The art of teaching with IT
TPACK & Creativity

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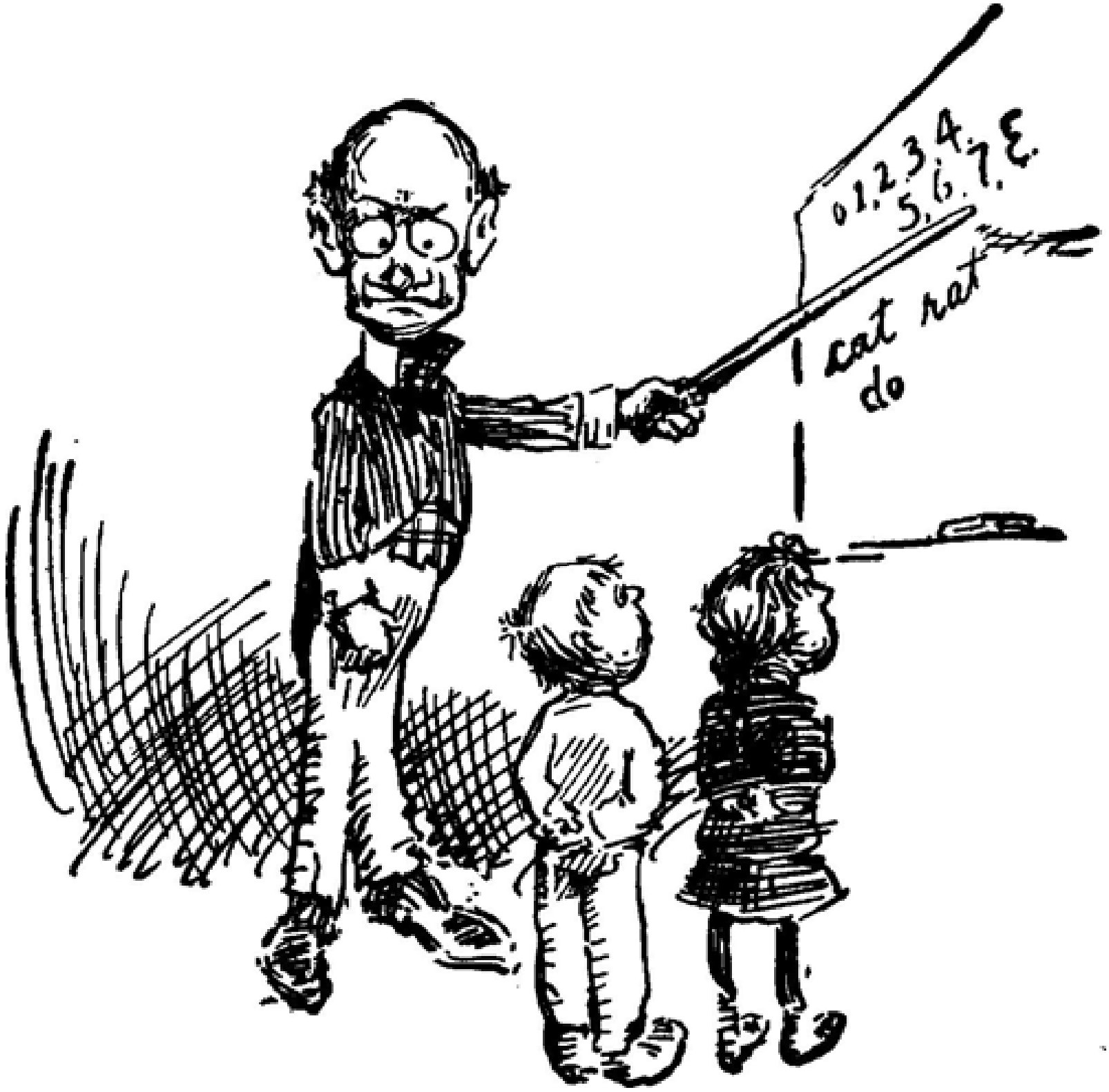
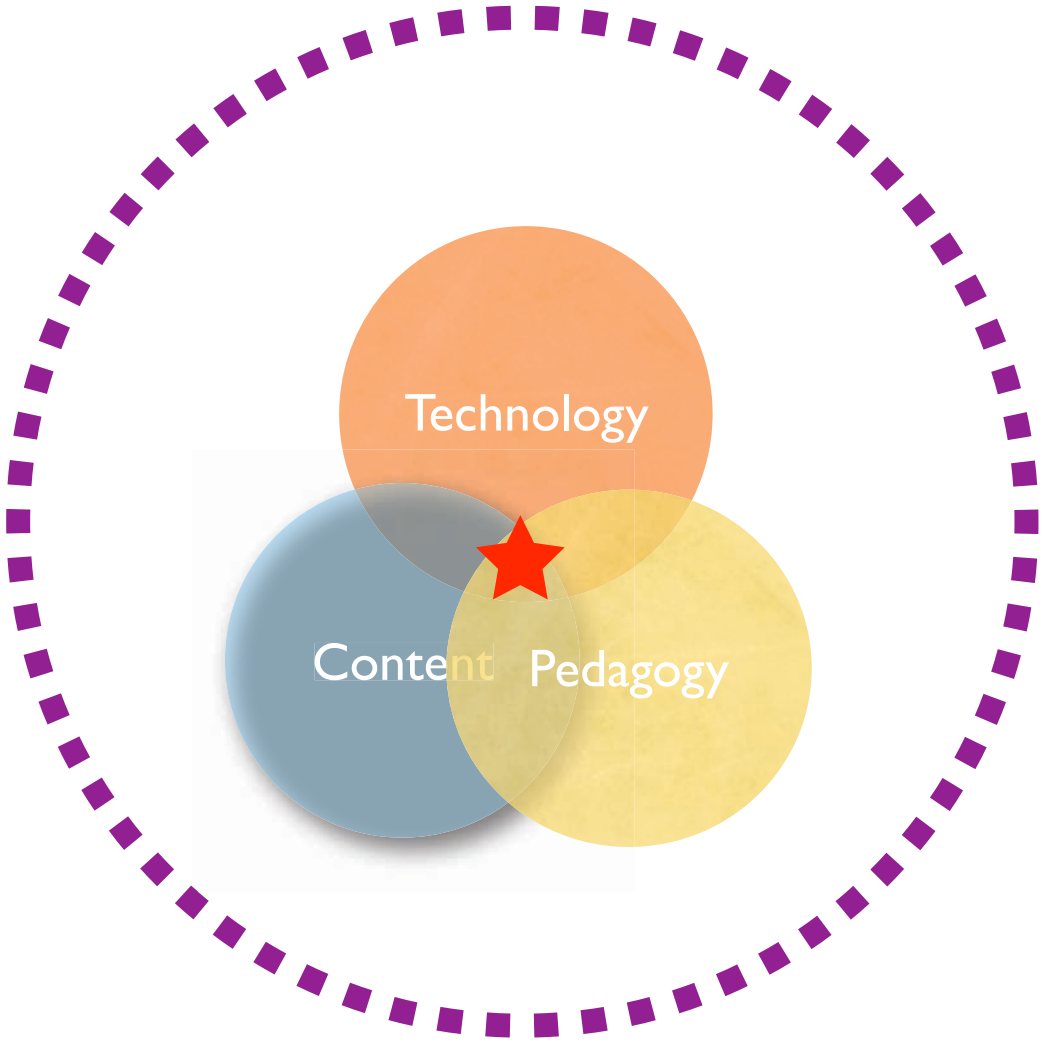

