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- *Apply for local and national **pilot grants** and other funding opportunities. ITHS also offers letters of support for grant submissions.*

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Institute of Translational Health Sciences
Career Development Series

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Ideation: a fresh approach to brainstorming new ideas

Abraham D. Flaxman, 09/29/2017

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Central Questions

From where do good ideas come?

How can we get more of them?

Learning objectives

By the end of this event, you will be able to:

- Use the 10+10 exercise to identify and develop your ideas
- Convene and facilitate group brainstorming sessions
- Use the double-diamond design process with a group
- Explain the value of group diversity in brainstorming

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Outline

1. Ideation, brainstorming, and the origins of ideas
2. Tools and techniques
3. Our own practice session: brainstorming using AI in health sciences

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Ground rules and introductions

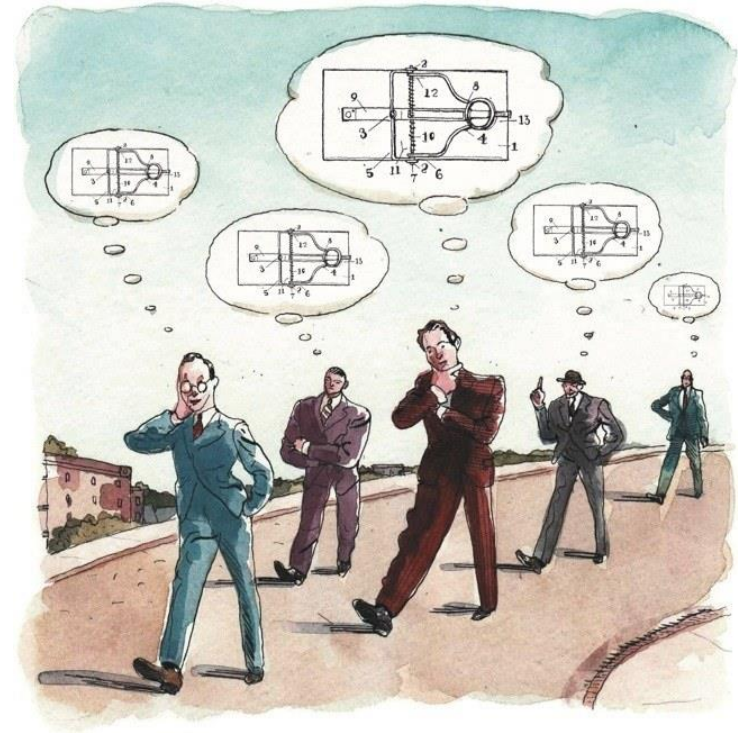**Introductions**: name, department/division, why you chose to come today

Ground Rules
- Step up, step back
- Oops, ouch
- Step outside for checking email, texts

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Intellectual Ventures Approach

"In 1999, when Nathan Myhrvold left Microsoft and struck out on his own, he set himself an unusual goal. He wanted to see whether the kind of insight that leads to invention could be engineered. He formed a company called Intellectual Ventures..."

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Intellectual Ventures Approach

- Pick a problem topic, the more defined and precise the problem the better.

- Invite diverse set of experts in both that topic, and also just scientists and other folks who could see an innovative spin on a solution

- Have everyone sign NDA, for IV, ideas generated in the session are ours. Thus, not all folks will want to be part of the innovating part of session.

- During actual session, start morning with short lectures to craft the problem, educate the audience (pre-reads before session are a good idea)

- Have a facilitator

- Get people to start spitting out ideas.

- Have lawyers in room to capture the ideas.

- Post meeting, look up patentability of solutions….

- If ideas are good enough, move forward with it and actually invent.

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IDEO Approach

"**IDEO** (pronounced EYE-dee-oh) is an international design and consulting firm founded in Palo Alto, California, in 1991. The company has locations in ...

