Leading in the Era of Exponential Changes

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Dean
### FOUR PILLARS

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<tr>
<td><strong>1. Talent</strong></td>
<td>students, faculty, staff- and provide environment to flourish.</td>
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<td><strong>2. Value</strong></td>
<td>Continuously adding value to curriculum, programs, infrastructure.</td>
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<td><strong>3. Thought Leadership- Solving World Challenges</strong></td>
<td>Grand Challenges: energy and sustainability, security and infrastructure, health and medicine, and scientific and technological discovery.</td>
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<td><strong>4. Impact: Technology Innovation and Entrepreneurship</strong></td>
<td>SCilicon Beach, Southern California, the United States, and the World.</td>
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**PEOPLE**

**PROGRAMS**

**PAPERS**

**PATENTS**
EXPONENTIAL TECHNOLOGY BRINGS DISRUPTION - REQUIRES AGILITY AND ADAPTABILITY – AND NEW MINDSETS

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**
Useful Purposes

TECHNOLOGY: EXPLOITING A PHENOMENON FOR *USEFUL PURPOSES*

- ETHICAL-MORAL
- UNINTENDED CONSEQUENCES
- COMPLEXITY
- POLICY
Shifting Emphasis in Engineering Education

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