0,1,2,3,4,
5,6,7,E.
I eat rat
do

Some ground rules

There are no rules!

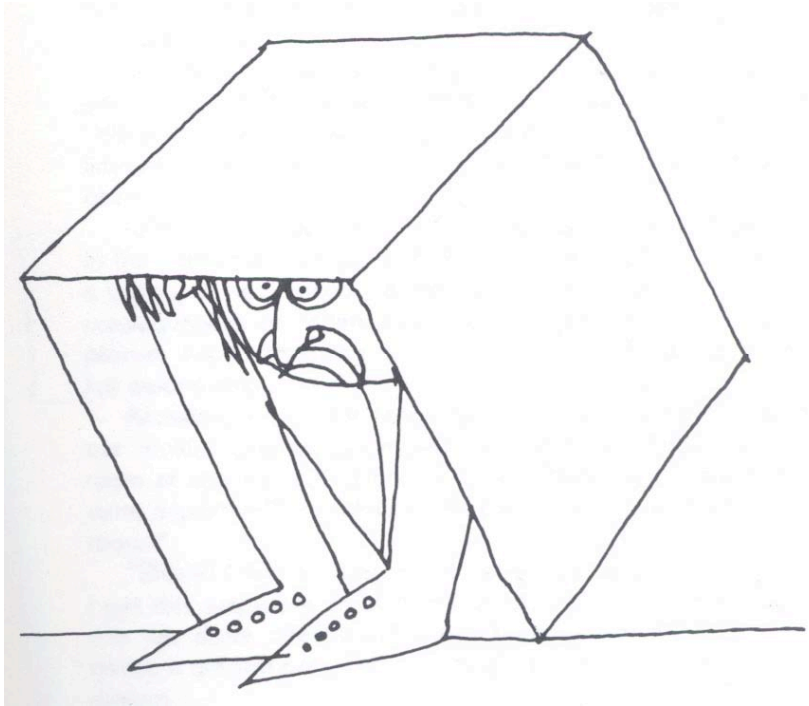


Context

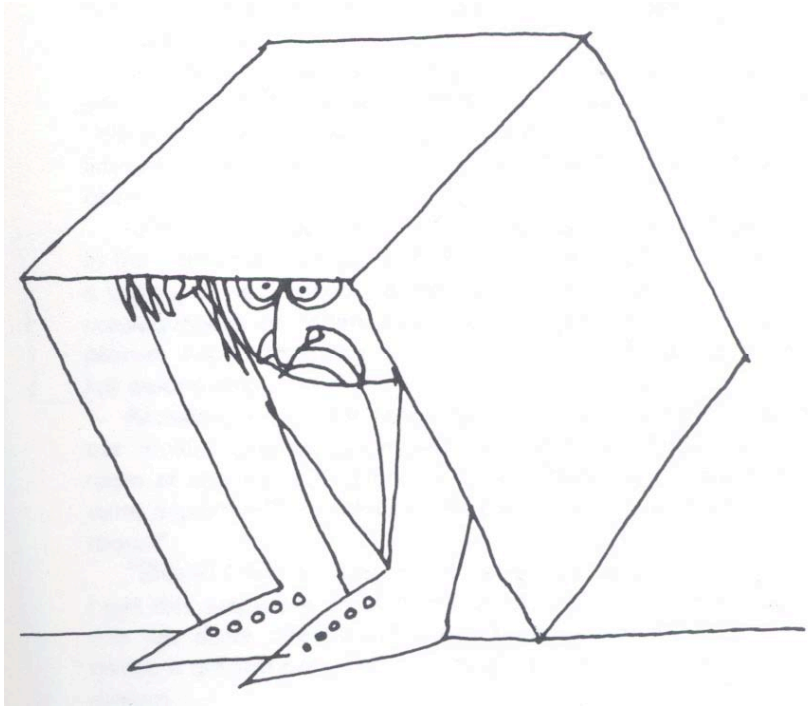
mechanical	use
meaningful	integrate
generative	innovate

creativity

challenge



creativity cannot
be taught



creativity cannot
be taught
but it can be developed!