THINKING BIG

The three words that make brainstorming sessions at Google, Facebook, and IDEO more productive

By Leah Fessler | July 10, 2017

IDEO approach

1. Pass out pens and Post-its to everyone and have a large piece of paper, wall, or whiteboard on which to stick them.
2. Review the Brainstorm Rules before you start.
3. Pose the question or prompt you want the group to answer. Even better if you write it down and post it.
4. As each person has an idea, have her describe to the group as she puts her Post-it on the wall or board.
5. Generate as many ideas as possible.

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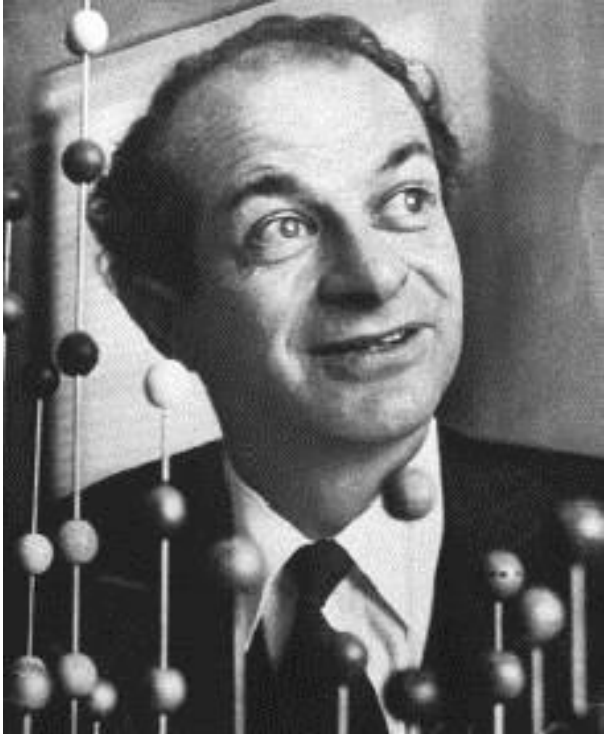
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IDEO brainstorm rules

- Defer judgement. You never know where a good idea is going to come from. The key is make everyone feel like they can say the idea on their mind and allow others to build on it.

- Encourage wild ideas. Wild ideas can often give rise to creative leaps. In thinking about ideas that are wacky or out there we tend to think about what we really want without the constraints of technology or materials.

- Build on the ideas of others. Being positive and building on the ideas of others take some skill. In conversation, we try to use "and" instead of "but."

- Stay focused on the topic. Try to keep the discussion on target, otherwise you can diverge beyond the scope of what you're trying to design for.

IDEO brainstorm rules (continued)

- One conversation at a time. Your team is far more likely to build on an idea and make a creative leap if everyone is paying full attention to whoever is sharing a new idea.

- Be visual. In live brainstorms we write down on Post-its and then put them on a wall. Nothing gets an idea across faster than drawing it. Doesn't matter if you're not Rembrandt!

- Go for quantity. Aim for as many new ideas as possible. In a good session, up to 100 ideas are generated in 60 minutes. Crank the ideas out quickly and build on the best ones.

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Have many ideas

If you want to have good ideas you must have many ideas.
---Linus Pauling

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Flare, then focus

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Groups can help

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Have many ideas

10+10 exercise –

      1. State prompt

      2. Come up with at least 10 ideas

      3. Pick the one you like best

      4. Come up with 10 variations on this idea

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Have many ideas
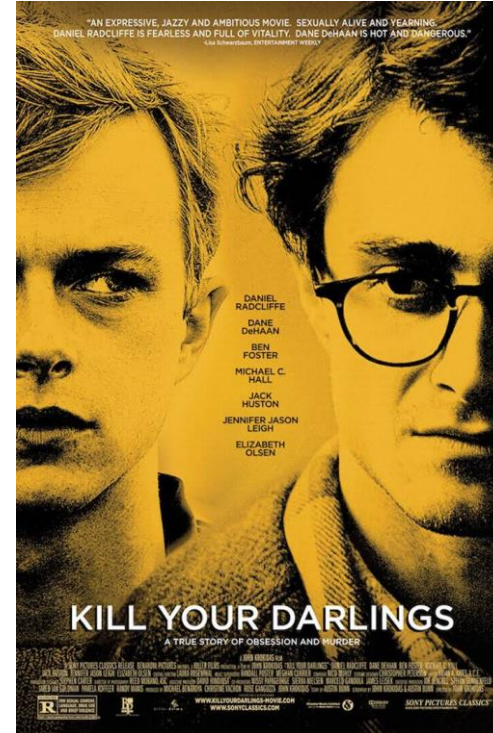
Write, pair, share –

