

A CURRENCY BOOK

PUBLISHED BY DOUBLEDAY

a division of Random House, Inc.

1540 Broadway, New York, NY 10036

CURRENCY and DOUBLEDAY are

trademarks of Doubleday, a division of Random House, Inc.

Library of Congress Cataloging-in-Publication Data

Kelley, Tom, 1955—

The art of innovation: lessons in creativity from IDEO,
America's leading design firm/Tom Kelley, with Jonathan
Littman.

p. cm.

Includes index.

1. Creative ability in business—Case studies. 2. Techno-
logical innovations—Case studies. I. Littman, Jonathan,
1958— II. Title.

HD53 .K454 2000

658.4'063—dc21

00-050906

ISBN 0-385-49984-1

Copyright © 2001 by Tom Kelley

All Rights Reserved

Printed in the United States of America

First Edition, February 2001

SPECIAL SALES

Currency Books are available at special discounts for bulk purchases for sales promotions or premiums. Special editions, including personalized covers, excerpts of existing books, and corporate imprints, can be created in large quantities for special needs. For more information, write to Special Markets, Currency Books, 280 Park Avenue, 11th floor, New York, NY 10017, or email specialmarkets@randomhouse.com.

The Art of Innovation

LESSONS IN CREATIVITY FROM IDEO,
AMERICA'S LEADING DESIGN FIRM

Tom Kelley

with Jonathan Littman



New York London Toronto Sydney Auckland

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

—LINUS PAULING



The problem with brainstorming is that everyone *thinks* they already do it. When I raise the topic of brainstorming in presentations and conversations with business executives, I see some eyes start to glaze over with the smug “been there, done that” look of someone who has already answered “yes” to the question “Do you brainstorm?” In fact, more than 70 percent of the businesspeople in a recent Arthur Andersen survey say they use brainstorming in their organizations.

Many businesspeople treat brainstorming as a check box, a threshold variable, like “Can you ride a bicycle?” or “Do you know how to tie your shoes?” They overlook the possibility that brainstorming can be a skill, an art, more like playing the piano than tying your shoes. You’re always learning and can get continuously better. You can become a brainstorming virtuoso. You can have heads of giant corporations and heads of government fly in to ask for your brainstorming help. (Don’t laugh. I’ve seen it with my own eyes.)

So if you say you already do brainstorming in your organization, great, you’re on your way. But I believe you can deliver *more* value, create *more* energy, and foster *more* innovation through *better* brainstorming. For one thing, you could brainstorm more often, weaving it into the cultural fabric of your organization. In that same Arthur Andersen survey of people who said they brainstorm, 76 percent admitted they brainstorm less than once a month. *Less than once a month*. I consider myself a movie fan, usually seeing thirty to forty films a year on the big screen (plus again as many on video), but if I dropped below one a month, I’d have to say I was a *former* fan. If you want to keep in shape, you have to exercise your brainstorming muscles more than once a month. So find a suitable space, order some supplies (and some chocolate chip cookies), get a good group together, and brainstorm up several dozen possible solutions to a problem that’s bugging you right now.

Brainstorming is practically a religion at IDEO, one we practice

nearly every day. Though brainstorms themselves are often playful, brainstorming as a tool—as a *skill*—is taken quite seriously. And in a company without many rules, we have a very firm idea about what constitutes a brainstorm and how it should be organized. First, a brainstorm is not a regular meeting. It's not something you take notes at. You don't take turns speaking in any orderly way. It shouldn't consume a morning or an afternoon. Sixty minutes seems to be the optimum length, in our experience, though occasionally a brainstorm can productively stretch to an hour and a half. The level of physical and mental energy required for a brainstorm is hard to sustain much longer than that. Brainstorming sessions aren't presentations or opportunities for the boss to poll the troops for hot ideas. Nor should they feel like work. And brainstorming is most definitely *not* about spending thousands of dollars at some glamorous off-site location.

Brainstorming is the idea engine of IDEO's culture. It's an opportunity for teams to “blue sky” ideas early in a project or to solve a tricky problem that's cropped up later on. The more productive the group, the more it brainstorms regularly and effectively. We call the sessions “brainstormers,” which to us sounds more like an active, engaging event. The buzz of a good brainstormer can infect a team with optimism and a sense of opportunity that can carry it through the darkest and most pressure-tinged stages of a project.

So what makes a brainstormer sing? Most people are familiar with the fundamentals—like sticking to one conversation at a time and building on the ideas of others—but it takes extra effort if you want a *great* brainstormer with valuable results.