One example of creative/ artful teaching

R. K.

1936 - 2008

calligrapher
designer
teacher

•

अक्षर

In small groups

- examples of artful or creative teaching from your own experience (doesn't have to be big)

2 minutes & share

What is common to these examples?

Attributes

original

valuable

skillful

effective

suitable for context

memorable

inspirational

(emotion, insight, aesthetic)

elegant

coherent

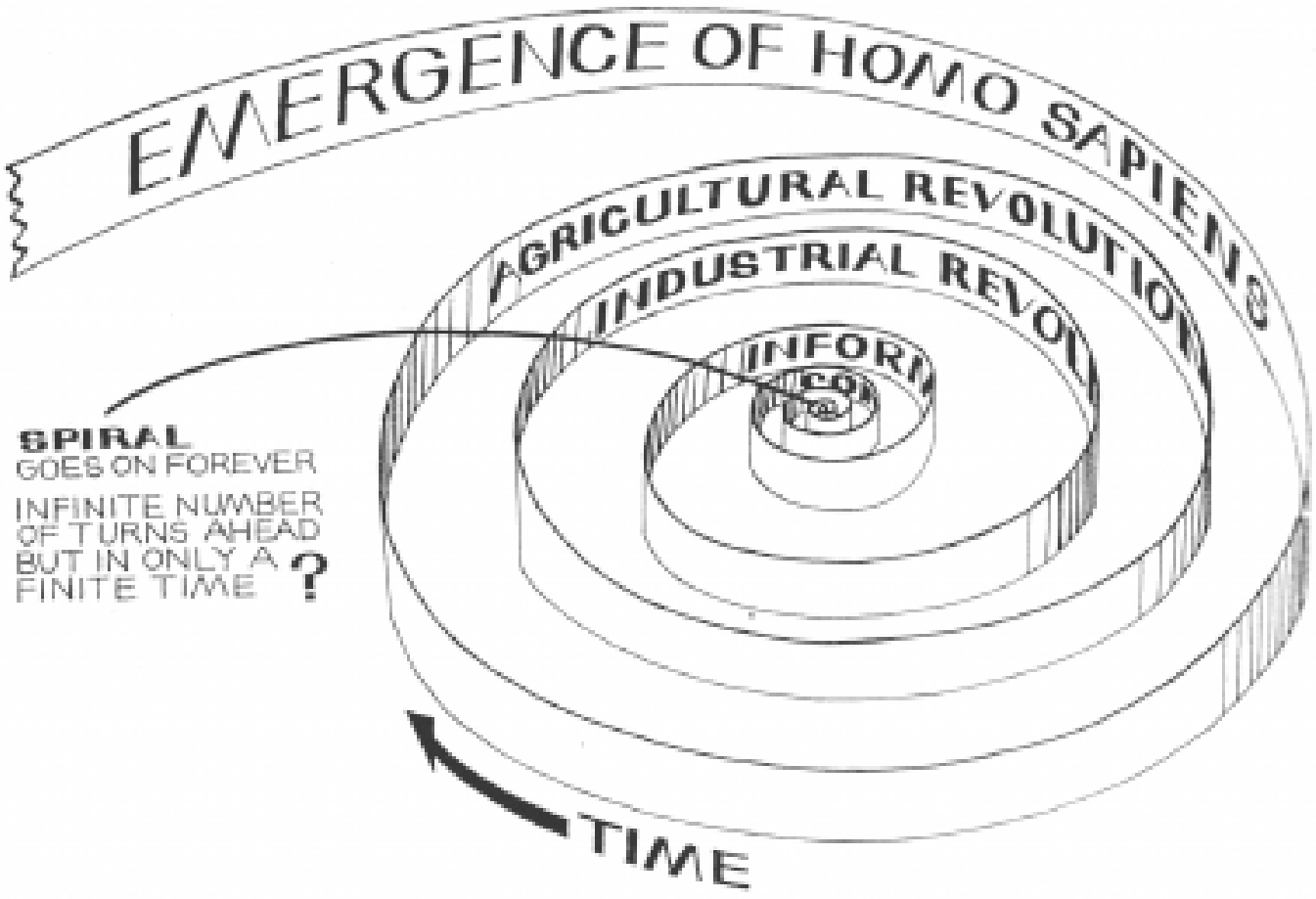
back 2

creativity?

Why do we need

creativity?

A new ecology



the crazy rate of change

Generations	
10,000	speech
750	agriculture
500	writing
400	libraries
40	universities
24	printing
16	accurate clocks
5	telephone
4	radio
3	television
2	computers
1	internet/email
0	gps, mp3, youtube, web2.0 etc. etc.

choices choices choices

need to stand out

the rise of “cool”
the importance of design

it is not that things are changing faster, but rather that the rate of change itself is increasing!

