

# Creativity 101

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How to get more ideas  
get better ideas  
overcome resistance and stop procrastinating

(But wait! There's more!)

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I'm Liz Ingraham. I'm a sculptor and an associate professor in Art and Art History, teach in an interdisciplinary design program called Visual Literacy and I'm going to talk about creativity or creative thinking OUTSIDE the disciplines of the arts.

# Creativity 101

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AND  
how to be happier, healthier, more productive, more successful  
and live your dreams instead of your fears

If you want all these benefits, you have to take my course!  
But at the end of today, you'll be smarter, richer OR thinner!

**Warning: this presentation may contain art**

Required disclosures: lawyer. Child of the 60's  
If you find ONE thing interesting in all of this, then it's a success from my point of view.



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I was a lawyer, working in Alaska, on the settlement of aboriginal land claims, or, radical social change on an unimaginable scale (40 million acres of land and a billion dollars). So I was a do-gooder lawyer but still a lawyer and unhappy in the ways normal people are unhappy.

Never get good at something you hate.  
They'll expect you to do it for the rest of your life.

—Boeing executive who walked away  
from his life for 19 years

One day I did something extremely dangerous, which is I asked myself what I really wanted to do. The answer led me to a summer architecture program at Harvard and then to beginning courses in drawing and painting and sculpture. When I walked into the sculpture studio my whole life rearranged and it never arranged back again. I threw off everything I was supposed to want and got an MFA in sculpture at UCSB.



I'm best known for a series of sculptural skins. Fully dimensional they are empty, like skins, they could be worn.  
Designed to be touched and handled by the viewer these explore how conventions and expectations, our own and others, become so familiar they seem like our own skin. Like the familiar personae we pull out of the closet. We put on and forget we can take off.  
CONVENTION. all buttoned up.  
LONGING. 30 ft of white satin.



Very interested in portable sculpture.  
Baggage: Handles. ID tag. Pockets in her inner thighs.



That series of skins won me a 40K prize for creativity and that prize helped me fund a collaborative multimedia stage performance based on my poetry and my sculpture at La MaMa Theatre in New York.



. . . the climax has an enormous emotional payoff  
as it follows on the heels of a dark, hopeless scene  
directly inspired by the "skin" sculptures hanging in the lobby.



Watching *Skins* is like staring at a painting  
that pulls you into its frame.  
The performances are excellent, the music is amazing, the settings  
are breathtaking, and the story is unforgettable.





Trapezoidal sections at the eastern and western ends of the state reflect the curvature of the earth.



I'm stitching together these squares to form a 15 foot Locator Map



Here's my UCARE student sewing.



Using the same topo software, at a larger scale, I'm now stitching 24" embroidered squares of the physical terrain.



Here's the first square I'm working on this week and some of my many test samples. The only color is the lakes and rivers and there will be fragments of stenciled "ghost grasses" on the back.

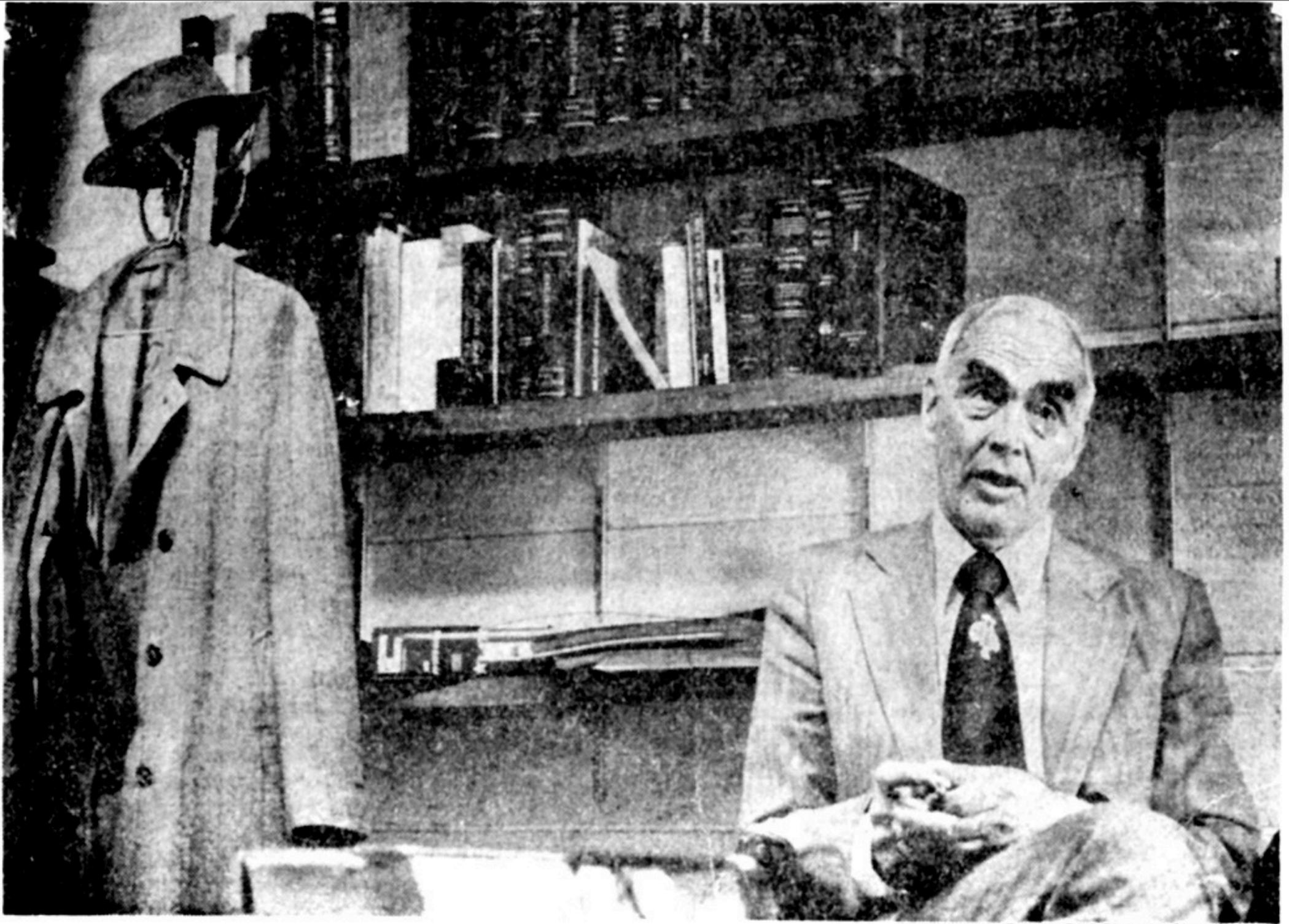


I'm also traveling across the state, documenting each of the sections. These are card decks with 99 roads, stills from a video camera on my dashboard, and 99 places, with the corresponding topo sections on the back.

The problem I set myself was:

How come I don't know where I am? Why do I lack a sense of place? Is that important? What can I learn from the abstract activity of mapping? And how does that experience contrast with the actual experience of standing on the same ground

All of my work is a dialogue--a struggle--with materials and their consequences. As usual, I'm in the middle of a process which is almost, but not quite, impossible so I'm quite happy.



**DR. THOMPSON MARSH, DU'S FIRST FULL-TIME LAW SCHOOL PROFESSOR**

Denver Post Photo by Steve Larson

Their family motto, anything worth doing at all is worth doing poorly, kept them doing a lot of things, he said.

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The bottom line in all this is that I've taken my cue from Thompson Marsh, one of my professors in law school, who said:

"Our family motto, anything worth doing at all is worth doing poorly, kept us doing a lot of things."

It was painful for this perfectionist, but I am now a successful dilantante who's mastered nothing and who's proud of both her failure rate and her accomplishments.

# The creativity habit

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- Creativity isn't an innate ability or the province of just artists or just a selected few
- Creativity is a process integral to human intelligence, accessible to all humans and exercisable within any discipline, as well as in daily life
- Creativity results from acting: from thinking, questioning, and above all from doing and PERSISTING.
- Creativity requires the use of both sides of your brain, all of your experience and all of your senses
- To think more creatively you need to get off your ass(umptions)

I teach a course to freshmen (fresh people!) called creativity 101. This is just a snippet from that course. I'm going to summarize what creativity and why you might want to be more creative, talk a little bit about some of the blocks to creativity, and some strategies for overcoming these blocks.

So what's creativity?

It's a habit, a PRACTICE, not a talent!

It draws on both sides of our brain and all our experience and all of our senses.

It does require action. It requires us to get off our assumptions--easy to say; sometimes hard to do.

# Creative thinking

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- is just a subset of critical thinking
- is a tool for analyzing and solving problems
- leads to more solutions and more optimal solutions

# Who wouldn't want?

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- To be a more fluid, flexible, imaginative and productive thinker
- To have a greater sense of balance in life
- To be more satisfied?
- To feel less stressed and more relaxed
- To have a greater sense of control and confidence



Creative thinking is flexible, fluid, imaginative thinking. And who wouldn't want this?

# Thomas Friedman, *The World is Flat*

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Want to “future-proof” yourself in a flattened, globalized, ultra-competitive world? Then practice “dimensional thinking.”

Here’s what you need to do:

- love learning and to be a life-long, self-motivated learner
- have passion and curiosity
- empathize with people and be good at interacting with them
- nurture your right brain

Thomas Friedman, author of *The World is Flat* on how to compete . . .

This IS creative thinking. Developing these qualities will make you more creative, more productive, more successful and more satisfied and improve your relationships.

You’re high achieving students. You WANT to succeed!  
THIS is how to succeed in the 21st century world.

# Where are you now?

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- Do you ever procrastinate?
- Are you in the “F-state”?
- Do you ever get overwhelmed or discouraged?
- Are you trying to “multi-task”?

Most of us aren't in an ideal state most of the time!