SEVEN SECRETS FOR BETTER BRAINSTORMING

1. SHARPEN THE FOCUS

Good brainstormers start with a well-honed statement of the problem. This can be as simple as a question. Edgy is better than fuzzy. The

session will get off to a better start—and you can bring people back into the main topic more easily—if you have a well-articulated description of the problem at just the right level of specificity. A brainstormer without a clear problem statement is like a company without a clear strategy: You'll wander aimlessly and need a lot of extra luck or talent to succeed. If you find yourself leading a session that lacks direction, spend a few minutes developing a good problem statement. It will be time well spent. For example, “spill-proof coffee cup lids” would be a bad brainstorming topic because it's too *narrow* and already presumes you know the answer. Another approach, “bicycle cup holders,” is too dry and product-focused. Maybe bicyclists shouldn't use *cups* at all, in which case they certainly don't need cup *holders*. A better, more open-ended topic would be “helping bike commuters to drink coffee without spilling it or burning their tongues.” Go for something tangible that participants can sink their teeth into, without limiting the possible solutions.

We've also found that the best topic statements focus *outward* on a specific customer need or service enhancement rather than focusing *inward* on some organizational goal. For example, topics like “How can we regain market share from Company X?” or “How can we build a better search engine than Company Y?” may not lend themselves to innovations that will be embraced by the market. On the other hand, a series of more specific, customer-focused brainstormers on topics like “How can we accelerate the time-to-first-result for customers searching via dial-up modems” could uncover innovations that might ultimately yield the competitive edge you are looking for.

2. PLAYFUL RULES

Don't start to critique or debate ideas. It can sap the energy of the session pretty quickly. You need a way to turn aside critiques without turning off the critiquers completely. At IDEO many of our conference rooms have brainstorming rules stenciled in six-inch-high letters on the walls, for example, “Go for quantity,” “Encourage wild ideas,” or

“Be visual.” Not willing to mark up your walls? Perhaps the facilitator could ring a bell when participants try to turn a brainstormer into a normal meeting. Or you could print the brainstorming rules on a giant Post-it or write them prominently on a whiteboard.

3. NUMBER YOUR IDEAS

Numbering each idea is pretty obvious, right? So obvious that it took us almost ten years to figure it out. Numbering the ideas that bubble up in a brainstorm helps in two ways. First, it’s a tool to motivate the participants before and during the session (“Let’s try to get a hundred ideas before we leave the room”) or to gauge the fluency of a completed brainstorm. Second, it’s a great way to jump back and forth from idea to idea without losing track of where you are. We’ve found that a hundred ideas per hour usually indicates a good, fluid brainstorming session. One hundred and fifty per hour is pushing the speed limit. Of course, it’s *quality* that ultimately matters, but we’ve heeded Linus Pauling’s advice to get a *lot* of ideas.

4. BUILD AND JUMP

Watch for chances to “build” and “jump.” High-energy brainstormers tend to follow a series of steep “power” curves, in which momentum builds slowly, then intensely, then starts to plateau. The best facilitators can nurture an emerging conversation with a light touch in the first phase and know enough to let ideas flow during the steep part of the ideation curve. It’s when energy fades on a line of discussion that the facilitator really earns his or her keep.

In the coffee-while-bicycling brainstorm example above, a good “building” suggestion to keep up momentum might be: “Shock absorbers are a great idea; now, what are some *other* ways to reduce spillage when the bicycle hits a bump?” By contrast, when discussion tapers off, a good “jump” transition statement might be something like this: “OK, let’s switch gears and consider some totally ‘hands-free’ so-

lutions that allow the cyclist to keep both hands on the handlebars at all times. What might those solutions look like?”

Try building on an idea. Encourage another push or introduce a small variation. Or take a jump, either *back* to an earlier path you skipped by too quickly or *forward* to a completely new approach. Whatever you do, try to get into the next power curve and keep the energy up.

5. THE SPACE REMEMBERS

Great brainstorm leaders understand the power of spatial memory. Write the flow of ideas down in a medium visible to the whole group. There are many emerging digital technologies for group work, but we have had great success with extremely low-tech tools like Sharpie markers, giant Post-its for the walls, and rolls of old-fashioned butcher-shop paper on the tables. Brainstorming is an intensely group-oriented process, and the facilitator’s rapid scribing is one of the focal points that hold the group together. We’re not talking about taking personal meeting notes here, but capturing ideas so that the group can see their progression and return to those that seem worthy of more attention.