— ray kurzweil

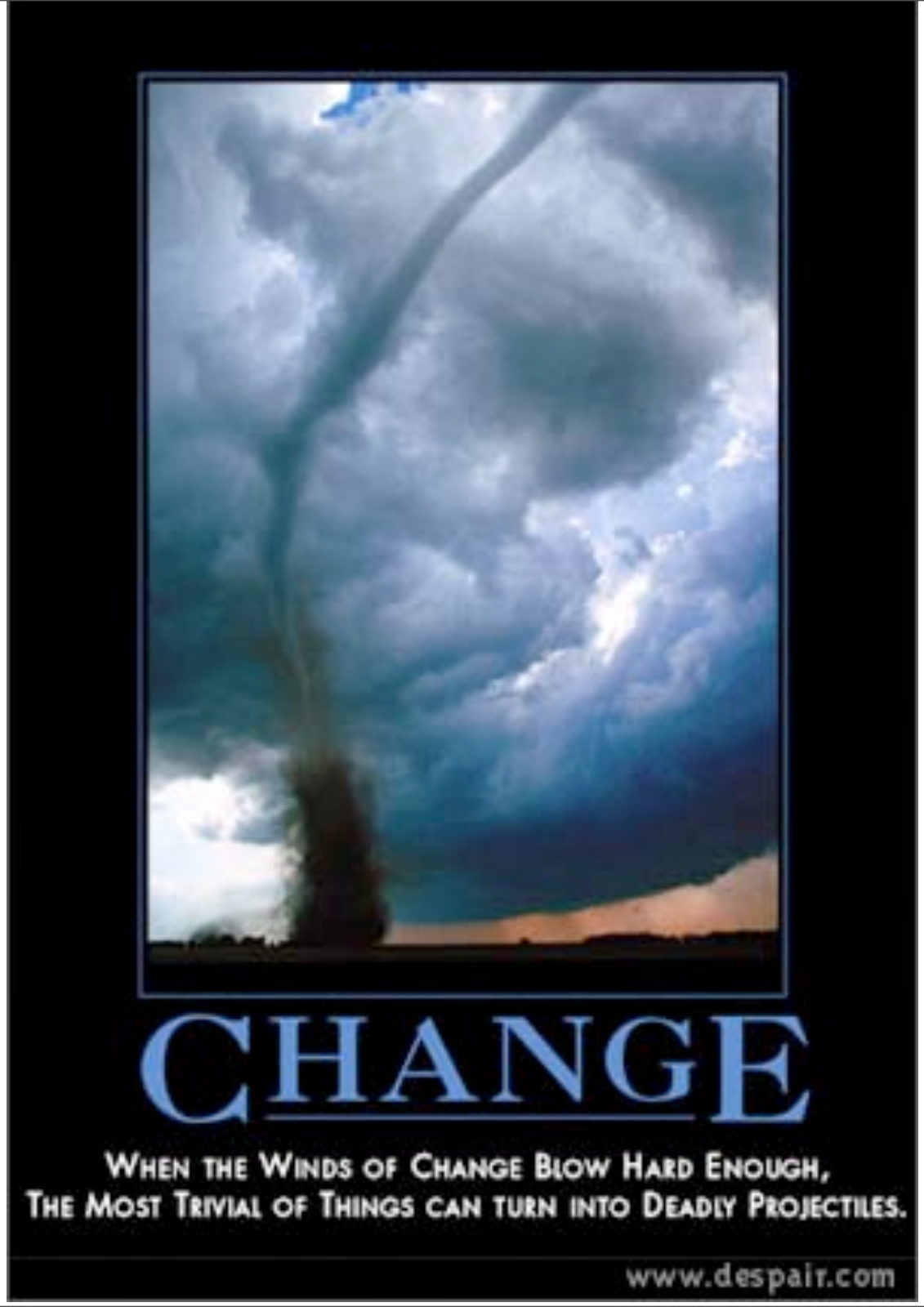
As a teacher what distractions are you competing against?

&

How do you stand out in the minds of your kids?

A new ecology

change


CHANGE
When the Winds of Change Blow Hard Enough,
The Most Trivial of Things can turn into Deadly Projectiles.
www.despair.com

it is a question of

survival

what can we learn
from
nature?

what can we learn
from
a fish?