Edward Hollowell: The symptoms of ADD are now just the symptoms of modern life: “the F-state”: frantic, frenzied, forgetful, flummoxed, frustrated, and fragmented. We don't have the extended time necessary to complete a thought, develop a conversation or reflect. He says it's as if we carry an invisible blipper, changing stations the minute a conversation or task takes too much time or becomes boring or hard. (We're overwhelmed by the mundane and can't even think about the big problems.)

Our constant digital access, as powerful and useful as it is, creates a sense of “connected anonymity,” and increases our sense of depersonalization, transience and impermanence. Sensory overload numbs us to real feeling and makes it difficult to maintain the hope, optimism, confidence and enthusiasm we need to solve our problems.

We insist on “multitasking” even though what we call multitasking is most often doing different tasks in rapid succession, and even though research shows that there is no such thing as efficient multi tasking. we make mistakes, miss key bits of information, are impolite, and fail to produce our best work.

# The “science of interruptions”

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- 11 minutes
- 25 minutes
- “continuous partial attention”

Research at U of Cal: office workers were interrupted every 11 minutes; 25 minutes to return to what they were doing--

resulting in what they call continuous partial attention

The good news is . . .

The good news and the bad news  
are the same

The bad news is . . .

The good news and the bad news  
are the same



There has been more information produced in the last 30 years than in the preceding 5,000 years.

Richard Saul Wurman  
Information Architect

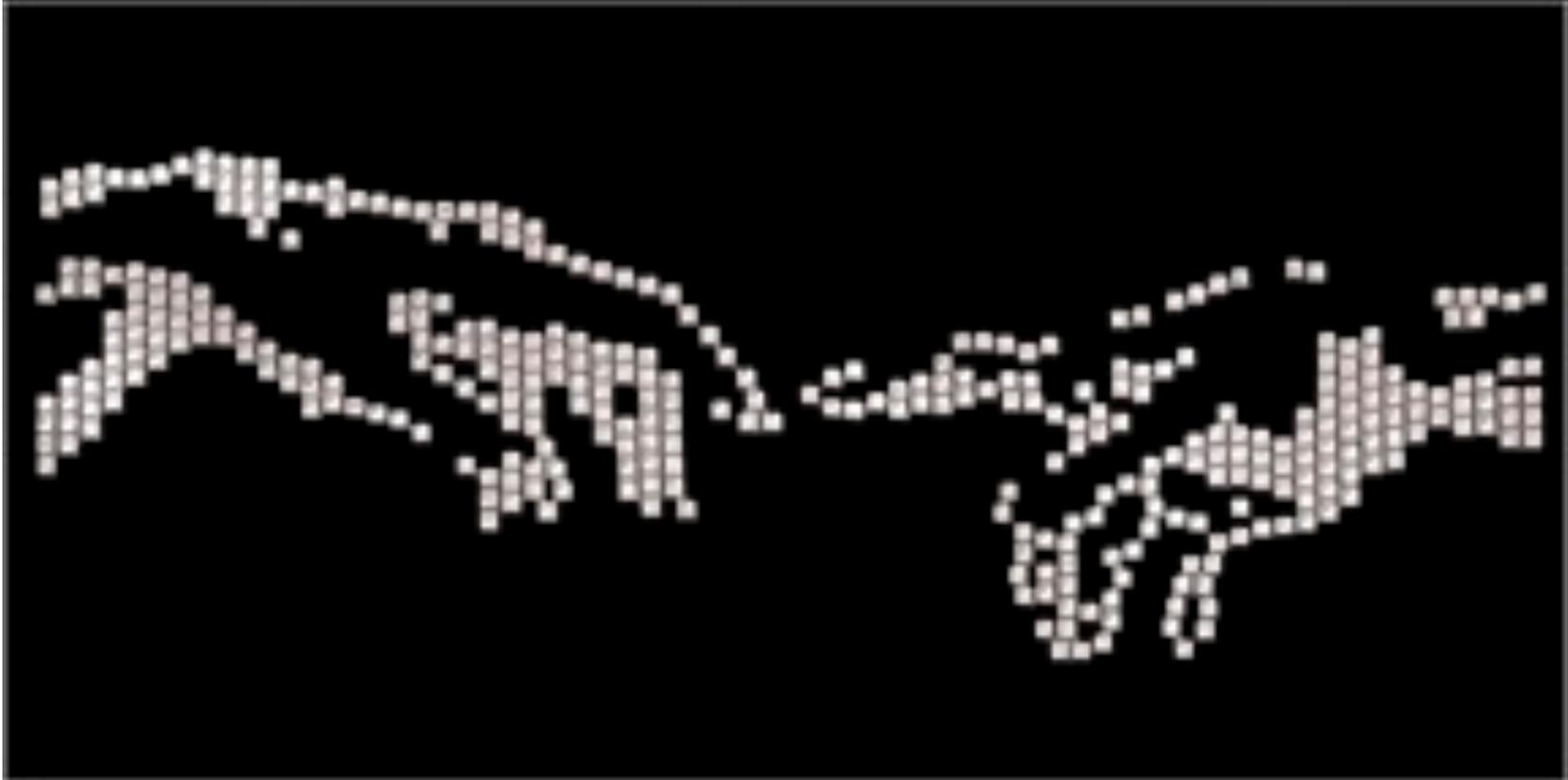
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The good news is, we live in the age of information. The bad news is, we live in the age of information. There has been more information produced . . .

The volume of information with which we are assaulted, and our responses to this information, have some profound effects on us.

So that it's attention, not gold, not oil, and not Google's algorithm, that's now our most valuable commodity. And in shortest supply.

More on this later.



We're so connected to the digital world, we're in danger of losing our connection to the physical world. The other digital world, the world of our hands, of touch.

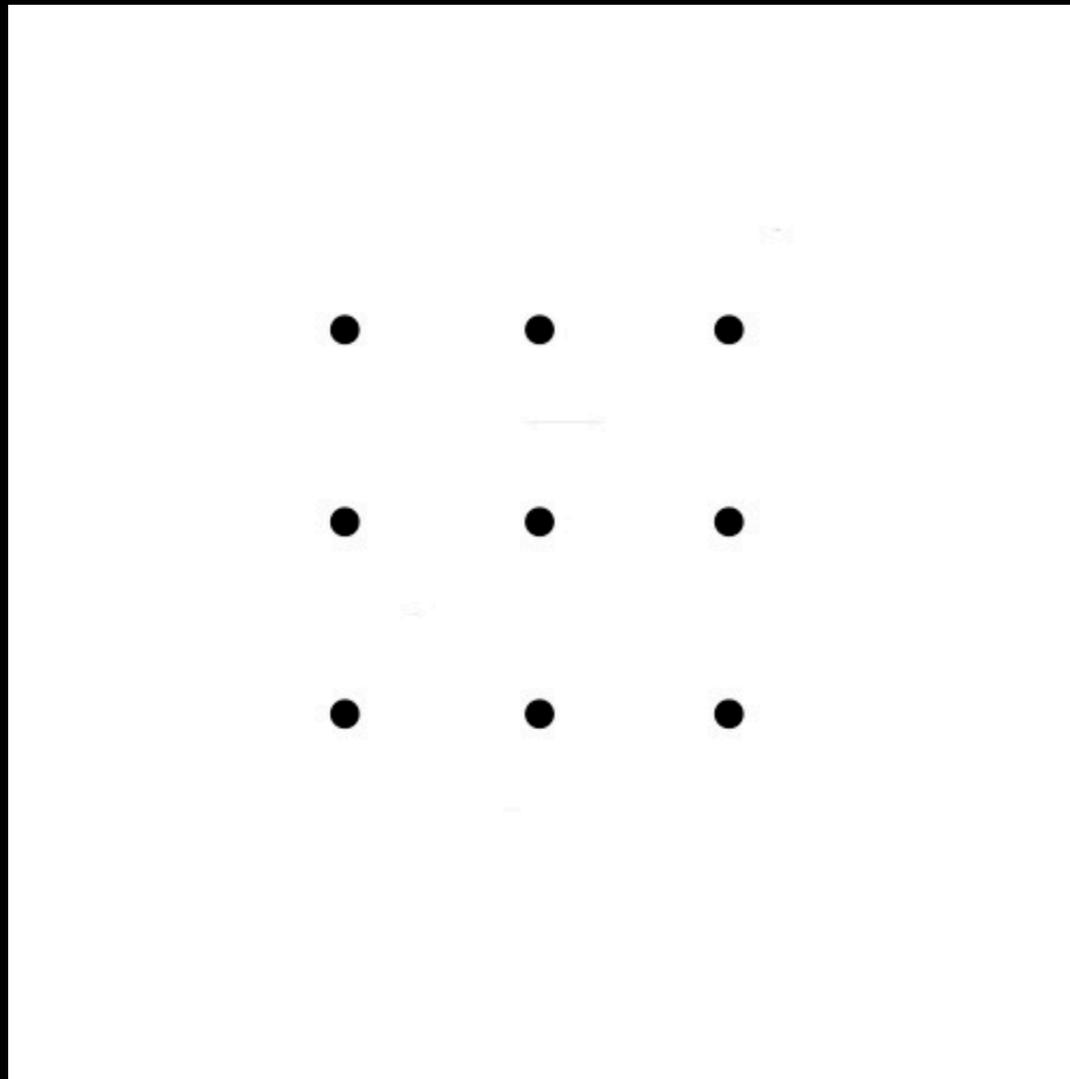
Even as more and more information becomes available, we  
understand and use less and less of it.  
If society cannot find ways to make integrated understanding  
accessible to large numbers of people, then the information  
revolution is not only useless but a threat to humane  
civilization.

