

Unlimited Potential – Leveraging the Power of Mind in Design

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The Potential to Improve

- 100 years ago both design and production were infants
- Production matured, and is today *at least* a thousand times more efficient
- By contrast, design is still in diapers
 - Messy
 - Unpredictable
 - Rich with untapped potential



Perfect replication of a terrible idea is no better than terrible replication of a great idea.



An Era of Exponentially Advancing Technology

- Processing, storage, connectivity
- 3-D CAD, CFD, VR, AR
- Spacecraft now well beyond the limits of our Solar System
- Atomic scale rearrangement of matter
- Genetic manipulation of life itself
- Emergence of artificial intelligence



Technology now allows virtually anything that humans can imagine to be made a reality.

An Era of Exponentially Expanding Access

- Entrepreneurs
- Marginalized professionals
- Maker community
- Students
- Retirees



Access introduces an unprecedented number and diversity of new design thinkers.

An Era of Exponentially Enabled Connection

- Anyone
- Anywhere
- Any topic
- Now has a social network constituency
- Or can generate one in seconds



Connections form rapidly, creating flash markets and punishing perceived error with equal efficiency.

But Also Creating An Era of Exponentially Growing Needs

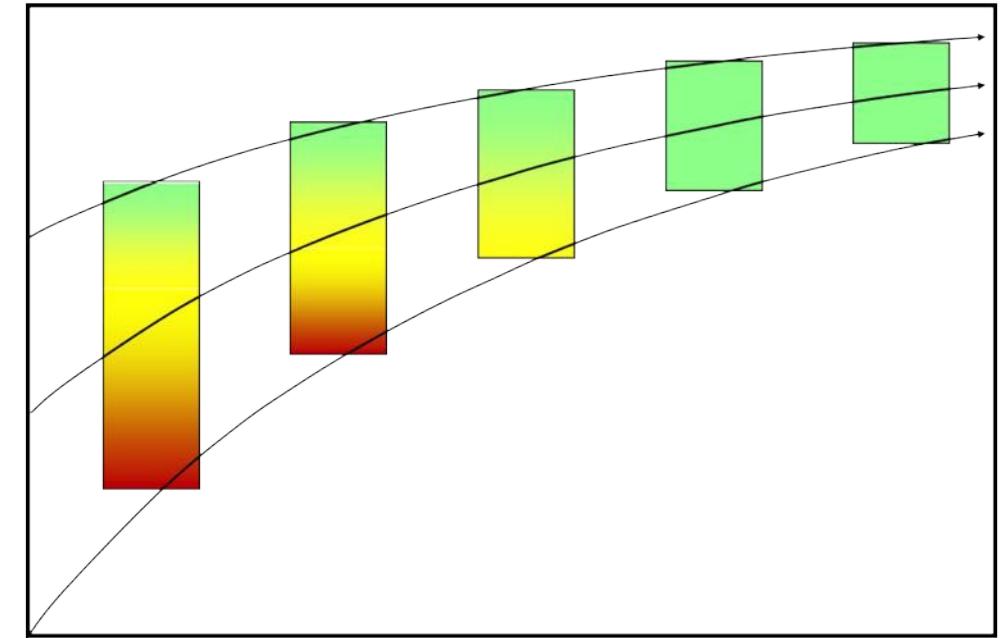
- Energy
- Environmental
- Medical
- Social, Legal, Political
- Infrastructure
- Traditional and Cyber Defense
- STEM Workforce
- Technically Literate Voters



Humanity has always had unmet needs, often our “solutions” just create increasingly difficult needs.

Design Must Respond with Exponential Improvement

- Stable = Dead
- Evolution is tolerated
- Disruption is expected
- Systems of Systems
- Stakeholders everywhere
- Competitors everywhere
- Weakness exposed immediately



Accomplished by raising the floor and the middle first, then the top of the skill distribution.

Design Progress is a Vector Sum

- Definition is altitude
- Execution is velocity
- You need both to reach orbit



Definition and execution are simultaneous variables that together determine progress.