trinidadian guppy

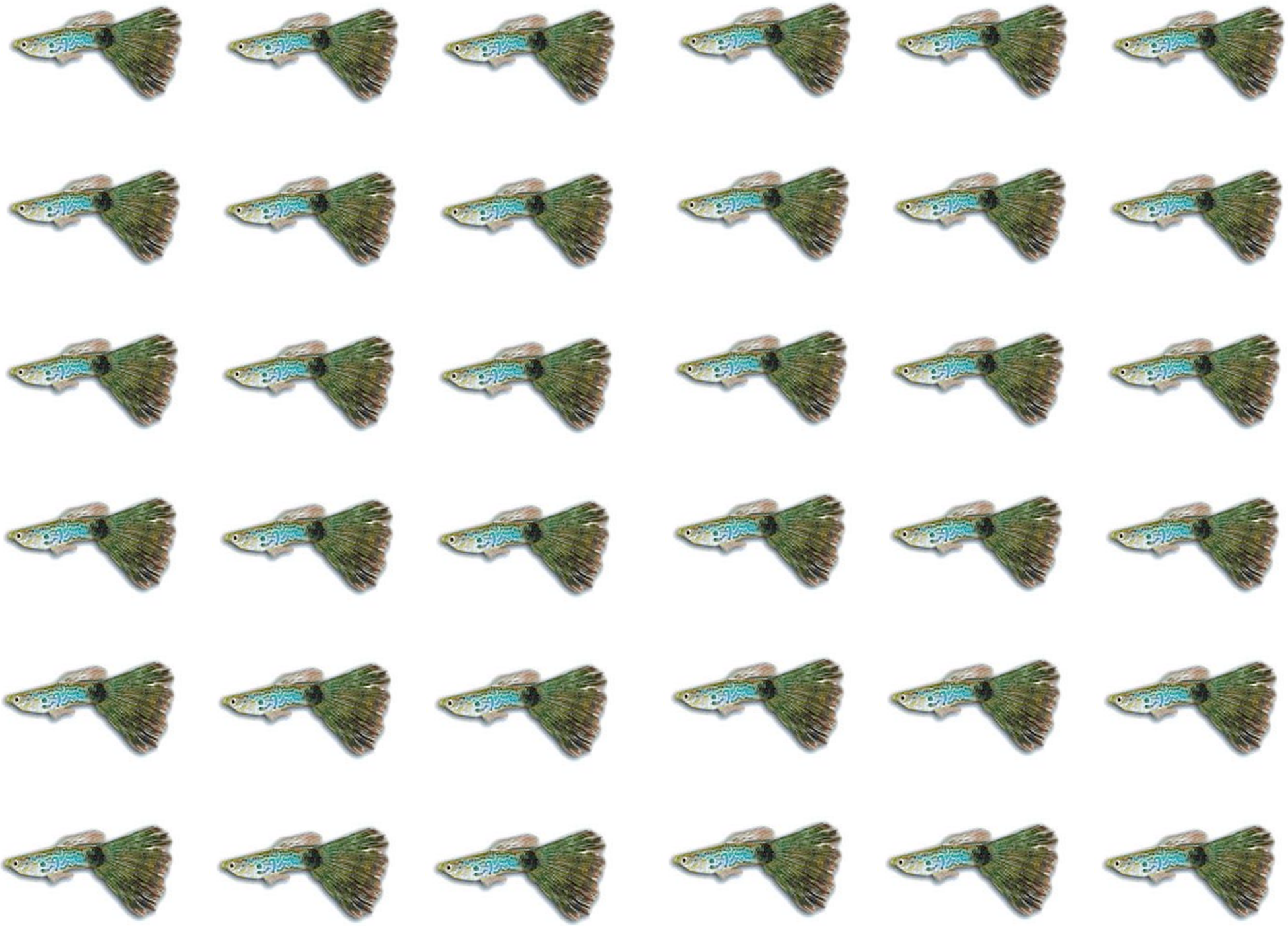
flexible

flexible

reproductive strategy

good times

bad times



so?

change

the best way to have
a good idea is to
have lots of ideas

— linus pauling (nobel laureate)

creativity
is the

but what is
creativity?

examples

2nd

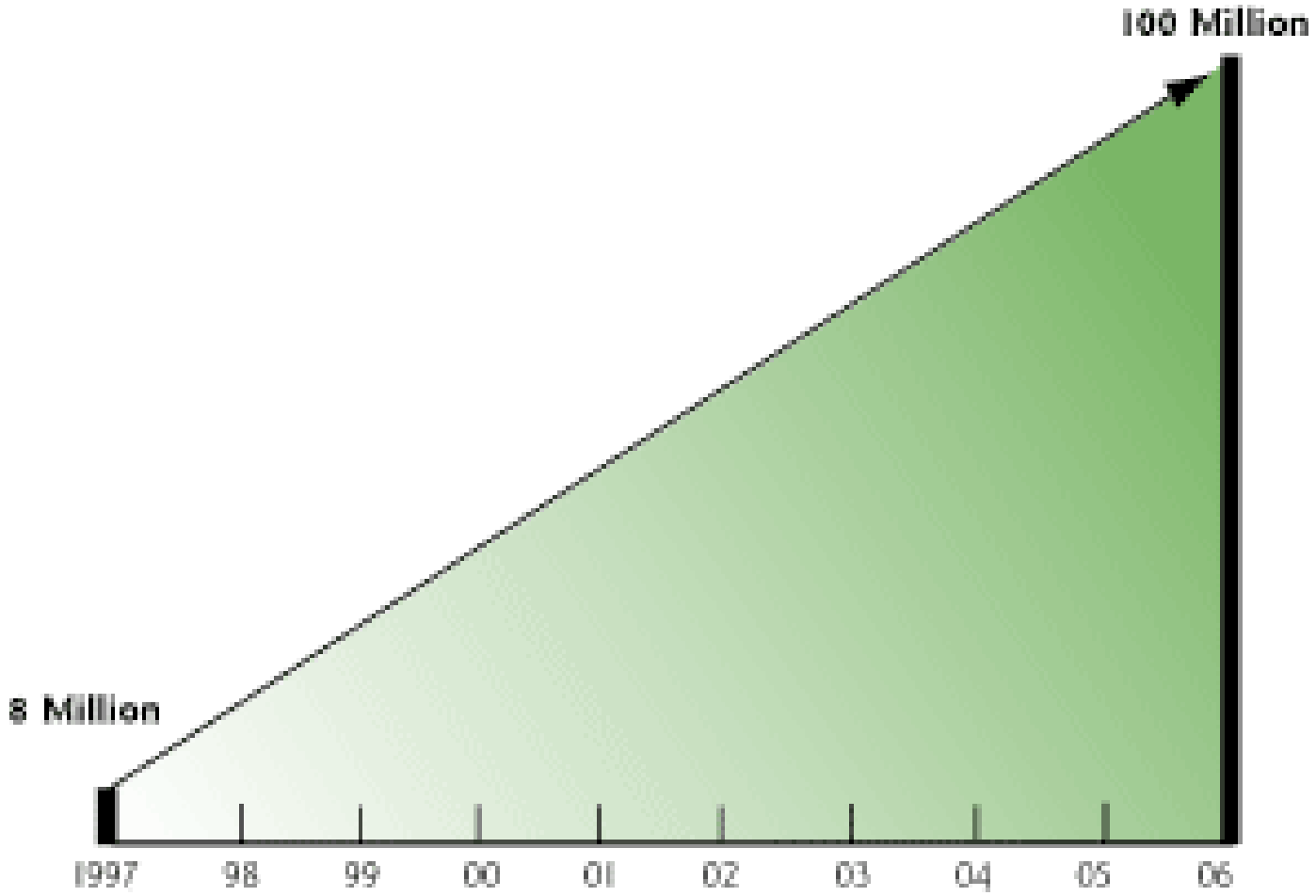
Lage Raho MUNNA BHAI

a RAJKUMAR HIRANI film a VIDHU VINOD CHOPRA production

www.erosentertainment.com

fantastic
social innovation

micro credit



Millions of Microcredit Borrowers Worldwide

Toilet humor?