—Robert Root-Bernstein, Physicologist

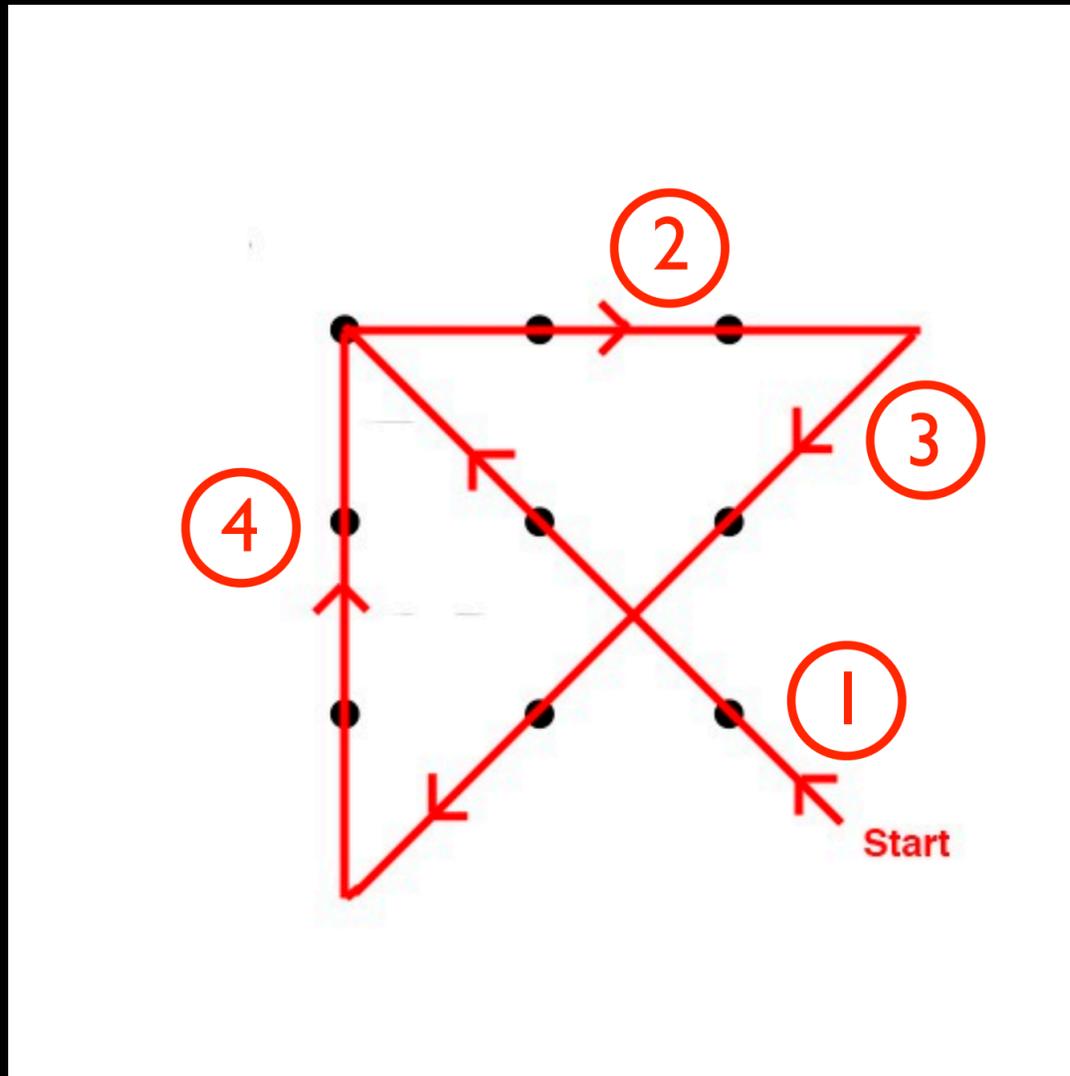
*“ . . . not one of us is safe from what we do not know.”*  
—June Jordan, Poet

We are bombarded. We skim and surf and take in and take in and take in.  
What we don't do is synthesize, analyze, connect, understand.

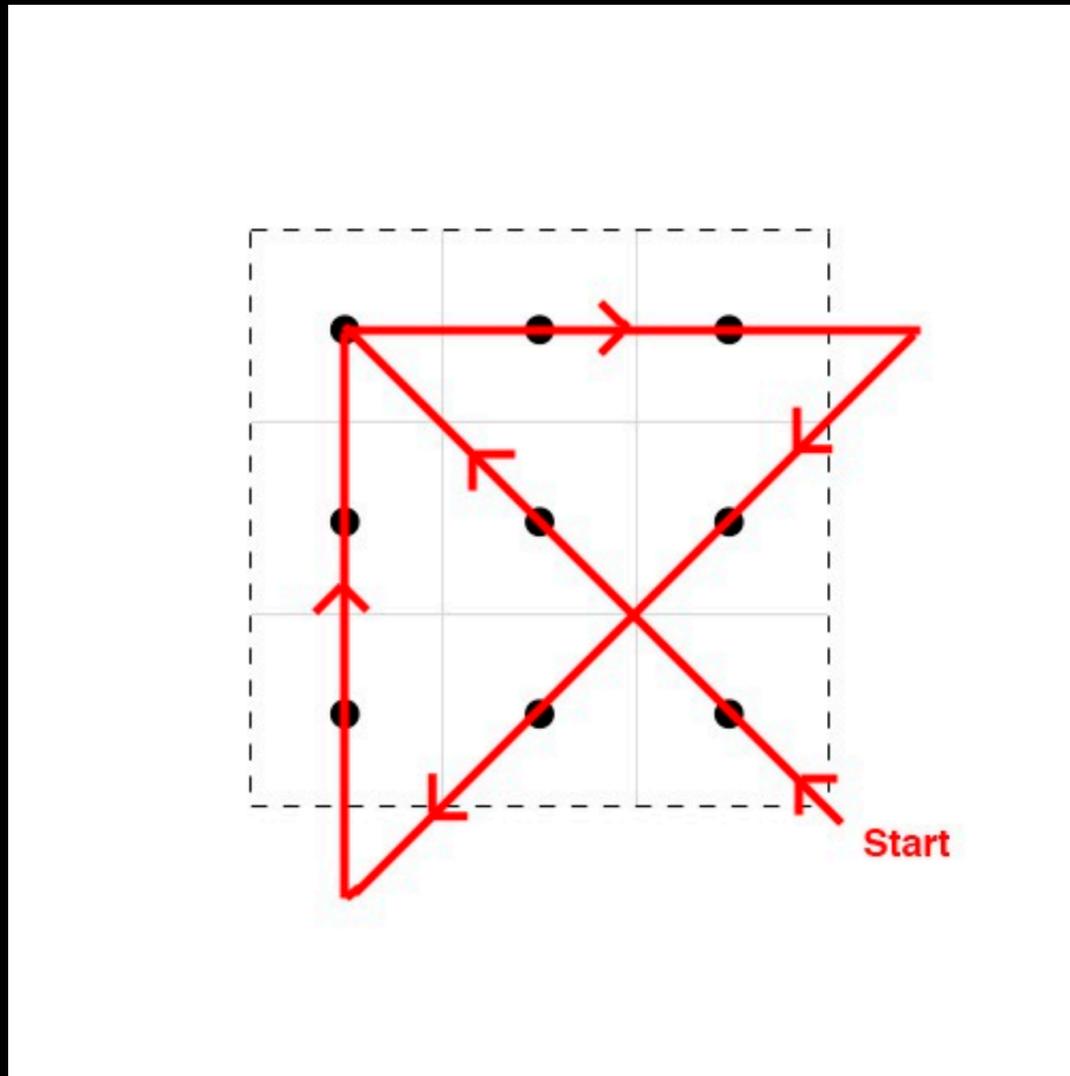
The relevance of this to the situation in the Gulf of Mexico should be apparent.



Let's do a simple exercise, a simple problem, the 9 dot problem  
You've done this? Take out a piece of paper and connect all 9 dots by drawing only 4 lines, without lifting your drawing tool from the page or going through any dot more than once.



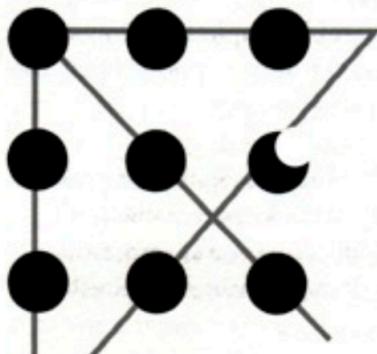
Here's the accepted solution.



which depends literally on going outside the box, the implied frame created by the 9 dots.

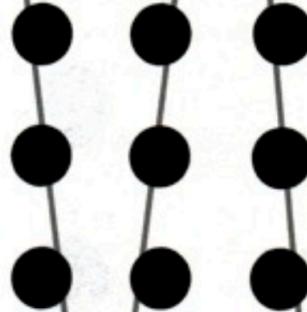
and there are many more solutions--

This puzzle is difficult to solve if the imaginary boundary (limit) enclosing the nine dots is not exceeded. One possible answer is shown below:



A surprising number of people will not exceed the imaginary boundary, for often this constraint is unconsciously in the mind of the problem-solver, even though it is not in the definition of the problem at all. The overly strict limits are a block in the mind of the solver. The widespread nature of this block is what makes this puzzle classic.

