The Human-Human Interaction Behind HCI:

*Team Creativity*

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Creativity

- The production of novel (and useful) ideas; ideation

Innovation

- The realization of new products and/or services as a result of new ideas; also known as idea implementation
Four General Conceptual Domains into which New Ideas Can Be Classified

Dimension 1: Creativity – novel or traditional

Dimension 2: Structural Connectedness – fit with current products & services

Finke, 1995
Team Brainstorming

- The evidence: **Teams aren't good at brainstorming.**

- *Don't we often use them for this very purpose!*

- **Exercise:** Food for Thought
Exercise: Food for Thought

- Team Brainstorming Task
- Goal is to come up with as many category labels as possible
- Sit with your project teams; Don’t start until instructed to do so
- All ideas need to be recorded on the handout
- **Ideate** for 10 minutes
Food-for-Thought: Results

<table>
<thead>
<tr>
<th>Team</th>
<th>Members</th>
<th>Fluency</th>
<th>Flexibility</th>
<th>Originality</th>
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Quantifying Creativity

Counterintuitive: *Quantity ultimately leads to originality*

Flexibility is key

How do we promote flexible thinking in teams?
Relationship between Fluency & Flexibility

![Graph showing the relationship between fluency and flexibility](image-url)
Teams are not *Normally* Creative

<table>
<thead>
<tr>
<th></th>
<th>Face-to-Face Team Brainstorming</th>
<th>Nominal Team Brainstorming (Same Number of People Working Independently)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quantity:</strong> Number of Ideas Generated</td>
<td>28</td>
<td>75</td>
</tr>
<tr>
<td><strong>Quality:</strong> Percentage of “good ideas” as judged by independent experts who did not know whose ideas they were evaluating</td>
<td>9%</td>
<td>13%</td>
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Convergent & Divergent Thinking

- C: proceeds toward a single answer
- D: proceeds outward from the problem in many directions
- Teams excel at convergent thinking (conformity, agreement)
  …but they benefit from divergent thinking, followed by convergent thinking
Teams Need Process Interventions

- **The solution**: Teams must manage the process to “norm” divergent thinking first

- **Case in Point**: IDEO
Online discussion and Web address information given during this program may no longer be accurate.

ABC has left these references intact to preserve the integrity of this program.
Four Horseman of the Creative Apocalypse

- **Social loafing** – tendency for people to work less hard in a group as compared to working alone

- **Conformity** – desire to be liked and accepted inhibits free expression of ideas

- **Production blocking** – members cannot express ideas because others are talking

- **Performance matching** – team members converge in their performance levels over time, this can lead to downward norm setting

Thompson, 2008
Face-to-Face Teams need to “Act Like Virtual Teams”

F2F Teams Gain More Value from Information Exchange when they focus on Divergent Views

Virtual Teams Gain More Value from Information Exchange when they focus on Convergent Views

Mesmer-Magnus, DeChurch et al., 2011
### Evidence-Based Interventions

<table>
<thead>
<tr>
<th>Process Interventions</th>
<th>Organizational Interventions</th>
<th>Structural Interventions</th>
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</thead>
<tbody>
<tr>
<td>How you interact while brainstorming</td>
<td>How you control how you interact while brainstorming</td>
<td>Creative inputs; the people, their social environment, the team’s environment</td>
</tr>
<tr>
<td>• Set high quantity goals</td>
<td>• Trained facilitators</td>
<td>• Diversify the team</td>
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<td>• Explicit set of rules</td>
<td>• Brainwriting</td>
<td>• Fluid membership</td>
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<tr>
<td>• Paulus’s new rules</td>
<td>• Brief breaks</td>
<td>• Organizational networking</td>
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<tr>
<td>• Positive mood</td>
<td>• Nominal group technique</td>
<td>• Traverse industries</td>
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<tr>
<td>• Increase individual accountability</td>
<td>• Delphi technique</td>
<td>• Build a creative space and environment</td>
</tr>
<tr>
<td>• Analogical reasoning</td>
<td>• Stepladder technique</td>
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Rules for Brainstorming

1. **Expressiveness:** Express any idea that comes to mind, no matter how weird, strange, or fanciful. Do not be constrained or timid.

2. **Nonevaluation:** Do not criticize ideas. Do not evaluate any of the ideas during the generation phase.

3. **Quantity:** Generate as many ideas as possible. Strive for quantity! Quantity increases the probability of finding novelty.

4. **Building:** Modify and extend the ideas suggested by others whenever possible.

Osborn, 1957
Paulus’s New Rules

1. Stay focused on the task
2. Do not tell stories or explain ideas
3. When no one is suggesting ideas, restate the problem and encourage each other to generate ideas
4. Encourage those who are not talking to make a contribution

Use of these rules can increase idea generation by 40%

Oxley, Dzindolet, & Paulus, 1996
For replicable creativity in teams... structure the process

Thompson, 2008