Schiphol
Nederlandse Spoorwegen
Amsterdam Airport Schiphol
Schiphol

a bug

a feature

post 9/11 + brown guy +
camera + airport + toilet

=

BAD IDEA!

post 9/11 + brown guy +
camera + airport + toilet

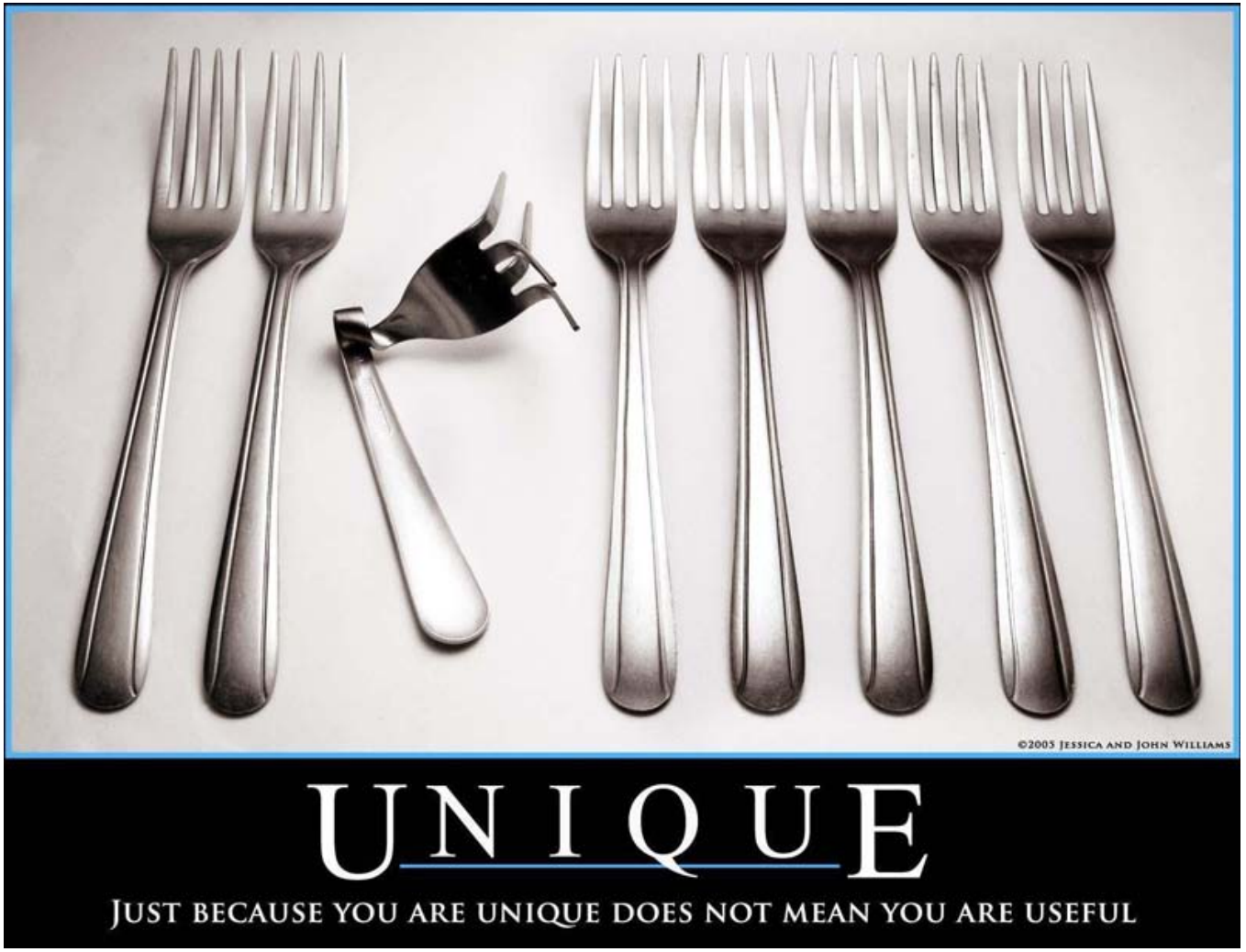
=

BAD IDEA!

what's common?

creativity

novel, fresh, unusual,
unique, surprising, startling,
astonishing, astounding,
germinal, trendsetting,
radical, revolutionary,
influential, pioneering...


©2003 Jessica and John Williams
UNIQUE
Just because you are unique does not mean you are useful

effective, valuable, important, significant, essential, necessary, logical, sensible, relevant, appropriate, adequate, effective, functional, operable, useful, user-friendly

whole, organic, ordered, arranged, organized, formed, complete, elegant, graceful, charming, attractive, refined, complex, intricate, ornate, interesting, understandable, meaningful, clear, self-explanatory, well crafted, skillful, well made, meticulous, careful

thus a creative product is

novel

effective

whole

creativity is a goal orientated **process** of developing solutions that are

novel

effective

whole

Think back to original examples... are they NEW!

(novel effective whole)

Pause

How do we get
lots of new ideas?

the research?

5 steps

Preparation

interest & immersion in problems

Incubation

churning below threshold of consciousness

Insight:

Aha, pieces falling into place

Evaluation

Is this worth pursuing?

Elaboration

Translation into final product

yeah, whatever!

research can only take you so far*

* but it does help us identify some myths!

