

# Experiences of an *Entrepreneurial GEEK* in Industry

Suresh Pillai

Lectures in Entrepreneurial Leadership

ETH Zurich

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# Complexity in the Real World

- Taking concepts and tools of Complexity Science to industry
- Entrepreneurial in applying my skills
- Entrepreneurial = **INNOVATIVE**  
+  
**SELLING AN IDEA**

~~Finding~~ *Creating*  
interesting problems  
to be solved.

- Nortel Networks (> 100 000 employees):  
Collective Intelligence in Foraging Ants  
➔ Self-adaptive Routing in Networks
- Distributed Storage Start-Up (18 empl.):  
Feedback Loops, Phase Changes  
➔ Resource allocation in Grids



ONLINE POKER !!!

# Mechanics of Online Poker

- Diversity of **TABLES**
- Company earns profit through **RAKE**
- Company lures/retains customers with **BONUSES**

# Boring

- Traditional Methods

Statistics & Charts - *Excel yuck!*

Data Mining

Decision Trees

Neural Nets

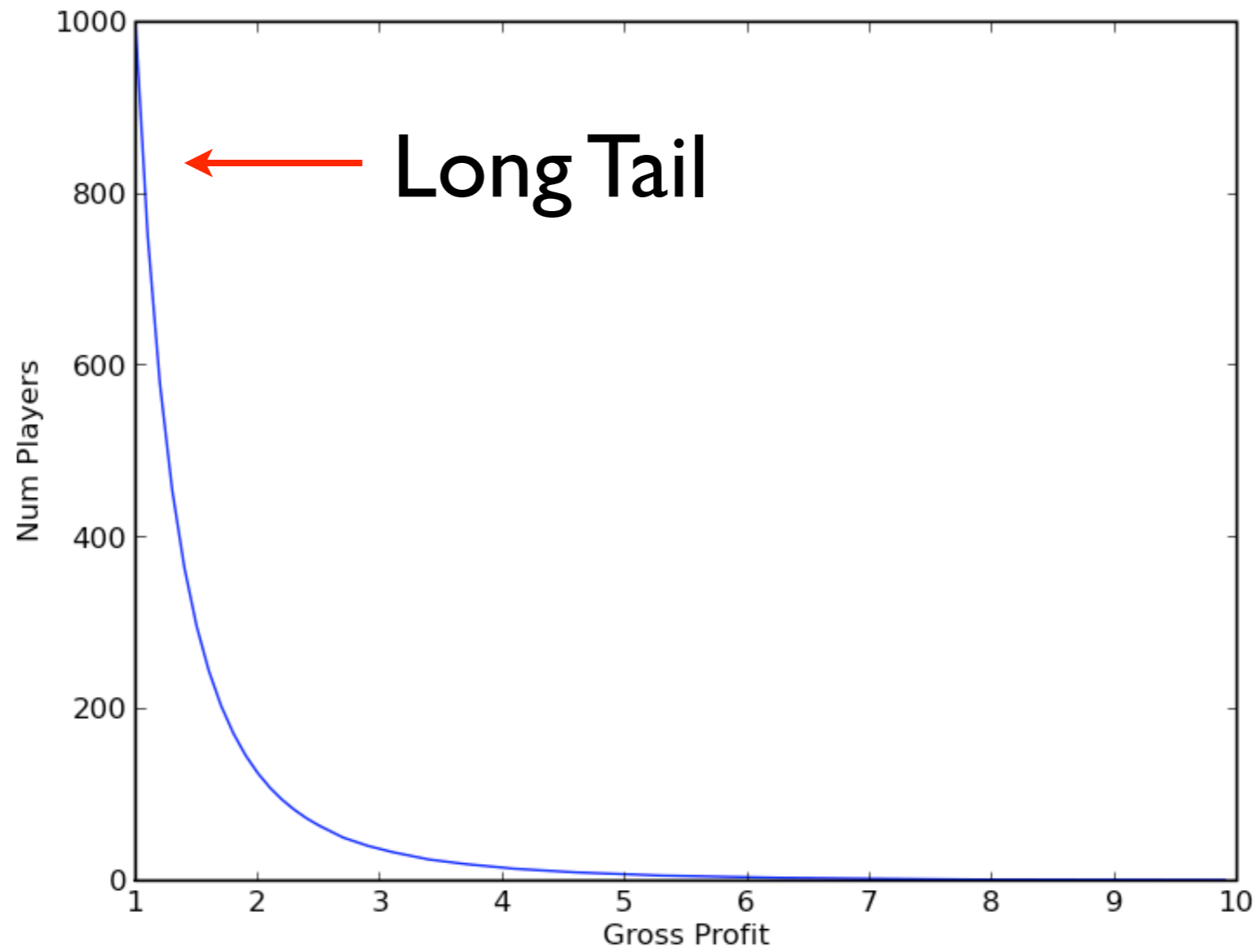
Clustering

# We're more interested in the DYNAMICS

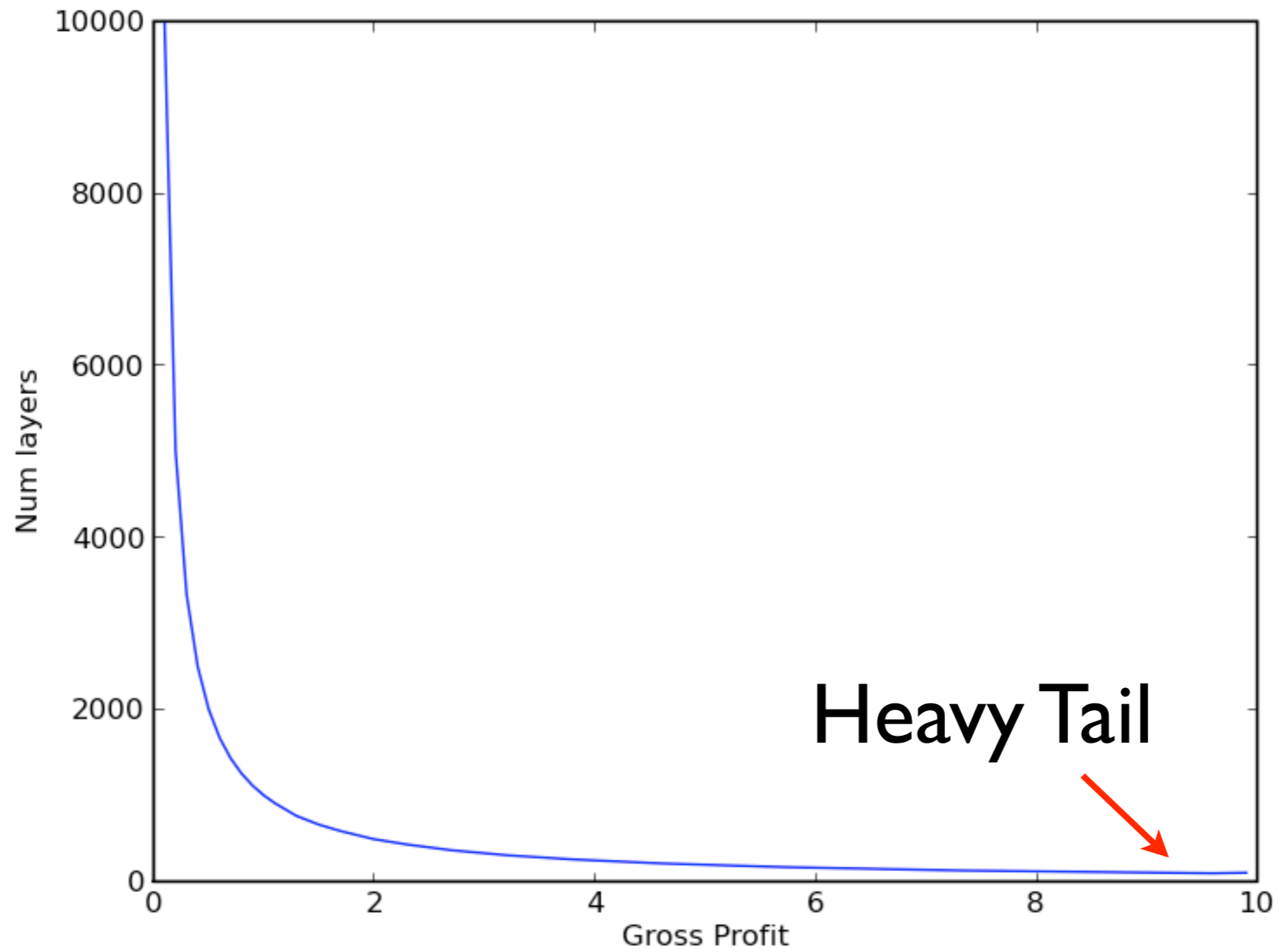
- Use our knowledge from complexity sciences to model the poker room  
**ECOSYSTEM**
- Sales pitch to senior management:  