       1. State prompt

       2. Have everyone in group write a response for 2 minutes

       3. Form pairs and refine ideas together

       4. Share ideas out to the group
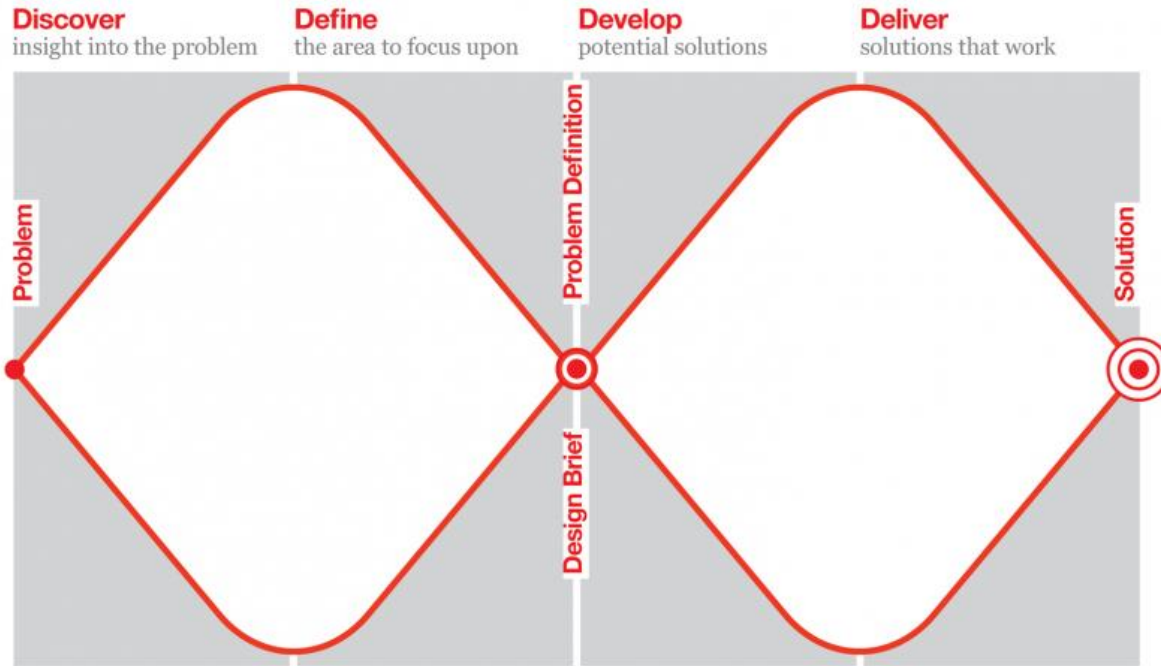
Flare

The IDEO rules of brainstorming:

1. **Defer judgement**. You never know where a good idea is going to come from. The key is make everyone feel like they can say the idea on their mind and allow others to build on it.

2. **Encourage wild ideas**. Wild ideas can often give rise to creative leaps. In thinking about ideas that are wacky or out there we tend to think about what we really want without the constraints of technology or materials.

3. **Build on the ideas of others**. Being positive and building on the ideas of others take some skill. In conversation, we try to use "and" instead of "but."

Then focus

- "In writing, you must kill your darlings." --William Faulkner

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Double Diamond Design

Discover — insight into the problem
Define — the area to focus upon
Develop — potential solutions
Deliver — solutions that work

Problem · Problem Definition · Design Brief · Solution

Three words

THINKING BIG

The three words that make brainstorming sessions at Google, Facebook, and IDEO more productive

By Leah Fessler | July 10, 2017

How Might We

- Start by looking at the insight statements that you've created. Try rephrasing them as questions by adding "How might we" at the beginning.

