Nothing is more dangerous than an idea when it is the only one we have.

Look for the second right answer.

The best way to get a good idea is to get a lot of ideas.

If you don’t ask, “why this?” often enough, somebody will ask, “why you?”

Creative Thinking may simply mean the realization that there is no particular virtue in doing things the way they have always been done.

Asking “what if” is a powerful way to get your imagination going.

The human mind likes a strange idea as little as the body likes a strange protein and resists it with similar energy.

Every child is an artist. The problem is how to remain an artist after growing up.

The next time you have a problem, play with it.

Learn to pause, or nothing worth while will catch up to you.
Promoting Creativity in Research Teams

Shirley M. Moore
Case Western Reserve University
Cleveland, Ohio
“What would the universe look like if I were riding on the end of a light beam at the speed of light?”

(Albert Einstein)
Creativity Skills contribute to teams working smarter and exceeding their previous levels of performance.
Creativity

The production of ideas, products or procedures that are novel or original and potentially useful.
Creativity Skills

Ability to:

• Make new connections
• Generate alternatives
• Engage in divergent thinking
• Suspend judgment
Creativity vs Innovation

- Creativity – the production of novel and useful ideas

- Innovation – the production or adaptation of useful ideas and idea implementation
Two Phases to the Creative Process

- **Imaginative Phase:** generate and play with ideas
  
  What if?  Why not?  What assumptions can we drop?  
  What rules can we break?  What if we looked at this backward?  Can we borrow a metaphor from another discipline?  
  The motto of the imaginative phase is:  
  “Think something different.”

- **Practical Phase:** evaluate and execute the ideas
  
  Is this idea any good?  Do we have the resources to implement it?  Is the timing right?  Who can help us?  
  What’s the deadline?  What are the consequences of not reaching the objective?  The motto of the practical phase is:  
  “Getting something done.”
The opposite of creative thinking is habitual thinking
Why we don’t think something different more often: Mental Locks

1. The Right Answer
2. That’s Not Logical
3. Follow the Rules
4. Be Practical
5. Play is Frivolous
6. That’s Not My Area
7. Don’t Be Foolish
8. Avoid Ambiguity
9. To Err is Wrong
10. I’m Not Creative
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Components of individual creativity

- Domain-relevant knowledge
- Creativity-relevant skills
- Motivation
How do we Change Habitual Thinking

Use techniques to think differently:
Use metaphors
Visioning new worlds
Make a mind map
Use “what if” questions
Use “how” questions
Random words/pictures
The inverse
If we were in another business
Brainstorm – use laterals
Using Metaphors

- Metaphor is defined as the substitution of one idea or object with another, used to assist expression or understanding.

- The essence of metaphor is understanding and experiencing on kind of thing in terms of another.

I was like a goldfish in a deoxygenated pond having to come up for air.
Metaphors

- Running for political office
- Disciplining a ten year old
- Cooking a fancy meal
- Fighting the government
- Starting a revolution
- Negotiating a contract
- Going fishing
- Putting our a fire
- Doing standup comedy
- Conducting an orchestra
- Making a sales call
- Courting a mate
- Going on a diet
- Performing a magic trick
- Colonizing a territory
- Building a house
- Spreading propaganda
- Prospecting for gold
- Planning a garden
- Having a baby
- Arranging flowers
- French mathematician
- Disappearing
Play allows escape from the hegemony of accumulation, goal-rationality, and utilitarian thinking.

Caillois` (1961)
Caillois’ four types of play

1. Games based on competition, body skills, and control.
2. Games incorporating chance.
3. Mimicry – taking the role of another
4. Games that have physical forces and movements that cause a sense of release from the human body

Produce surprises and sensations – “means of excitement”

Combination of skill and chance ➔ innovation
The Innovation Process

Purpose/mission
Bring out old ideas
Determine the gap

Generate new ideas
Filter and prioritize

Act on them (implement)
Team Composition

5-7 members best

Diversity (fields, team innovator roles)

Non-judgemental leader

Urgency in solving the problem
Creative Climate

- Idea Time
- Risk Taking
- Challenge
- Freedom
- Idea Support
- Conflicts/Debates
- Playfulness/humor
- Trust/Openness
- Dynamism/liveliness

Ekvall, 1996
Leaders of Creative Efforts: What do they do and think about?

- Mission definition
- Support
- Structure
- Feedback
- Organizational outreach
Individual vs. Team Creativity

- Team creativity is manifested through member creativity.

- Research suggests that “climate” is the team factor that makes team creativity greater than the aggregate of its members’ individual creativity.
Speedstorming Process

- Purposeful mixing (structured social interaction)
- Time limitation. Pairings of individuals who are given 5 minutes of one-to-one encounters
- Pairs are given a focused topic with the aim of generating ideas to pursue collaboratively (choose one)
Boundary Spanning Ideas

Speedstorming

- Method to create cross-disciplinary collaboration and finding boundary spanning ideas
- Promotes formation of new and potentially more productive collaborations (high quality interdisciplinary ideas)
- More focused than freeform networking usually done by professionals

Joyce, et.al., 2010