Cover virtually every wall and flat surface with paper before the session starts. That way you won’t find yourself in the awkward position of having to erase ideas to make room for more. And you may find there’s a certain synergy in physically moving around the room writing down and sketching the ideas. As you rapidly capture the team’s ideas, make a mental note of ones that are worth coming back to during a build or a jump. When you return to the spot on the wall where that idea was captured, spatial memory will help people recapture the mind-set they had when the idea first emerged.

6. STRETCH YOUR MENTAL MUSCLES

People are busy. Time is short. Is it worthwhile to “burn” some time at the beginning of a brainstorm doing some form of group warm-up?

Maybe. But that “maybe” rapidly becomes a “yes” in certain circumstances:

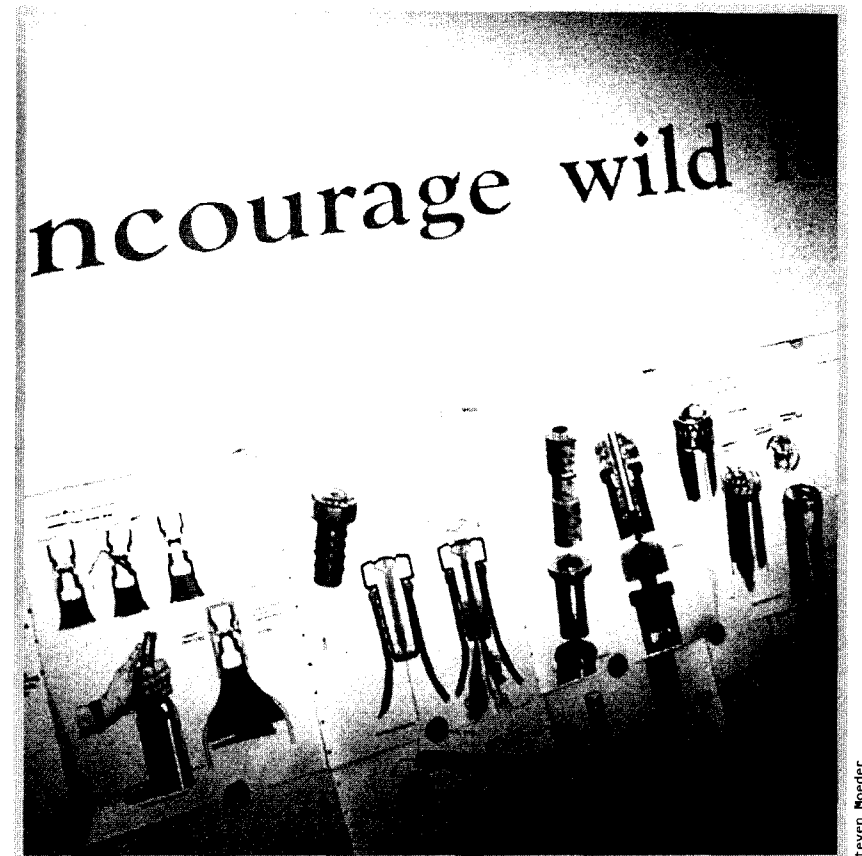
- When the group has not worked together before
- When most of the group doesn’t brainstorm frequently
- When the group seems distracted by pressing but unrelated issues

One type of warm-up we practice is a fast-paced word game simply to clear the mind (Zen practitioners call it “beginner’s mind”) and to get the team into a more outgoing mode. While these group exercises done in a circle may seem like you’ve been transported to your toddler’s Gymboree class, they help ground you in the group and temporarily blot out worries about the latest operational glitch or the unread e-mails waiting back at your computer.

Another warm-up is to do some content-related homework. At IDEO we did a systematic study a few years ago to measure the value of different brainstorming warm-up techniques. We divided our pool of participants into three groups and had them brainstorm on applications of specific new technologies to the toy industry.

First we gave two of the groups homework. One group did some background reading and listened to an expert lecture on the technologies. Another group spent half an hour in a local toy store looking at the state of the art in all its variations. The third group came into the brainstorming session cold. Guess what? The group whose homework was a visit to a toy store significantly outperformed the other two, both in the quantity of ideas produced and in perceived quality. Not scientific enough to submit to the *New England Journal of Medicine*, but we were convinced. We now frequently bring “show-and-tell” to a brainstormer to help us visualize the wide variety of options and materials that could be applied to the session’s topic.

One of the best brainstormers I ever attended at IDEO was an exploration of alternative wine beverage containers. Before the brainstormer, we covered a conference table with bottles, closures,



Steven Meeder

Printing brainstorming rules on the wall
can help keep sessions on track.

materials, and mechanisms ranging from the retro porcelain Grolsch beer bottle stopper to an elegant black Japanese sake flask. By the time we’d examined everything on the table, the session was already in full swing. We had hundreds of ideas before we were done, and a point of view on how to help our client innovate.

