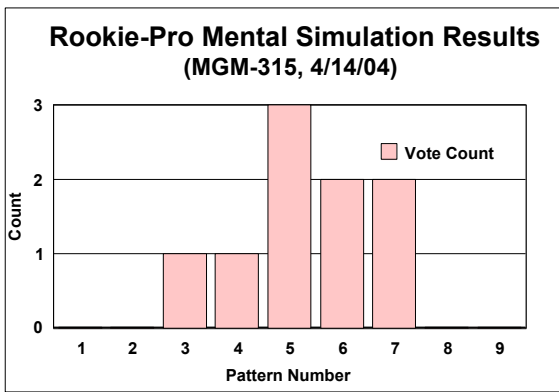


Systems Thinking & Problem Solving:
 (Understanding Our Most Important Messes)
 Systems Thinking Skills

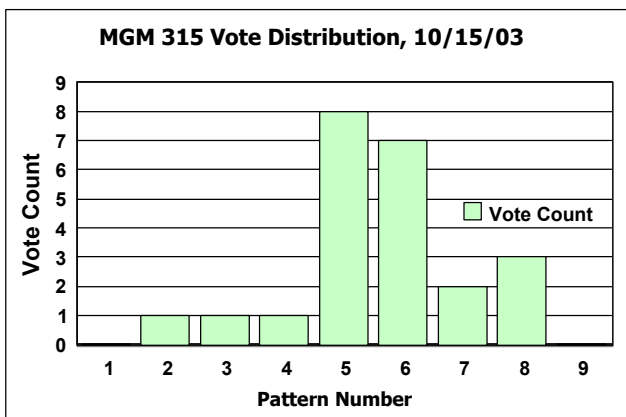
MGM-315 4/21/04

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Rookie-Pro Mental Simulation Results



Rookie-Pro Mental Simulation Results



Systems Thinking Skills (continued)

- Forest Thinking

- **Forest thinking vs. tree thinking:**
- "Tree thinking": functions, business units, silos
- To understand problems we need to know the context of the problems and not look at parts of the structure and events in isolation ("tree thinking").
- Detailed, dense → general, less dense
- Look for important relationships removed in time & space
- Look for similarities, rather than differences
- This is synthesis versus analysis

Systems Thinking Skills (continued)

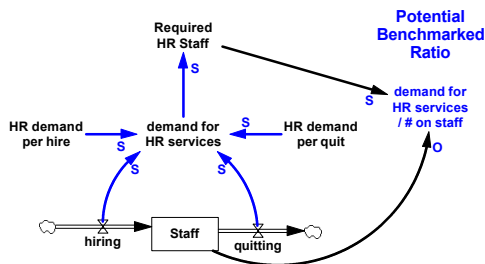
- Operational Thinking

- **Operational thinking vs. factor thinking:**
- **Factor thinking:** Milk production (GDP, Interest Rate, fertilizer cost)
- Where are the "COWS" ???
- Define the "plumbing", "main chains", "spinal cords"
- Causal vs correlational
- Seeing behavior as a result of system structure, the "plumbing" of the system, not as a result of multiple factors ("laundry list" or "factor thinking"; e.g., a best-fit equation to parameters).
- Covey's "7 Habits of Highly-Effective People" is "factor thinking"
- We recognize the difference between stocks & flows, and we know this difference has enormous influence on operational behavior.

Systems Thinking Skills (continued)

- Operational Thinking

- Don't do "factor thinking" as is done when "benchmarking" based on "operating ratios"



Systems Thinking Skills (continued)

- Scientific Thinking

- **Scientific thinking vs. proving-truth thinking:**
 - ➔ Current prevailing wisdom is always regarded as an "entertainable hypothesis."
 - ➔ "Scientific thinking" raises the quality of our thinking by using models as working hypotheses with limited domains of applicability, which we examine against reality to determine where they break down.
 - ➔ "Proving-truth thinking" seeks to prove models are true under all conditions.
 - ➔ The problem with validating models against history is that loops that have been "dormant" in the past become dominant in the future.
 - ➔ Technique: put a model in "steady state" and "shock" it.
