Leading in the Era of Exponential Changes

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FOUR PILLARS

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

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

Increasing complexity

Convergence is an intrinsic part of technology
Useful Purposes

TECHNOLOGY: EXPLOITING A PHENOMENON FOR USEFUL PURPOSES*

- ETHICAL-MORAL
- UNINTENDED CONSEQUENCES
- COMPLEXITY
- POLICY
Growth Mindset

From Here

To Here

Knowledge

Applications

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*
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.
Home of the NSF I-Corps Innovation Node
Los Angeles, one of seven in the nation
Technology Entrepreneurship and Commercialization Hub (TECH)

Teach
- UG/G curriculum
- Special support for PhD, postdoc
- “Concierge” support for faculty

Think
- Speakers to work with faculty
- Close work with multiple agencies

Launch
- Prep for raising funds
- Federal and private sources

Link
- Universities
- Innovators and mentors
- Corporate and VC communities
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