergent
Bioscience**

**Protein
Engineering**

**CHARIOT
Personalized
Learning**

USC Rossier
School of Education

CREATE

*Quantum
Communications*

**Discovery
Informatics**

**Keck School of
Medicine of USC**

**Iovine
Center**

USC Roski
School of Art and Design

**Center for Body
Computing**

HTE@USC

USC Viterbi
School of Engineering

**USC School
of Cinematic Arts**

USC Games

**USC School
of Architecture**

HBI

USC Suzanne Dworak-Peck
School of Social Work

USC Marshall
School of Business

**Min Family Engineering
Social Entrepreneurship
Challenge**

**AI for Social
Good**

**Maseeh
Entrepreneurship Prize
Competition**



SOME MNEMONIC RULES

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

INNOVATION AND ENTREPRENEURSHIP

Southern California is the geographic region in the nation with the largest number of engineering and computer science graduates.

START

HERE



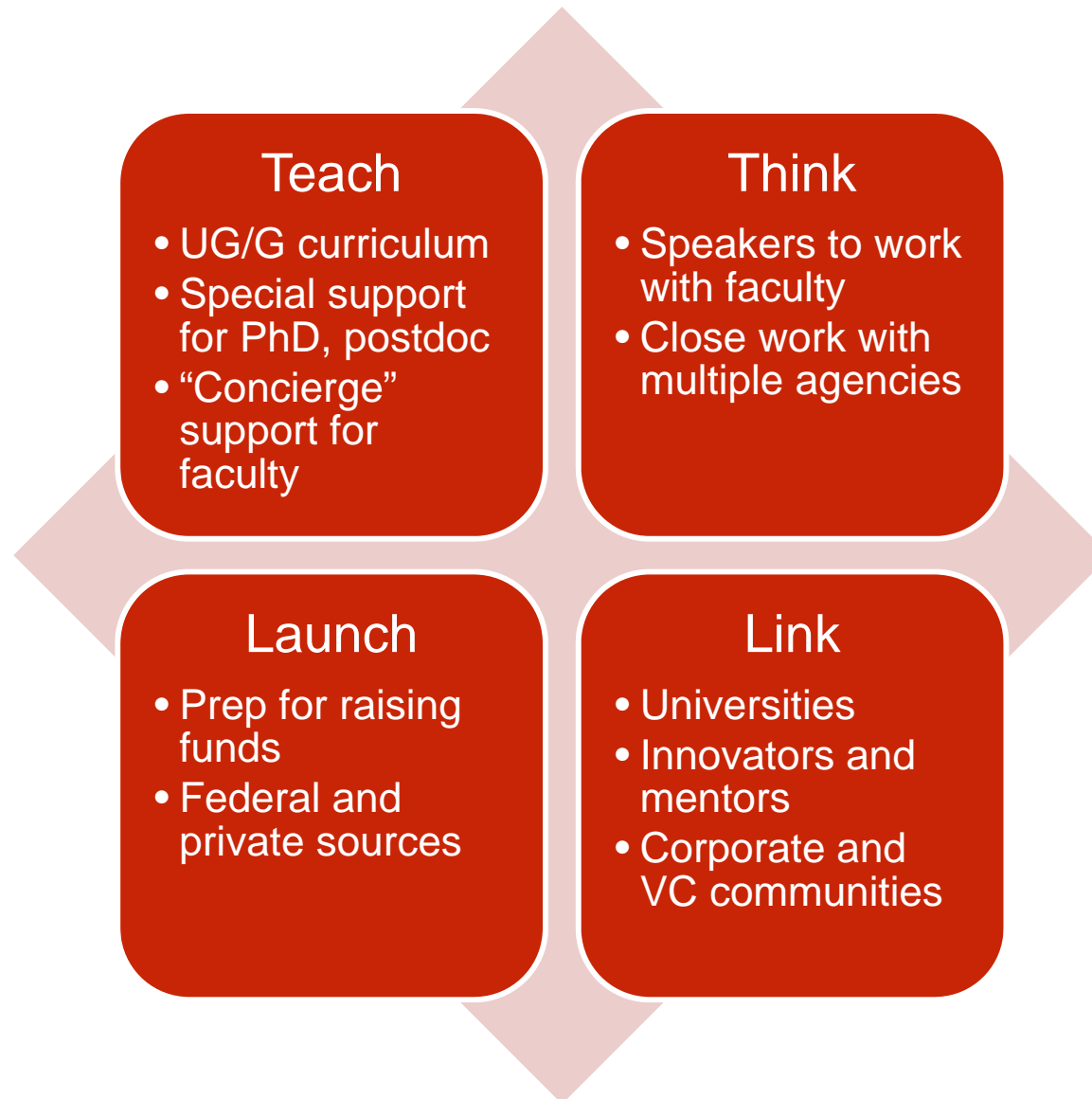
Silicon Beach



Home of the NSF I-Corps Innovation Node
Los Angeles, one of seven in the nation



Technology Entrepreneurship and Commercialization Hub (TECH)



Garage



- “International waters” – can be the home for your startup
- Additional programs to support your team, including student interns (we accept only 25% of intern candidates)
- Conference facility for investor meetings as needed
- Faculty spinoffs from ICT, CHLA, UCI, UCLA, Caltech, Purdue as residents or associates