Such blocks are subtle and pervasive, but let me talk more about this puzzle to demonstrate that awareness of blocks can and often does result in the ability and motivation to overcome them. I used to use this puzzle years ago when I first came to Stanford in order to demonstrate conceptual blocks. For a talk which I once gave on the subject of problem-solving, an announcement was sent out with this puzzle on the cover. An anonymous party (confess) sent back this solution:

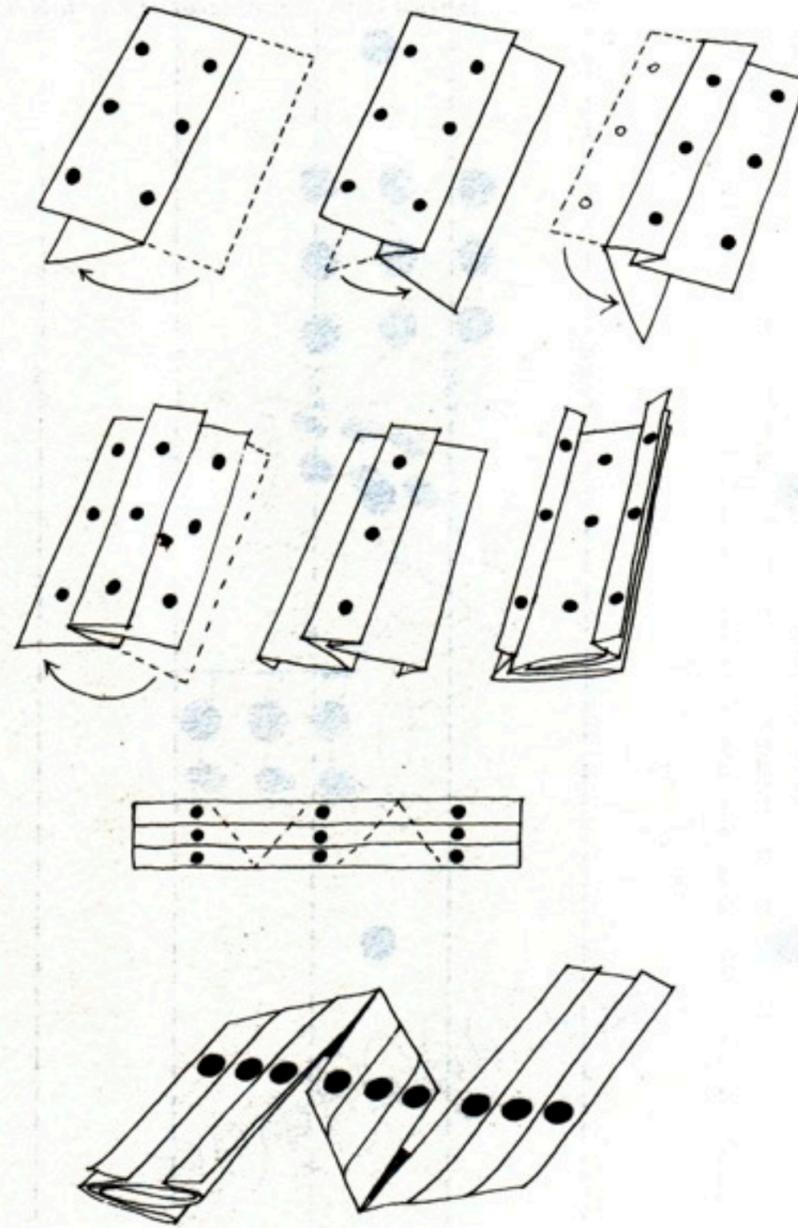


I officially designated him/her our official conceptual smart-ass and secretly admired that person because I was, of course, too blocked to realize that it wasn't necessary to draw the lines through the centers of the dots.

Many of which are discussed in a wonderful book, *Conceptual Blockbusting* by James Adams, who taught engineering at Stanford. Starting with, not going through the CENTER of the dots--Anyone have this solution?

Funny how we have these internalized rules we're not aware of. Who makes these rules?

To add insult to this injury, one of my oldest friends later sent me the fiendish solution shown here, which allows all nine dots to be crossed off by one straight line—plus a little unblocked paper folding. Try this solution yourself—make a copy of the following page and start folding!

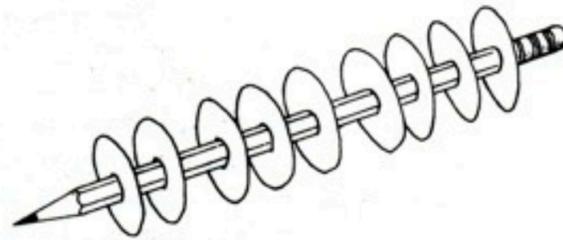
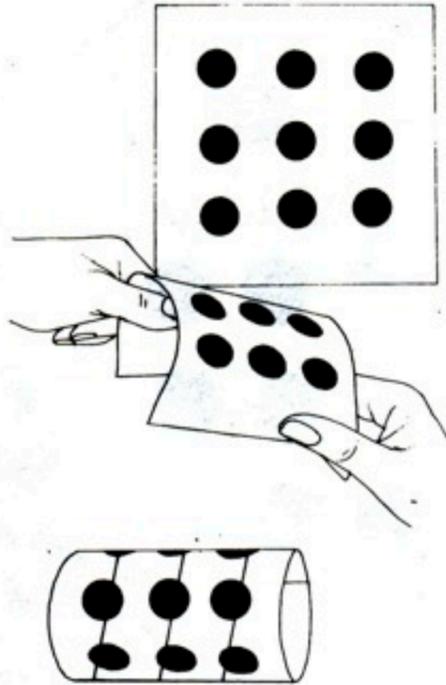


and expanding into some very imaginative solutions-- involving folding  
This is only 1 straight line. Does it have to be 4 lines?

I received many such as the one below, which merely requires cutting the puzzle apart, taping it together in a different format, and again using one line.



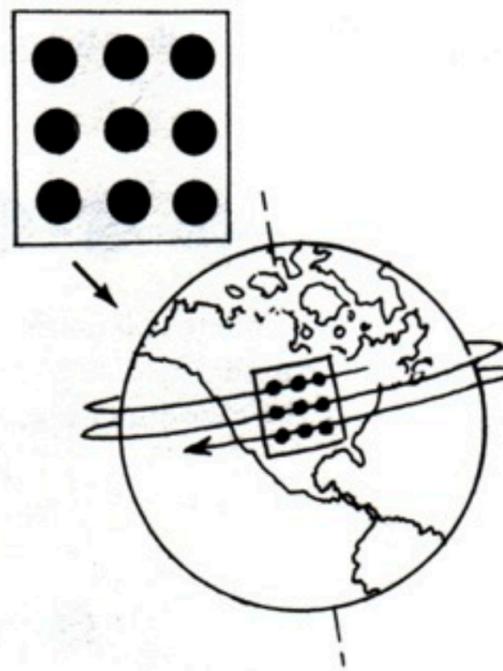
It is also possible to roll up the puzzle and draw a spiral through the dots (below), cut out the dots and shove the line through them, or otherwise violate the two-dimensional format.



These solutions involve violating the 2 D format--cutting or rolling the puzzle.

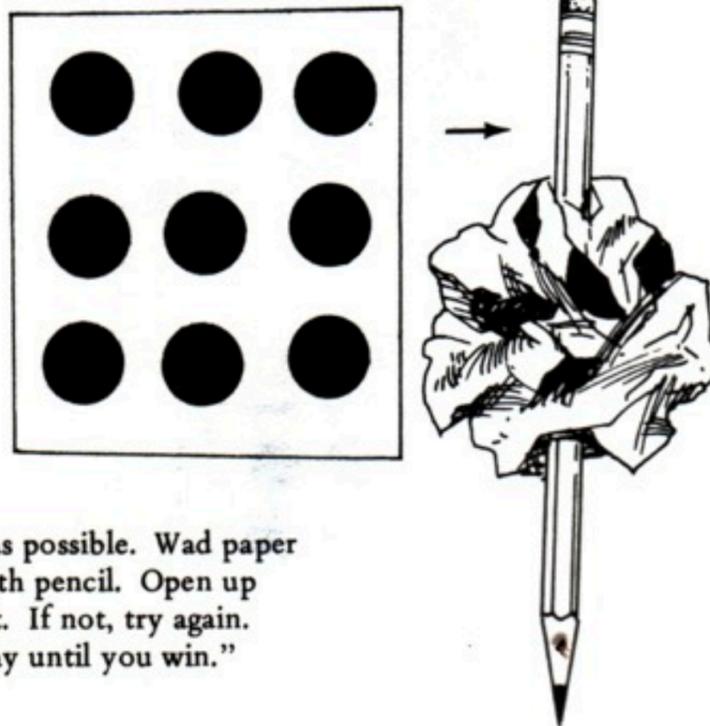
1 Line 0 Folds

Lay the paper on the surface of the Earth. Circumnavigate the globe twice + a few inches, displacing a little each time so as to pass through the next row on each circuit as you "Go West, young man."



~ 2 Lines\* 0 Folds

\*Statistical



Draw dots as large as possible. Wad paper into a ball. Stab with pencil. Open up and see if you did it. If not, try again. "Nobody loses: Play until you win."

I love both of these . . .

There are consequences when we break the rules in life, at work, at school. But what are the consequences of breaking the rules when we think?

Why do we put these boundaries around our thinking?

What are we afraid of? Wasting time? Looking foolish? Being wrong?

May 30, 1974  
5 FDR <sup>Navasa</sup>  
Roosevelt Rds. <sup>NW</sup>  
Ceiba, P.R. 00635

Dear Prof. James L. Adams,  
My dad and I were doing Puzzles  
from "Conceptual BLOCKbusting". We  
were mostly working on the dot ones, like  
::: My dad said a man found a way  
to do it with one line. I tried and did  
it. Not with folding, but I used a fat line.  
I doesn't say you can't use a fat line.  
Like this

P.S.

acctually you  
need a very fat  
writing apparatice

 Sincerely,  
Becky Buechel  
age: 10

And my personal favorite. She later became his student at Stanford!

# Divergent thinking is essential for creativity.

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- Don't just look for the "right" answer. Don't focus too narrowly on a single "correct" solution. (convergent thinking.)
- Don't settle for "good enough" (satisficing)
- PUSH for the most possibilities.
- Aim for fluency and flexibility.

Kraft, Ulrich, "Unleashing Creativity," Scientific American Mind 16.1 (2005)

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The point of all this is that to be creative you need fluency--many possible solutions--and flexibility--powerful and unexpected solutions. You need DIVERGENT thinking.