- The goal is to find opportunities for design, so if your insights suggest several How Might We questions that's great.

- Now take a look at your How Might We question and ask yourself if it allows for a variety of solutions. If it doesn't, broaden it. Your How Might We should generate a number of possible answers and will become a launchpad for your Brainstorms.

- Finally, make sure that your How Might We's aren't too broad. It's a tricky process but a good How Might We should give you both a narrow enough frame to let you know where to start your Brainstorm, but also enough breadth to give you room to explore wild ideas.

How Might We

Groups can help

Diversity and Inclusion

- Diversity of ideas and diversity of group membership

Scott E. Page

THE DIFFERENCE

HOW THE POWER OF DIVERSITY
CREATES BETTER GROUPS, FIRMS,
SCHOOLS, AND SOCIETIES

Challenge: busy-ness

How might we get busy people in a room together?

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Challenge: fear

- Ground rules as a counter-measure
- Establish ground rules at the beginning of a group process, and gently hold each other accountable to them.

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Challenge: fear

Google assessment of Psychological Safety:

- If you make a mistake on this team, it is often held against you.
- Members of this team are able to bring up problems and tough issues.
- People on this team sometimes reject others for being different.
- It is safe to take a risk on this team.
- It is difficult to ask other members of this team for help.
- No one on this team would deliberately act in a way that undermines my efforts.
- Working with members of this team, my unique skills and talents are valued and utilized.

Groups can help: Round Robin

- Use a Round Robin to get ideas out of everyone. Process can overcome entrenched hierarchies and get more from all/for all.

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Conversation of possibility

1. PLAN
2. ASK
3. INITIATE
4. THINK
   - Aim to spend about ⅓ of the allotted time on divergent thinking
   - Aim to spend about ⅙ of the allotted time on convergent thinking
5. SYNTHESIZE
   - Allow about ⅓ of the allotted time for synthesis.

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Time to try it out

- Artificial Intelligence (AI) in health sciences

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Background

Recent breakthroughs in AI with **Deep Neural Networks**

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Time to try it out

Andrew Ng is raising a $150M AI Fund

"2017 has been a particularly active year for starting AI-focused venture capital funds." TechCrunch article on Andrew Ng's new fund.

- Google's Gradient Ventures

- Basis Set Ventures $136M

- Element.AI $102M million

- Microsoft Ventures AI fund

- Toyota >$100M

- Allen Institute for AI (here in Seattle, and so recent that it is not in the TechCrunch Article)

Andrew Ng, Harvard Business Review (cont)

Andrew Ng, Harvard Business Review:

"AI will transform many industries. But it's not magic. To understand the implications for your business, let's cut through the hype and see what AI really is doing today."

"Surprisingly, despite AI's breadth of impact, the types of it being deployed are still extremely limited. Almost all of AI's recent progress is through one type, in which some input data (A) is used to quickly generate some simple response (B)."

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This is not magic

What Machine Learning Can Do
A simple way to think about supervised learning.

INPUT A	RESPONSE B	APPLICATION
Picture	Are there human faces? (0 or 1)	Photo tagging
Loan application	Will they repay the loan? (0 or 1)	Loan approvals
Ad plus user information	Will user click on ad? (0 or 1)	Targeted online ads
Audio clip	Transcript of audio clip	Speech recognition
English sentence	French sentence	Language translation
Sensors from hard disk, plane engine, etc.	Is it about to fail?	Preventive maintenance
Car camera and other sensors	Position of other cars	Self-driving cars

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This is not magic

"If a typical person can do a mental task with less than one second of thought, we can probably automate it using AI either now or in the near future."

---Andrew Ng

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Time to try it out

- What new opportunities does AI enable in health sciences?
- (How might we … ?)

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One more trick: make anything a brainstorm

Use the "rule of three" to make anything into a brainstorm

- One idea is a bad idea
- Two ideas is an argument
- Three ideas is a brainstorm

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