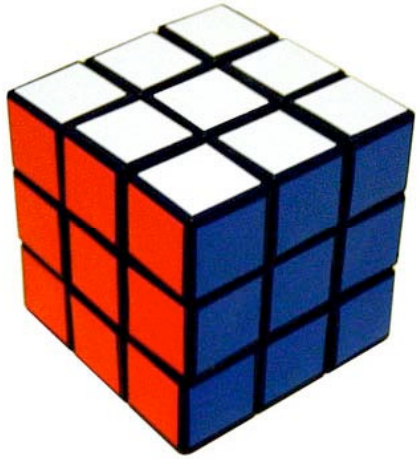
creativity is a big sudden insight available only to people with special talents!
oger Edwards

creativity is a big sudden insight available only to people with special talents!
wrong!
ger Edwards

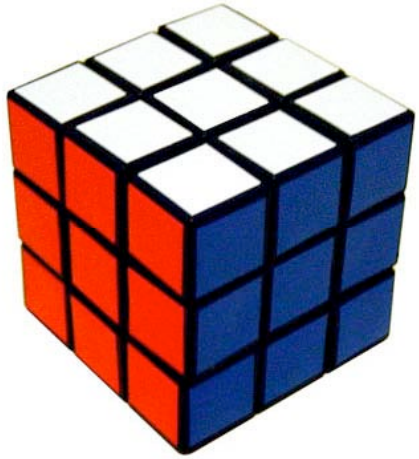
creativity as variations on a theme

creativity as variations on a theme

that let us see the world differently



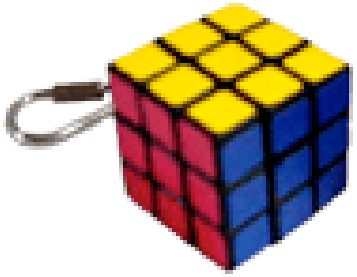
consider the rubik cube



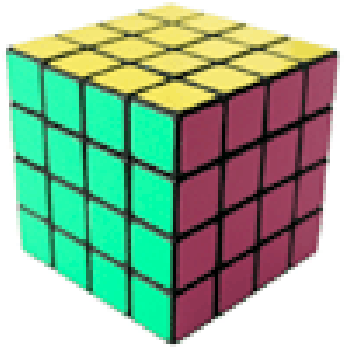
consider the rubik cube

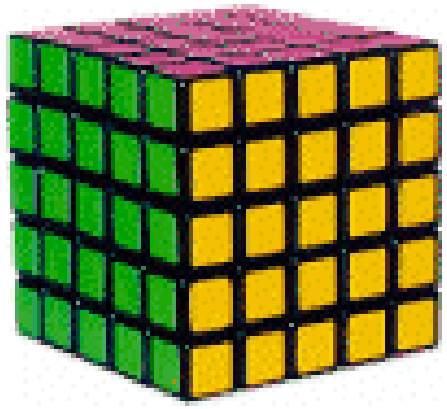
can you come up with some variations?

superficial variations



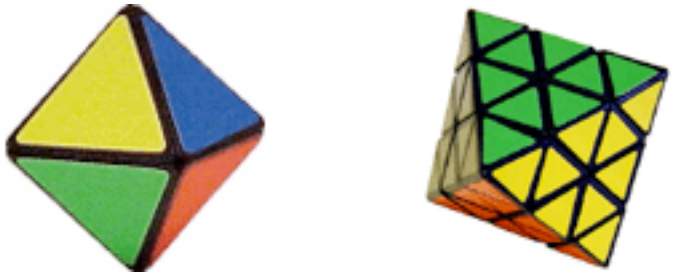
why 3 x 3 x 3?