Convergent thinking aims for a single, correct solution to a problem, using logic, finding an unambiguously correct (and often orthodox, conventional, expected) solution. Examples: multiple choice tests, your bank balance, most of contemporary life and education! Divergent thinking generates many possible solutions, proceeds from different starting points, changes direction as required to generate multiple solutions, many of which could be "correct" and appropriate.

Our tendency is to get one right solution, one that's good enough and the STOP. Adams calls this "satisficing". We stop and we don't push.

# Perceptual blocks

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- not seeing the problem from multiple viewpoints
- failure to use all sensory inputs
- saturation: familiar inputs can't be recalled.
- stereotyping: finding/seeing what you expect; labeling
- isolating the problem too much; imposing too many constraints

What stops us? What causes us to satisfy?

We are often stopped by perceptual blocks. These are the main perceptual blocks to getting ideas and solving problems

Which of these have you experienced?

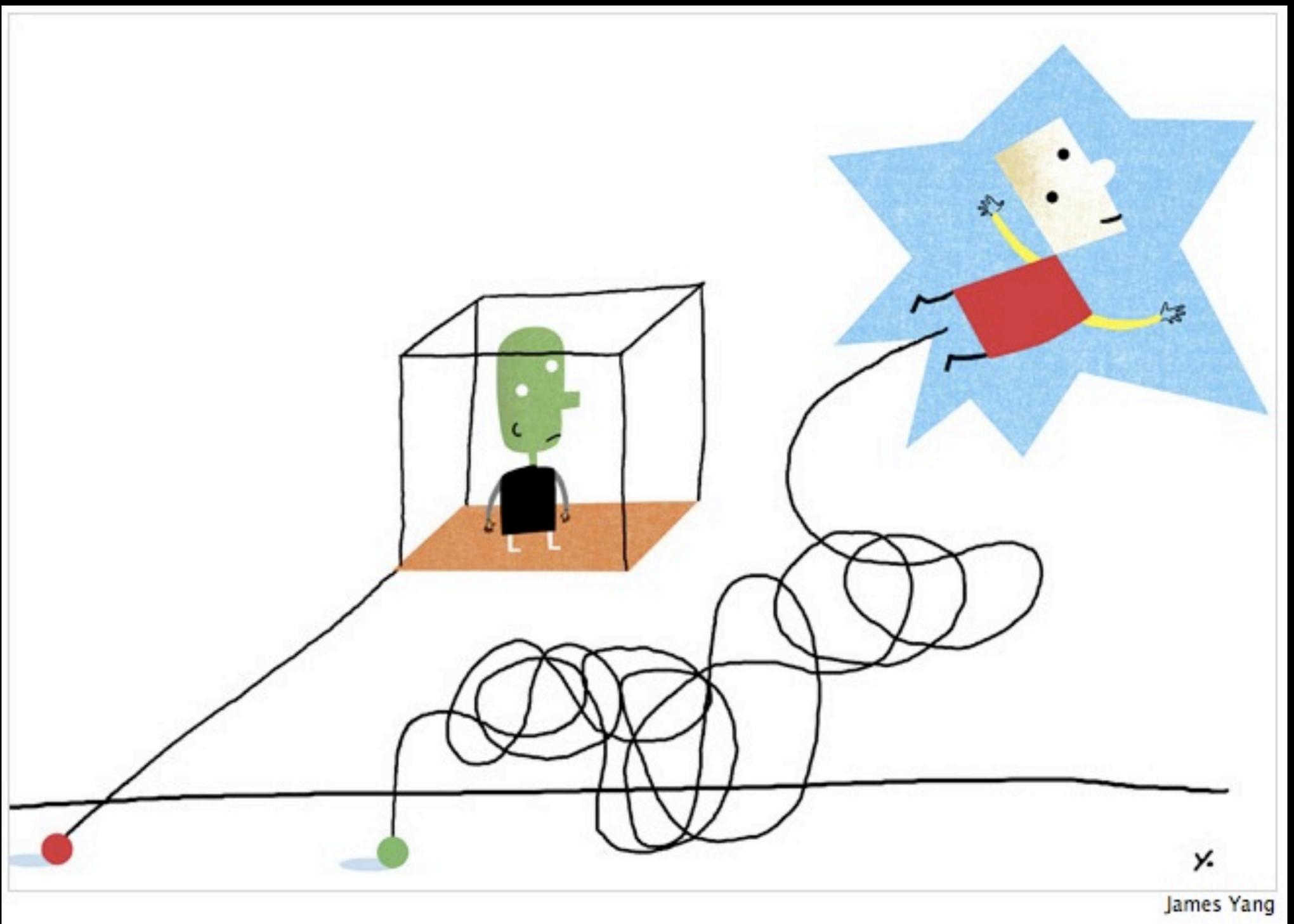
These perceptual blocks limit our ability to **perceive** the problem and limit our ability to **conceive** solutions.

James L. Adams, *Conceptual Blockbusting*

Perceptual blocks prevent us from PERCEIVING the problem and CONCEIVING a solution.

and they all relate to these issues of remaining open to sensory input and having the flexibility to see the problem from multiple points of view.

So let's look at perception for a moment.



Another way to think of this is that before you can think outside the box, you need to be able to see what's inside the box.

You need to be aware that there even IS a box.

# We are pattern seeking and pattern generating

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We're conditioned to make snap judgments

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We are pattern seeking and pattern generating beings. It's part of our hard wiring and necessary for our survival.

This is survival: an unbounded visual field. And incalculable amount of stimuli being received every moment. We're conditioned to make snap judgments. Friend/foe. Predator? Prey? Is THAT food or am I food? We don't say, gee, that's interesting. That leopard's markings are different from the one I saw yesterday. Instead, it's fight or flight.

We must make unconscious decisions about what's important and what we're going to focus on or we'd short out, go insane. We simplify and categorize (label) for survival. (Often these labels are wrong.) (Hardening of the categories)



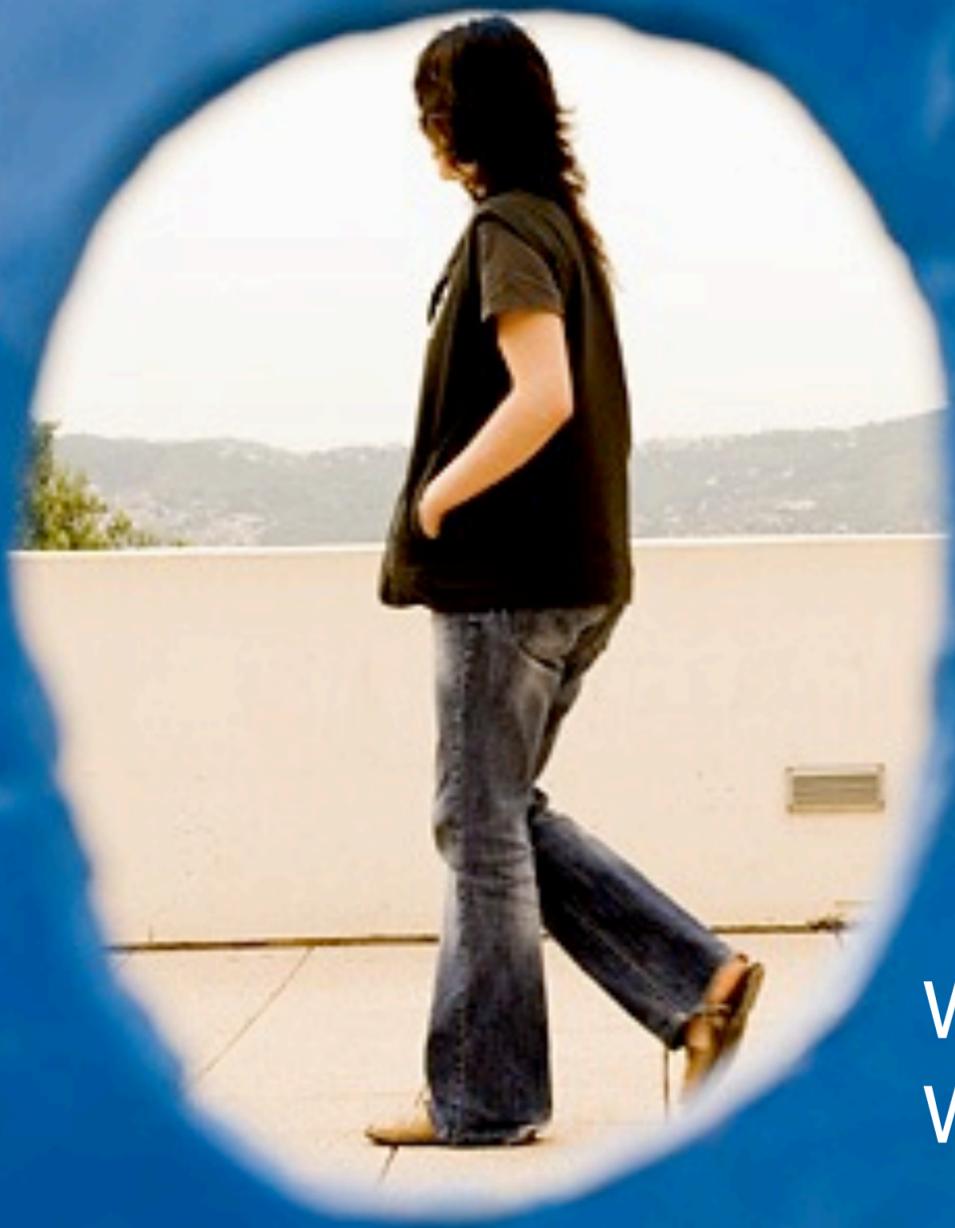
We make assumptions. Often wrong. Seeing is believing. But seeing isn't always seeing, isn't always truthful. Here's just one of a million visual paradoxes we could consider. I like this one because I teach drawing and design and even though I know the conventions being used here I persist in seeing these vehicles as different sizes, and they're not.