7. GET PHYSICAL

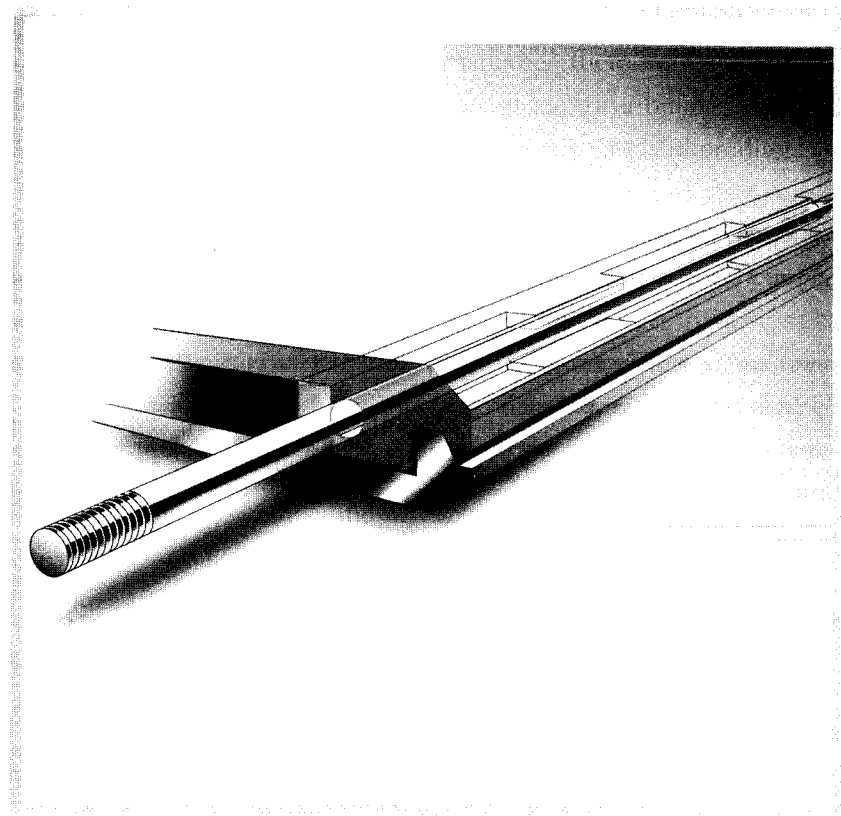
Good brainstorms are extremely visual. They include sketching, mind mapping, diagrams, and stick figures. You don’t have to be an

artist to get your point across with a sketch or diagram. Leave your performance anxieties at the door and jump in with whatever visual tools you have available.

But the best brainstormers often get physical. We move beyond two dimensions and push for three. The first way we do this is to bring in everything but the kitchen sink (and we've brought the sink, too, when it was relevant). That means competitive products, elegant solutions from other fields, and promising technologies that could be applied to the problem. The second way we get physical is to have materials on hand to build crude models of a concept: blocks, foam core, tubing, duct tape, whatever might be useful. The third physical approach is "bodystorming," where we act out current behavior/usage patterns and see how they might be altered. We've bodystormed on products ranging from vending machines to car seats, where our skits and scenarios pointed to all kinds of opportunities for improvement.

THE BRAINSTORMER EFFECT

Hot brainstormers may generate a hundred or more ideas, ten of which may be solid leads. They can help put a team on course, and the rush of adrenaline can keep team members buzzing for days. There's a ripple effect. People talk after brainstormers, sharing wild or practical ideas that may have come out of a particularly vibrant session. A great brainstormer gives you a fantastic feeling of possibility, and an hour later you walk out of the room a little richer for the experience. I think that sense of spontaneous team combustion is why we've been able to find so many unusual solutions to seemingly intractable problems. For example, in designing the slim Dynabook laptop we discovered there wasn't enough room for traditional fasteners. A brainstormer generated the idea of "knitting" the two halves together—like a piano hinge—which sent us out looking for a strong, thin rod threaded on one end.



This surprising but effective use of a bicycle spoke was inspired by a brainstorm.

We eventually reached a solution by getting our favorite Palo Alto bike shop to supply custom spokes to Dynabook that, amazingly enough, did the trick.

