

NPS PhD in HLD
&
How Disruptive Product and Process
Innovations
Revolutionize DOD and DHS Capabilities?

Dr. Terry Pierce
(Captain, USN, Ret.)

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NPS PhD in HLD

- Congress in FY07 authorized \$1.9 M for a NPS PhD in HLD
- Background – Admiral Keating
 - Translational Researchers (Stanford Medical School Model)
 - New Academic Discipline focused on Basic & Applied Research

NPS PhD in HLD

- NPS Vision
- Provost is Primary Investigator (P.I.)
- Status
- FY08 Funding: USNORTHCOM
- FY09 Funding: DHS S&T

NPS PhD HLD

Focus of Effort:

Achieving Disruptive Innovation Capabilities

Challenge: New Technology and Economics of Substitution
Forces established organizations to behave like:

Mythical Phoenix, a bird that periodically crashed to earth in order to rejuvenate itself.

NPS PhD HLD

Focus of Effort:

NPS is a Cauldron for Innovation Study and Research

NPS Ideally Suited to Champion Disruptive Innovation Studies

- Dean Bob Beck's GSBPP
 - Dr. Chip Franck and Dr. Marc Ventresca
- Dr. Peter Denning's Cebrowski Innovation Institute
 - Sue Higgins Learning Organization Research
- Dr. John Arquilla Defense Analysis SPECOP Swarm Innovation
- Dr. Ted Lewis Executive Director NPS MA in HLD/S
- Captain Scott Jasper SIGS Transformation Research
- Research Professor John Hiles MOVES: Cognitive Blending Research
- Dr. Leonard Ferrari's NPS Field Experiment Program
- Dr. Roger McGinnis NPS PhD Director of Innovation for DHS S&T
- U/S Cohen Admiral (ret). DHS S&T Chief of Naval Research

Innovation Research

- The Attacker's Advantage
- The Defender's Dilemma
- Why Leaders Become Losers?
- The Age of Discontinuity
- The Longitude Problem: Royal Navy
- How Breakthroughs Happen
- S-Curve and Limit Analysis

Innovation Champions

- How do Warfighters Champion Sustaining Innovations?
- How do Warfighters Champion Disruptive Innovations?
- How do Champions Defend Against Innovation Attacks?

The Military Disruptive Growth Imperative

- Ability to create *disruptive* ways of warfighting is a critical function.
- Relying exclusively on using advanced technologies to sustain old ways of fighting creates a significant long term disadvantage.

Research Question?

Why are *disruptive* capabilities often adopted first by someone other than the nation inventing the striking new technology that underlies the innovation?

This phenomenon is called Technological Failure.

Examples

Example: RCA possesses transistor and develops prototype transistorized radio but remained a follower in the market to Sony. Ironically, Sony radios produced from technology licensed from RCA.

Example: British invent tank and aircraft carrier, but fail to invent *Blitzkrieg* and *Carrier Warfare*.

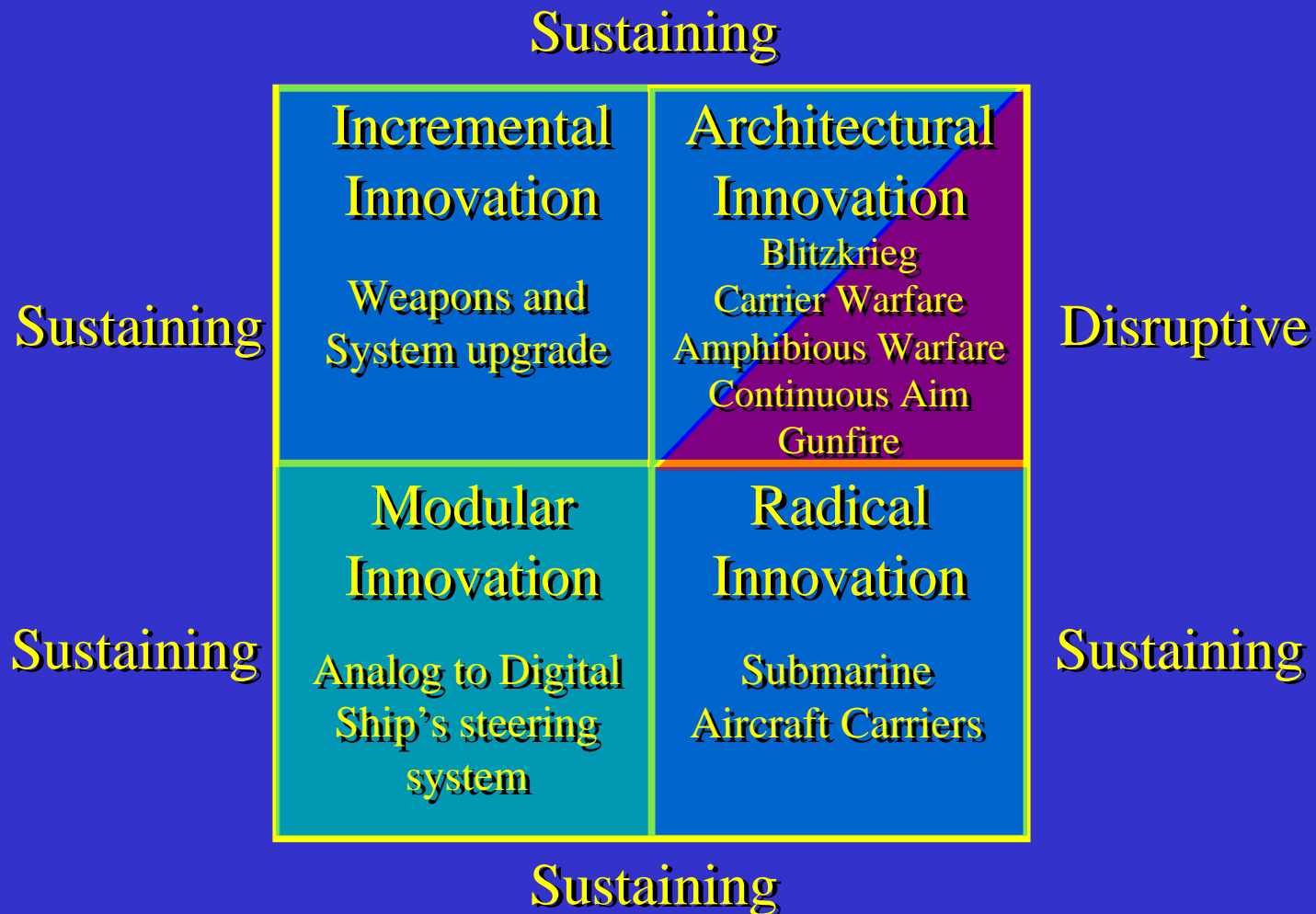
Example: U.S. possesses core technologies of atomic bomb and V-2 Rocket, but Soviet Union is first to create ICBMs.