I had to take them into photoshop and cut them up to be able to perceive them more accurately

*According to research at Cambridge University, it doesn't matter in what order the letters in a word are, the only important thing is that the first and last letter be at the right place. The rest can be a total mess and you can still read it without a problem. This is because once we learn how to read we look for the senses of the jumbled letters. The human mind does not read every letter by itself, but perceives the word as a whole. We do this unconsciously without thought.*

We make assumptions. We fill in the gaps. These assumptions are efficient and they help us make quick judgments about meaning or importance but they don't serve us well when we need more critical, powerful or more imaginative thinking.



We don't see things as they are.  
We see things as we are.

—Anais Nin, writer

So there's this unconscious filtering and labeling and simplifying and editing that's going on . . . . We go through most of our lives wearing blinders. And we're not even aware of them. If we were aware of them we could change these filter, just as on a camera. We could start to understand that what we actually perceive in a given moment is just one of a number of possible choices.

Are you in your right mind?

(Which may be your left brain?)

Are you in full possession of your faculties?

(Which include intuition as well as analysis?)

Creativity uses BOTH sides of your brain.

The left side is more linear, sequential, verbal and mathematical and analytical and loves categories but lacks a sense of overriding, abstract connections.

The right side is more imaginative and intuitive and tends to work holistically, integrating pieces of an informational puzzle into a whole. The right side is more synthesizing, more visual and loves patterns.

The left side is responsible for convergent thinking, which uses logic to find a single, correct solution to a problem. The right side is responsible for divergent thinking, which generates many possible solutions.

The creative person needs to use BOTH intuitive, divergent thinking to generate ideas, and logical, convergent thinking to evaluate ideas and shape them into concrete form. Part of the flexibility and fluency of a creative person is the ability to switch back and forth at will from generative and imaginative thinking to critical and evaluative thinking.



Remember that you need the flexibility to allow both sides of your brain to operate--your left brain which sees the train sequentially, and linearly and logically (and in fragments), first the engine, then the next car then the next and so on until the caboose-- and your right brain which can take in the whole train at once-- You need logical, linear, analytical thinking AND holistic, intuitive thinking. You need both ways of thinking for effective solutions.

Intuition is the journey from A to Z without stopping at any other letter along the way. **It is knowing without knowing why.**

Rare is the expert who combines an informed opinion with a strong respect for his own intuition and curiosity. Curiosity is, after all, the way we answer when intuition whispers, “There’s something there.”

—Gavin de Becker, Threat assessment expert

And we need to use our intuition. Retaining knowledge is a skill. Intuition is a gift we all have. Intuition is the journey . . .

Gavin de Becker is no psychobabble guru. He advises the CIA and nations on global security issues and designed the MOSAIC Threat Assessment Systems used to screen threats to federal judges and members of Congress.

Intuition can help us to generate a solution, or to pick a path out of competing options to pursue further.

Intuition doesn’t exist in a vacuum. It draws on our experience but we cannot articulate the connections we’re making. A similar process is discussed in detail in a wonderful book called Blink by Malcolm Gladwell. Experts use “thin slicing” to make quick judgments of a situation from relatively little information based on their rapid and unconscious processing of their own accumulated expert experience.

# Unconscious processing = a free lunch?

(Don't push the river.)

Intuition relates to the closest thing to a free lunch I've found in this world system.

Which is that all experts agree that for effective problem solving you MUST have a period of conscious effort FOLLOWED by a period of letting go and forgetting about the problem. What happens is that the period of conscious effort sets up a situation where your unconscious continues to work the problem. You're walking along and the answer, a possibility, drops out of the sky . . . . Here's how Richard Feynman did it:

He'd had huge early success but other people's expectations had just destroyed his enjoyment of physics. So he decided to just play, without worrying about any importance whatsoever.

Within a week he was in the cafeteria and some guy threw a plate in the air. He said: "I saw it wobble and I noticed the red Cornell medallion on the plate going around. I had nothing to do so I started to figure out the motion of the rotating plate. I worked out equations for the wobbles, for fun, and thought about how electron orbits are suppose to move.

"It was effortless. It was easy to play with these things. Everything flowed off effortlessly. There was no importance to what I was doing, but ultimately there was. The diagrams and the whole business that I got the Nobel Prize for came from that piddling around with the wobbling plate."

# Get off your “buts . . .”!

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- Test, question, ask “what if” and dare to answer
- Make mistakes. Make new mistakes. Make better mistakes.
- Generate the most bad ideas you can.
- Fail! Fail bigger! Fail better! (“Failure is the opportunity to learn a WHOLE LOT in a REALLY SHORT time.”)

*Most of my advances were made by mistake.  
You uncover what is when you get rid of what isn't.  
—Buckminster Fuller, Designer*

So, divergent thinking is going to generate a lot of ideas. And a lot of mistakes and failures. Read Buckminster Fuller's bio. He spent most of his career as a complete failure. It didn't matter, because his successes, like the geodesic dome, were so huge, enough to earn him both fame and fortune. The point is he kept thinking and kept making and kept asking what if.

# What is an idea and how do I get one?

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## Do a mind dump

Get your best worst ideas  
Change your point of view  
Raise your snorkel  
Don't start at the wrong end  
Ban the critic and fire the censor

Follow your nose  
Don't sit on your ass(umptions)  
Give chance a chance  
Don't push the river

To encourage divergent thinking, here are some strategies.

Follow your nose. It sounds easy, but more often we'd rather sit still than get up and go where our nose is pointing. Trust your hunches and your intuition. You can use your logic when you test out your hunch. The only way to find out if something will work is to try it.

Do a mind dump at the beginning of a project. Write down--make a list (your left brain LOVES lists) of every association you have with the project, without censoring or editing or making sense. EVERY ASSOCIATION.

ts, golf, golf shoes, business shoes, penny loafers, leather, cloth, canvas, plastic, dogs, cats, snakes, those things that make the "clink" noise on  
hite cyan, magenta, logos, yellow design spec, food, ants, messy, sweep, dust, vacuum, closet, zapateria, shoe shopping, stereotypical women  
outdoors, dancing, tap, ballet, spikes, crane leaves, metal cleats, plastic cleats, rubber cleats, toe cleats, this assignment, ledge, brick, step, s  
lse removing gum, ridges, boots, work boots, hiking boots, cowboy boots, snake skin, snakeskin boots, alligator skin, alligator skin boots,  
football camp when my brand new cleats started to fall apart after the third practice, Under Armor, New Balance, cross trainers, softball, toe guards for pit  
ne Wade, Flabber, High School, College, Step: Masbury, Steve and Barry's, Starbury's, Athletes Foot, Dr. Scholls, Lamisil, At, Tough Actin Tenac  
ther shoe; they're a couple thousand, can only be bought from Ferrari, and come in one color Mercedes Red, stash pocket, tiedie, customized,  
raveler's check, chamber of commerce check, one pair = 2 shoes, I have 3 pairs I wear. Flip flops, sandals, multi-colored strap,  
re flip flops and swim trunks and at McDonald's the crappy pair of black shoes I have to wear at work in the kitchen, the layer of  
k taylors when I had to make pizza at the Red v White spring game, the paper that I'm writing about shoes on, the pencil  
where we will be discussing shoes, Elizabeth Ingraham is the professor that gave my class this assignment of writing about shoes,  
gger so I didn't have to write so much about shoes, I really could care less about shoes, if I could go bare foot all the time I probably would b  
ip and then I'd slip and fall on my butt, it would get wet and cold, ice, snow, hot coals, sunburn, hair, warts, 10 toes, 2 feet, an  
Madden, Suede Dress, Blue Suede Shoes - Elvis Presley, Cree Simmons' platform dragon boots, Espadrilles, DC's, DVS,  
y Spears, Avia, Rocket Dogs, Privo Merrell, Naturalizer, Clarks England, Donald J Pliner, Kenneth Cole Reaction, Guess; U  
ng, Bruce Willis, urban legend, Air Wais, American Eagle, Phat Pharm, Baby Phat, Blade Runner, Calvin Klein, Circa, Element, U  
lippers, K-Swiss, Ralph Lauren, Mizuo, Play Boy, Report, Roller blades, roller skates, snowboards, snow boots, surfboards, sketchers T  
a, Trotters, Globe trotting, Globe Trotters, Show-time Gaffney, Zoo York, And 1, Boss Hugo, Ballet, Dickies, Easton, Emerica, Hurley,  
sembly, adhesive, glue, duct tape, Red Wing, 120D, South pole, Kenneth Cole, Ocean Pacific, Maui, Lahaina, Ka Anapali, Hana, the  
in bat grano, Oakley, Penguin, Vibram tread, Transformers, Power Rangers, Teenage Mutant Ninja-Turtles, Dora the Explorer, Dou  
sh B'gosh, babies, toddlers, the terrible twos, Pirates, Quiksilver, Seame Street, Bert, Ernie, Lookie monster, Big Bird, Oscar the Grouch  
ght ups, noisemakers, Bionicle, raincoats, steel toed, stride rite, Geox, Heelys Columbia, casual, dress, formal dinner, etiquette  
the gym, retro, the strip, the park, the office, after hours, back to school, not in bend, amazon.com, ebay.com, paypal, fo  
people after they've died when they're jussing in the ground? arthritis, arthritis medicine, mosquitoes, mosquito bites, itching, itches  
socks, grey socks, Hanes

Mind dumps allow both sides of your brain to speak. They get everything that's "in there" out here, where you can examine it and look for patterns.

They reveal what you know. Which is ALWAYS more than you think you know. And they reveal what you're interested in. Here's a portion, just a portion, of dump on 18" by 24" paper around the concept of "shoes."