Exponential Design Improvement Requires Intellect

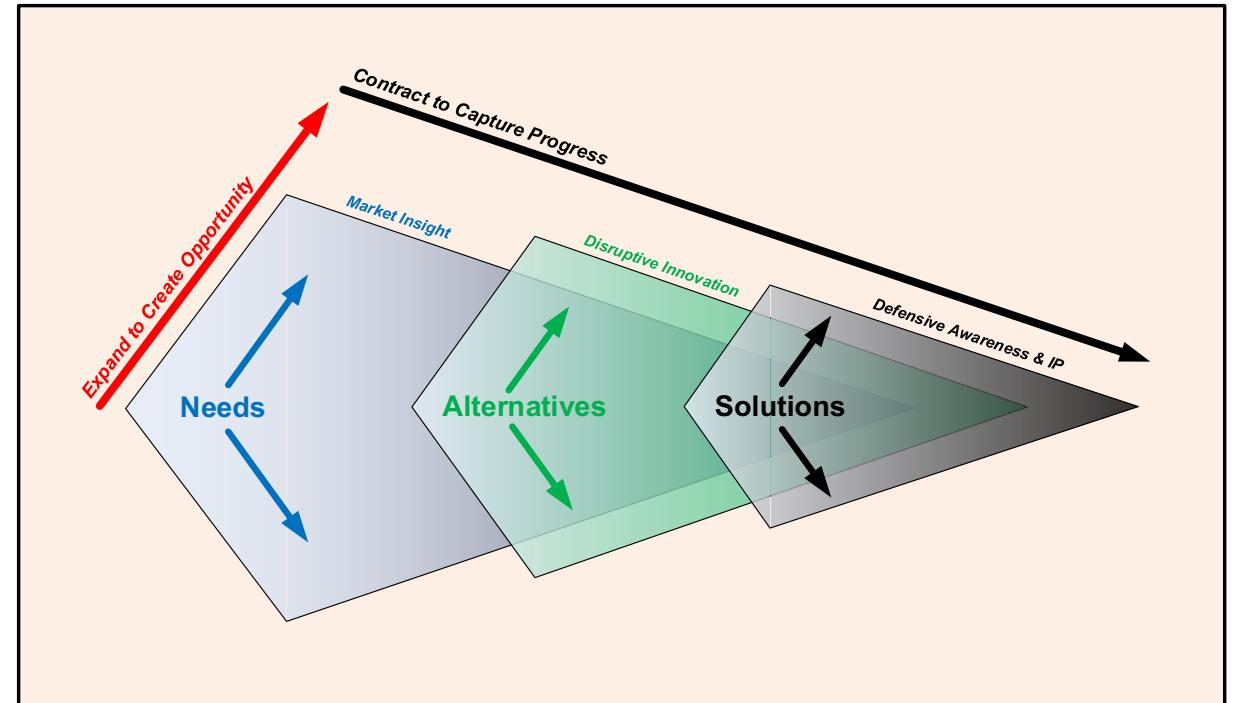
- In key roles
 - Stakeholder Interaction
 - PM
 - Engineering
- At critical decision points
 - Scope
 - Requirements
 - Architecture and Design
 - Risk Acceptance
 - Cost / Schedule / Technical tradeoffs



Seek to function as a single “design-mind”, with all skills and relevant interactions supported.

Where Value is Created and Lost

- Potential is created during expansion cycles
- Potential is captured or lost during contraction



Potential is unlimited in nature, fractionally identified during design, and fractionally captured thereafter.

Expansion Creates Potential

- User & Market insight
- Exploration of technology
- Alternate approaches
- Alternate architectures
- Alternate embodiments
- Defensive awareness and IP
- Learning opportunities

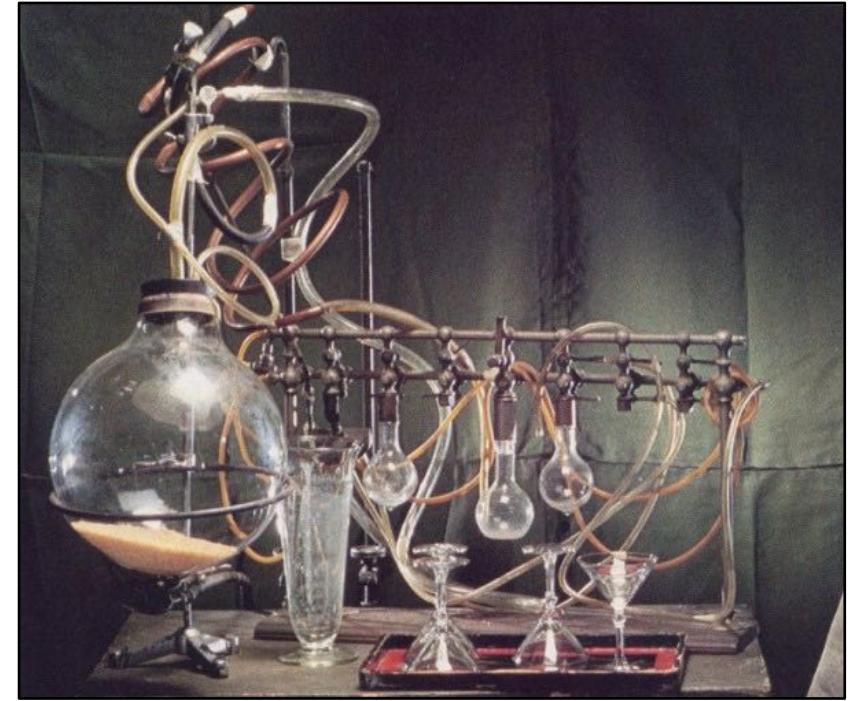


During expansion, strive to identify all potential benefit deemed worth chasing.



Contraction Captures Progress

- Resolve conflicting needs
- Establish requirements
- Baseline management
- Reduction to practice
- Bridge to production
- Continuous improvement



During contraction, seek to lose as little identified potential as possible.

The Mind is a Defense Against Failure

- People who understand, not just obey, are essential
- They act like antibodies to defend the effort
 - Against poorly crafted policy and process
 - Against short term optimization
 - Against conflicting goals and rewards
 - Against remaining stuck in the present



Intellect offers a design immune system, but only if you allow people freedom to act.

The Mind Enables Learning from Mistakes

- Learning offers you a “dividend-check”
 - IF you know how to uncover it
 - AND you cash it before it expires
 - THEN compounding can make you rich
- Difficult to warn people who do not yet feel at risk



Wanting to help is not enough, you must first gain the attention and trust of those you wish to serve.

Conclusion

- We live in an era of exponentially expanding
 - Technology
 - Access
 - Connection
 - Needs
- Design must respond with exponential improvement
 - Intellect in key roles and decision points
 - Creating potential and capturing progress
- We must leverage the power of the human mind
 - As an “immune system” that protects against failure
 - To recognize critical opportunities for learning and improvement



**Thank you for attending!
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