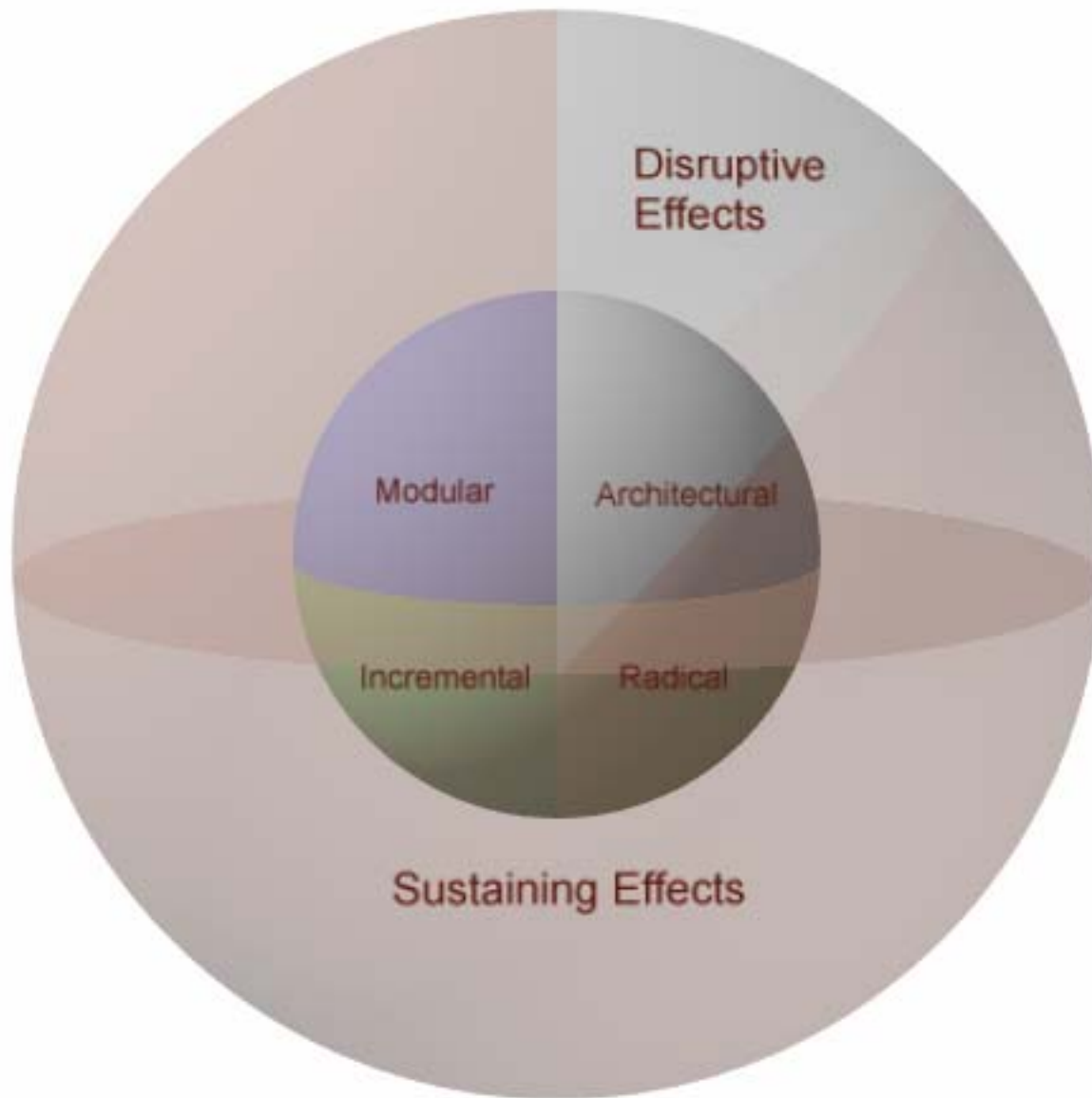
Examples

- Example: Intel's Uniaxial Strained Silicon Resistor

Architectural Process Innovation

Disruptive Architectural Typology for Defining Technology & Doctrine





Why are disruptive architectural innovations difficult to achieve?

- They destroy the usefulness of the architectural knowledge of the old way of fighting.
- Since architectural knowledge tends to become embedded in the doctrine of military organizations, its obsolescence is difficult to observe and correct.

Architectural Innovation Difficulty Creates Opportunity for Disruptor

- Since new architectural linkages among existing components are difficult to spot, innovation champions can *disguise* their disruptive innovation as sustaining.
- Disguising is focused on different Measures of Effectiveness.

Questions?