99's, crocs which I hate, Steve, Madden, Suede Dress, Blue Suede  
Lohan, Paris Hilton, Britney Spears, Auda, Rocket Dogs, Pri  
streets, crosswalks, hitchhiking, Bruce Willis, urban legend, Air  
ood, Hush Puppies, Bunny Head Slippers, K-Swiss, Ralph Lauren, Mi  
y Golf, The North Face, Tribeca, Trotters, Globe trotting, Globe  
yds, Kawasaki, Suzuki, plants, assembly, adhesive, glue, duct tape, Re  
ops, spelunking in caves, stepping in bat guano, Dakley, Penguin, VIBRO  
feet, sleep, Hot Wheels, Osh Kosh B'gosh, babies, toddlers, the te  
occer socks, 3..., preschool, light ups, noise makers, Bionicle, ra  
ent shoelaces, trend, rodeos, the gym, retro, the strip, the par  
com, why do they put shoes on people after they've died, when they're ju  
element, atoms, molecules, black socks, grey socks, Hanes, wikipedia  
rubber mats from black shoes

And here's a detail--from crocs to motorcycles to Bruce Willis to urban legends to duct tape to atoms to "why do they put shoes on people after they've died?"

Discovering the background noise of the universe was a big deal!  
What would happen if you tapped into the background noise of your consciousness? You might discover something you didn't realize that you knew . . .

# What is an idea and how do I get one?

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Do a mind dump  
Get your best worst ideas  
Change your point of view  
Raise your snorkel

Follow your nose  
Don't sit on your ass(umptions)  
Give chance a chance  
Don't push the river  
Stop stopping  
Start starting

Don't start at the wrong end  
Ban the critic and fire the censor

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Remember, you want to range WIDELY. Without limits and rules and without constraints. Nothing bad is going to happen from thinking!

Don't censor, judge or limit yourself. Bring the critic back in once you have an hypothesis, a prototype, the results of a test. Then let the critic fire away. Then silence him and brainstorm again . . . It's a circular process: generating THEN analysis and critique.

Don't start at the wrong end of a project! IF you know exactly what it's going to look like, be like, do , there's probably little reason to actually make it . . . You're not going to discover anything other than what you already know.

And remember that chance and accident, even mistakes, can be a great muse. Just ask the inventors of Teflon, the Post-it note and the microwave oven.

# What is an idea and how do I get one?

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**Stop stopping  
Start starting**

55

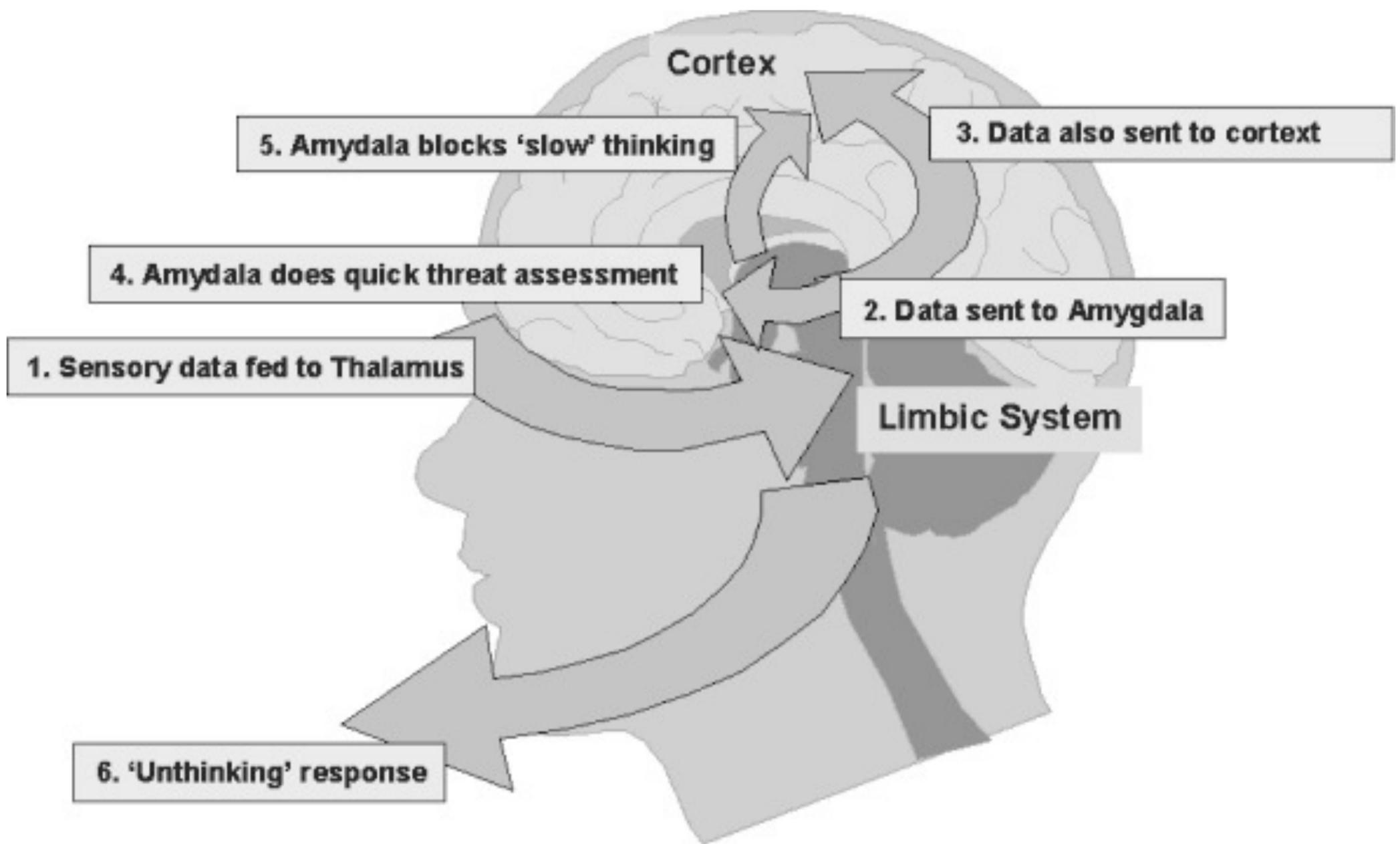
## Stop stopping

If you're stuck, ask yourself what's stopping you? What are you not allowing? Not letting in (admitting)? What are you resisting? Your resistance is the strongest clue that what you're resisting is important for you to do. There's energy in your resistance. Work with it!

## Start starting

Start now. Whether its two minutes, twenty minutes, two hours doesn't matter. Making the worst (smallest) start you can—but starting now—will insure that the ending is the best it can be. Big projects can come from small ideas. Big accomplishments can come from small steps, one after another after another.

This is such easy, and obvious advice: start now. Do a little, then a little more, then a little more. Why do we resist it?



## Fear makes us stupid

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Fear blocks higher level thinking. This is part of our hard wiring. Our sensory data goes to the amygdala and we act on it before the cortex can process it. So, our emotions lead, not follow. This is why we often have such a strong--and wrong--first impression.

It's visceral. As if we were thinking with our gut. Not a useful use of intuition! (This "unthinking response" is our reptilian brain, which controls physical survival--breathing and circulation and the fight or flight response.)

We just feel and react.

Fear not only makes us stuck, it makes us stupid.

The amygdala is also important for visual learning and memory. (So paradoxically can be used to your advantage.)

The limbic system also can attach emotional markers to things making them more likely to be recalled or keep us engaged in a competitive activity such as a video game because the brain's pleasure centers get activated. We can use this game aspect to keep ourselves engaged.

So fear makes us stupid, but when our positive emotions are engaged, we perform better, and our IQ is actually measurably higher. And we can actually make use of our higher level functions in the neocortex--thinking, planning, speaking, writing, analyzing.

# Emotional blocks

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- Fear of making a mistake (or of failing or of taking a risk)
- Inability to tolerate ambiguity or chaos or an overriding desire for order
- Preference for judging ideas rather than generating them
- Inability to relax, incubate, sleep on it
- Lack of challenge OR over-motivation to succeed quickly
- Inability to distinguish reality from fantasy.

from James L. Adams, *Conceptual Blockbusting*

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Besides perceptual blocks we also have emotional blocks (and cultural blocks). These are the most common ones. Which of these do you have?

Ambiguity, disorder: Problem solving is bringing order to chaos. You have to desire order but tolerate chaos. Things will be messy for a while.

Reality vs fantasy: you need access to your imagination AND to your logic and intelligence. You need both sides of your brain.

# Emotional blocks

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# 1:

Fear of making a mistake (or fear of failing or fear of taking a risk)

(the most common block AND not based on a realistic assessment of the consequences!)

How to overcome this fear?

The most common block is fear of making a mistake or failing or taking a risk (or even of succeeding!) This is behind perfectionism, which has killed more work than it has enhanced. Perfection is a neurosis. What you should aim for is excellence, which comes after persisting over a long period of time with the intention to improve.

**Doing** is significantly different than **not doing**.

**Doing not only “gets things done.”**

It teaches lessons you cannot possibly learn **theoretically** and can **loosen** even the most stubbornly entrenched feelings of fear and doubt.