You can't quantify the value of letting people's minds run wild. At one brainstormer a few designers and engineers got the idea to motorize a swirling pencil—and made one on the spot. "We've struck gold!" somebody yelled out. We didn't follow up successfully on the whimsical toy. But a few years later, with or without our help, the Wigglewriter came to market and sold like hotcakes. A waste of time? Not in my book. It's the sort of incorrigible spirit of play that keeps team members in tune and on edge.

I'm convinced that if you participate regularly in brainstormers, it's like stretching exercises for your mind. You approach problems differently than when you're at your desk or strolling the halls. When a client rejects a course of action, the two or three team members working on that specific aspect of the project don't slink off to their desks to mope. They'll put up chairs to the nearest table and hold a mini-brainstormer, maybe just fifteen or thirty minutes to find a new track.

Brainstormers can do something else for your group. They offer the team members a chance to shine. It's friendly competition. Who doesn't want to demonstrate their cleverness and wittiness in front of their peers? And when a brainstormer thunders, it's a multiple win, a rising tide that lifts everyone up on a wave of excitement.

Some people, of course, are better at brainstorming than others. And truth be told, your performance *does* matter. Pipe up in brainstormers, bang out a quick prototype, or solve a tricky technical question, and you'll rise in the eyes of your peers. If you've got an open style of innovation—with brainstormers, prototyping, and problem solving—you'll naturally favor those who take action. It's true, "hot groups" aren't a place for shrinking violets. When a newcomer starts peppering a brainstormer with cool ideas, we take notice. You earn respect and authority in that week's brainstormer or on today's prototype team.

Unfortunately, we all occasionally fall victim to negativity. The coach who hammers too hard on the fumbling player, the teacher who corrects the flub and fails to praise the insight. Without a comfort zone, people don't take chances. If you're going to do a lot of brainstorming, there are several other pitfalls to watch out for.

SIX WAYS TO KILL A BRAINSTORMER

A brainstormer is a terrible thing to waste. It's easy to get it wrong. Here are six surefire ways to kill a brainstormer.

1. THE BOSS GETS TO SPEAK FIRST

If the boss gets first crack, then he's going to set the agenda and the boundaries, and your brainstormer is immediately limited. I know of one Silicon Valley boss who eagerly launched a brainstorm saying he was looking for some great new ideas. But unfortunately, he followed that enthusiasm with a room-silencing caveat: "Oh, and every new idea has to be patentable. And something we can manufacture." In that setting, nobody is going to suggest anything even remotely "wild." Try sending the boss out for coffee. Or doughnuts.

2. EVERYBODY GETS A TURN

I once sat in on a meeting a client *thought* was brainstorming. Sixteen people were packed into the room. We went clockwise around the table, and each person was given two minutes to speak. It was democratic. It was painful. It was pointless. It definitely wasn't a brainstormer.

3. EXPERTS ONLY PLEASE

Let's see, do I have a materials expert, an engineer, a software guru, and the V.P. of marketing? In brainstorming, don't be an "expert" snob. Bring in someone from manufacturing, who knows how to build things. Invite a customer service rep with lots of field experience. Find someone who reads a lot of science fiction. They may not have the "right" degrees, but they just might have the insight you need.

4. DO IT OFF-SITE

Brainstorming at ski lodges and beach resorts can be counterproductive. Do you want your team members to think that creativity and inspiration only happen at high altitude or within walking distance of an ocean? Don't get me wrong: Off-sites are fine. But remember, you want the buzz of creativity to blow through your offices as regularly as a breeze at the beach.

5. NO SILLY STUFF

Sports utility shopping carts. Velcro diapers. A privacy curtain to hide those embarrassing purchases. These are just a few of the wacky ideas hatched during our *Nightline* shopping cart brainstormer. I can't emphasize enough what these flights of fancy do for the team. They remind everybody that this isn't like work, that anything goes, and that we're going to have a lot of fun while we solve our problems.

6. WRITE DOWN EVERYTHING

I recently encountered a senior manager who's very good at a lot of things, but very bad at brainstorming. What's his main fault? He writes everything down, and I mean *everything*. He seldom contributes anything useful. We've seen this scenario before, especially among those who are new to brainstormers. Taking notes shifts your focus to the wrong side of your brain. It's like trying to dance and type on your laptop at the same time. Sketch all you want, doodle to your heart's delight. But don't act as if you're in History 101.

. . .

Everybody brainstorms. And everyone could get better at it, including IDEO—which was why we recently launched a research project to look for new approaches and variations. We believe it's worth the energy to try harder. A brainstorm can feel like it's just another meeting, or it can be a fun, invigorating experience that can take a project or a team to a new level.