**OPTIMISE PROFIT**  
**CONTROL STABILITY**



# Poker Profit

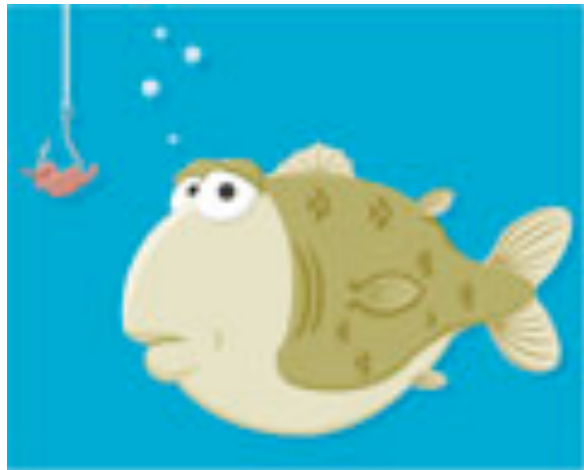


# Casino Profit



# The Ecosystem Species

*Minnows*



- Lose fast  
**LITTLE PROFIT**
- High bonus ratio
- Short lifetime
- Provide **LIQUIDITY**

- Slowly win/lose  
**HIGH PROFIT**
- Long lifetime
- Consistent



*Dolphins*

*Sharks*



- Win big  
**LOW PROFIT**
- Long lifetime
- Attract new players

# It's Complicated

- System is highly non-linear with many interacting agents
- Traditional differential equations not possible
- Need to use **AGENT BASED MODELLING**

# The Answer

- Want to determine optimal ratio between the different species to maximise **profit** ...
- Constrained by the requirement for the ecosystem to be **liquid** ...
- and desire the ecosystem to be resilient against changes in business environment.

# The Big Bosses

Use our results to develop

- player acquisition **MARKETING** strategy
- **OPERATIONAL** bonus system
- **CUSTOMER INTERACTION** plan to teach minnows to become dolphins

# Entrepreneurship

- New Ventures - Industry - Academia
- Be open: throw away pre-conceptions and expectation
- Start-ups: learn from others' experiences  
Give you confidence to just do it