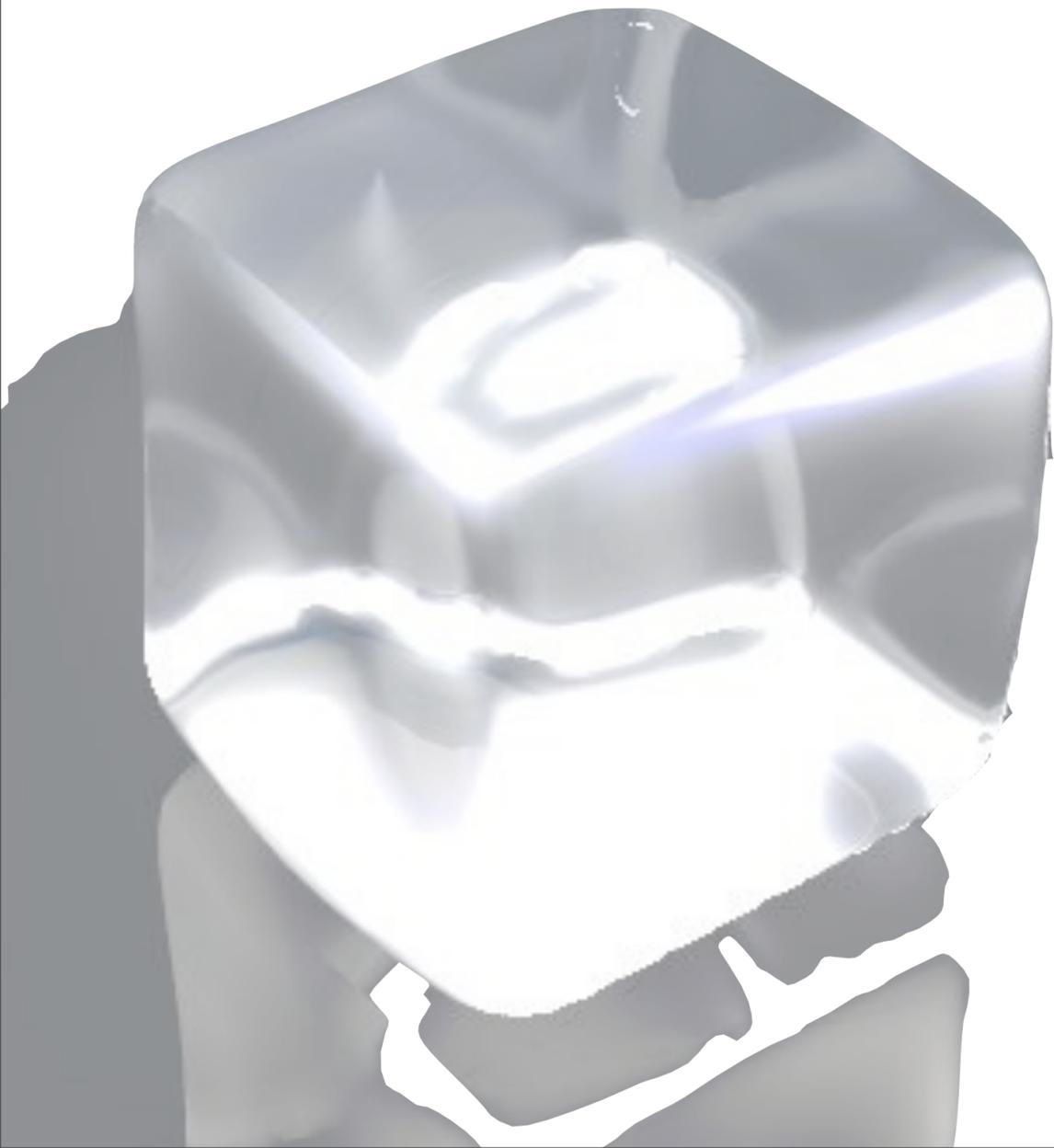
—Carol Lloyd

How to overcome the fear that makes us stuck? In this case, Nike's right. The antidote for fear is DOING.

By just doing something, you not only undercut the “I'm afraid I'll fail” obstacle, you overcome the “I procrastinate/I have trouble getting started” obstacles.

# Procrastination and denial

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- Fear of failure leads to procrastination, which doesn't lessen the fear but just freezes it into place
- Meanwhile, our tranquility is disturbed by doom darts ("OMG, I forgot to / I have to . . .") because we're in denial about our commitments

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Procrastination has nothing to do with time.

It has everything to do with fear. So fear stops us from higher level thinking and stops us from doing and that just creates more fear.

The deadline looms and we act out of desperation and maybe we finish and we've had no opportunity for feedback, for refinement, and, unless we're VERY lucky no chance to push beyond an easy response.

So we need to become more fearless (or at least continue to act in spite of being afraid).

# Short circuit fear

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- Do anything!
- Little and often
- Focus on a problem and then let it go
- Create a sense of play
- Write down your thoughts, ideas, dream AND fears
- 10 - 80 - 10

ANY PHYSICAL ACTION will break this cycle of paralysis.

We can USE our knowledge of the physical world and understand that if we do a little bit every day, after a while we will have a LOT accumulated.

I don't know why it took me so long to learn this.

Another way is to treat an activity as a game. Set a timer. Compete against yourself. See how many responses you can generate. Try to do the absolute worst first draft possible . . . . This helps you access the pleasure centers of your brain and turn your limbic system / lizard brain to your advantage.

Finally, archiving your thoughts is a PHYSICAL ACTION that is useful and practical and also a huge stress reliever.

You cannot rely on short term memory for anything other than, well, the short term. (5-9 pieces of information; after 12 seconds recall is poor) after 20 seconds information is gone unless you keep repeating it to yourself or write it down. It signals to your brain this is important and encourages divergent thinking, connections, synthesis and

Quantity will always

—ALWAYS—

increase the quality of your ideas.

(Try to get the most bad ideas possible!)

Bottom line: to get better ideas, just get more ideas.

# Why look for alternative ideas?

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- One of the alternatives may solve your problem.
- An alternative may help you rearrange the components of your problem (leading to a better solution)
- The alternative may be a better starting point
- An alternative may be a breakthrough idea which has nothing to do with the problem at hand.
- Even if you return to your original idea, you will know it was the best option, not just the easiest one.

From *Thinkertoys* (2006) by Michael Michalko, Chapter 9

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You'll stumble upon a better idea. Or you'll know that you have the best idea. And that will give you confidence. That conviction that you aren't just taking the easy way out will inform how you develop your idea and how we respond to it. And your confidence in your idea will help you to be open to feedback about your idea, which in turn will make it better.

Bad ideas can't hurt you! Artificially limiting your focus to one or two ideas will. Like putting blinders on. You might find what you're NOT looking for! Bell was trying to invent a hearing aid, not the telephone.



“by degrees”



“blind to what’s around us”

Now the plea:

Put a frog in boiling water: he’ll jump out but put him in a pot of cold water and gradually raise the temperature and he’ll boil to death . . .  
(Probably an urban legend)

But the fish isn’t an urban legend The fish can’t see the ocean. he feels cold or warm or hungry, but can’t perceive the system he’s in because he can’t get outside it to observe or compare.

# Interrupt the flow of ordinary (in)attention

## Change your point of view

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Organic chemist Peter Debye says “you have to use your feelings--what does the carbon atom WANT to do?”

Richard Feynman revolutionized quantum physics by asking himself questions such as “If I were an electron, what would I do?”

“You don’t see what you’re seeing until you see it,”  
Mathematician William Thurston says, “but when you do see it, it lets you see many other things.”

We have huge advantage over the frog and the fish and that’s our potential for consciousness.

We can become aware of our assumptions and set them aside for a moment. We can stop focusing on just a fragment and see the situation in a larger context. We can look at something from more than one point of view--physically, emotionally, psychologically. Empathize with our subject.

Pay attention! Be conscious! Even just for 10 minutes!

# We ignore the physical world at our peril

It's too soon to talk about the crisis in the Gulf.

But I can talk about a smaller scale, but still hugely significant disaster which happened in 1986, the Challenger space shuttle which exploded 73 seconds after liftoff, killing 7 people, including Christa McAuliffe, the first member of the Teacher in Space Project. It was a huge blow to the US Space Program, and a shock to our sense of infallibility.

There was a lengthy congressional investigation. Richard Feynman was on the panel, and this was not long before his death in 1988. Debate raged about the cause of the explosion and who was responsible. Feynman called for a glass of ice water, pulled out one of the rubber O-ring seals used in the rocket booster and dropped it into the ice water. The rubber ring froze and shattered.

Engineers knew that the seals were vulnerable to cold temperatures but the pressures to launch, but no one was willing to articulate the danger clearly. And economic pressures and political pressures, caused those in charge to overrule their objections and to continue with a launch in cold weather despite clear feedback about the risks. Feynman wrote in his report "For a successful technology, reality must take precedence over public relations, for nature cannot be fooled."

I knew a man who grabbed a cat by the tail  
and learned 40 percent more about cats  
than the man that didn't.

—Mark Twain

I know from my own work and the work of my design students that it's easy to design with words. To try to talk your way into or out of a design.

But then reality intrudes. Actual weight, actual gravity, actual time and the real extent of the problem becomes all too clear as the prototype collapses or dissolves.

But there isn't just danger in ignoring the physical world, there's a loss of potential in ignoring our physical senses. We aren't just words and language: we're ears and noses and fingertips. Sound and smell and touch give us vital clues and rich opportunities for design.

We need to broaden our inquiry, not restrict it. Widen our intelligence, not narrow it. Draw on the multiple intelligences: spatial intelligence, kinesthetic intelligence, body intelligence, emotional intelligence--that we have.

We are not disembodied beings although our digital communication makes it seem that way sometimes. We still have to live in a physical world where physical materials and physical forces have physical consequences.

We need fearless imagination AND unbounded diversity in our approached AND ruthless feedback.

# Recipe for creativity

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- Fail more.
- Relax more.
- Do less more often.
- Look around more.
- Use all your senses.
- Get feedback.

*Be sloppy enough that something unexpected may happen but not so sloppy that you can't tell what it was.*

*—Max Delbrück, molecular biologist*

And remember that something very small and simple, now, can have a profound effect, later.

"In times of change, the learners will inherit the Earth while the knowers will find themselves beautifully equipped to deal with a world that no longer exists."

—Eric Hoffer, Writer

Ask more questions. Ask more interesting questions. Be a life long learner.

We need to range widely. Try things out. Test possibilities. And be honest with ourselves and our colleagues about what's working and what isn't.

Creative work is not a selfish act or a bid for attention.

It's a gift to the world and every being in it. Don't cheat us of your contribution. Give us what you've got.

—Steven Pressfield, Writer

We NEED your voice. We NEED your thinking. Our problems are so complex, and often so far beyond the range of one individual and one discipline, we are in desperate need of YOUR input. Don't hold back!