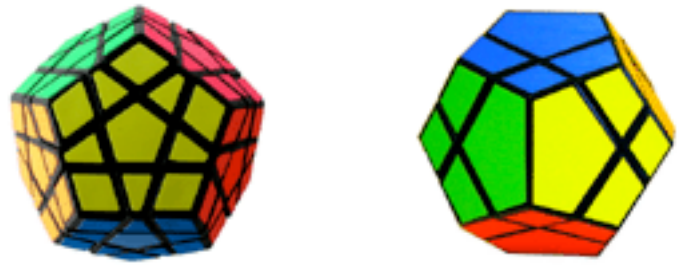




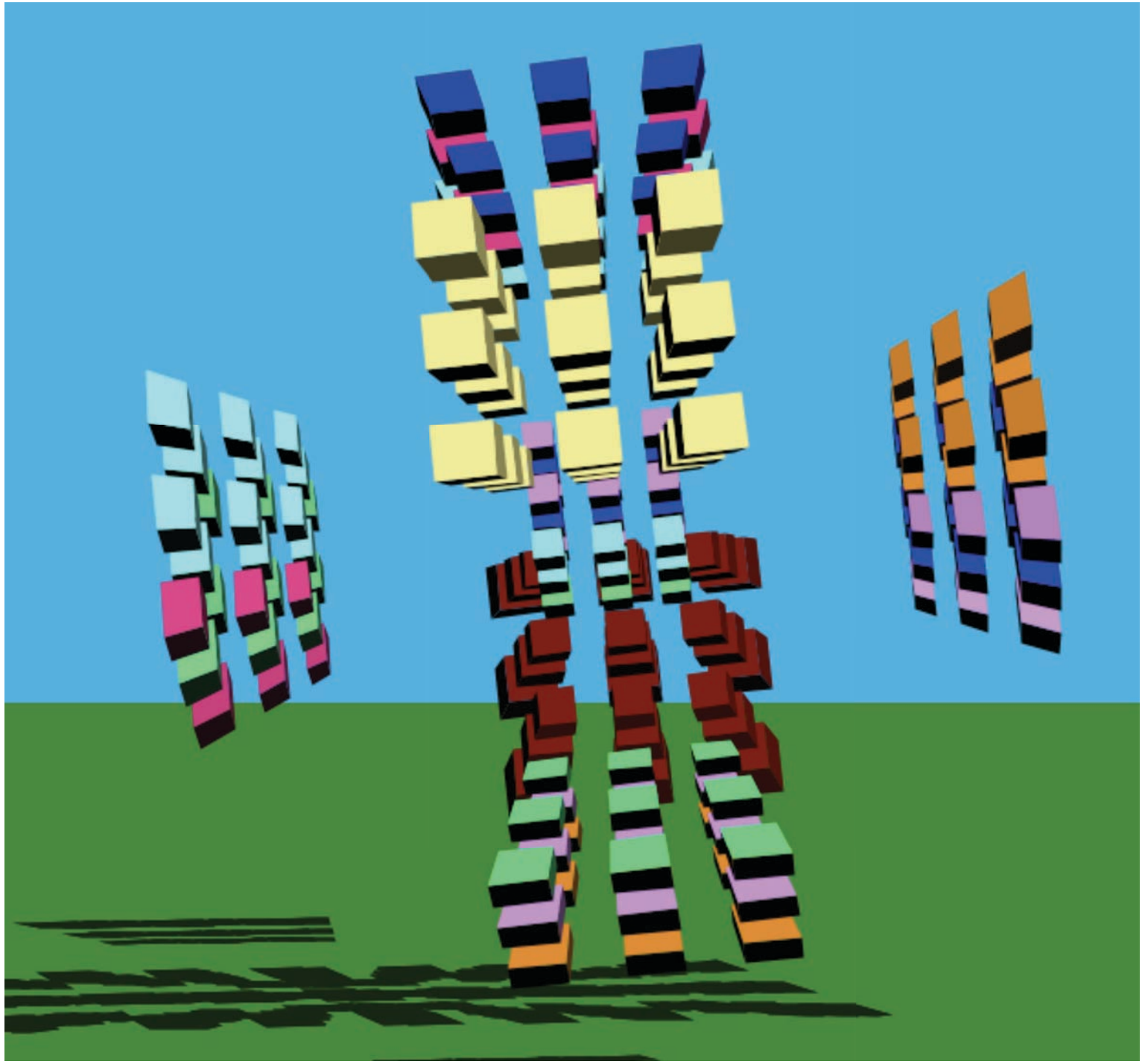
why n x n x n?

why platonic solids?





why 3-d?

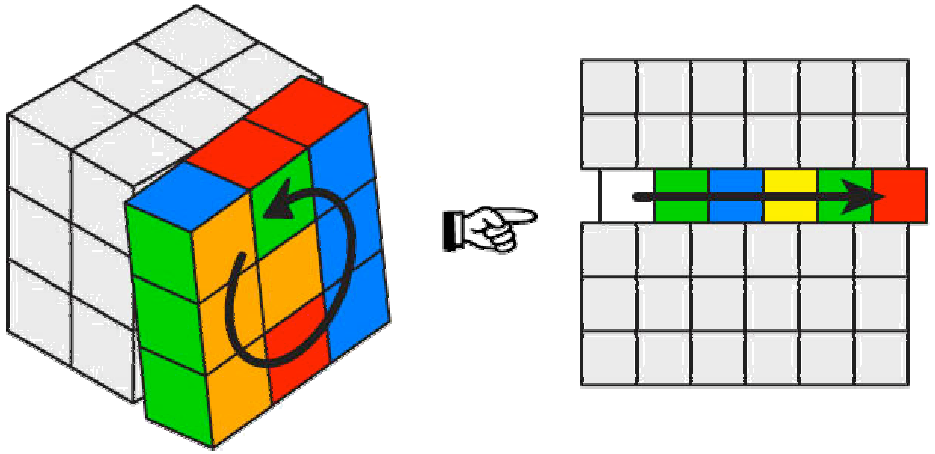


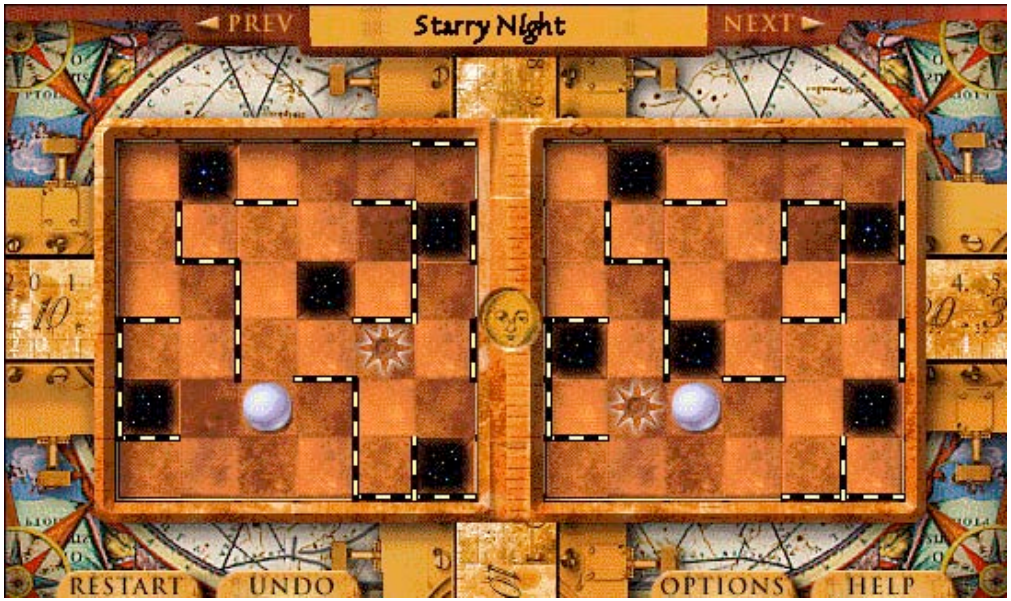
objection!

(i hear you say)

this is not real creativity!

simultaneous motion?



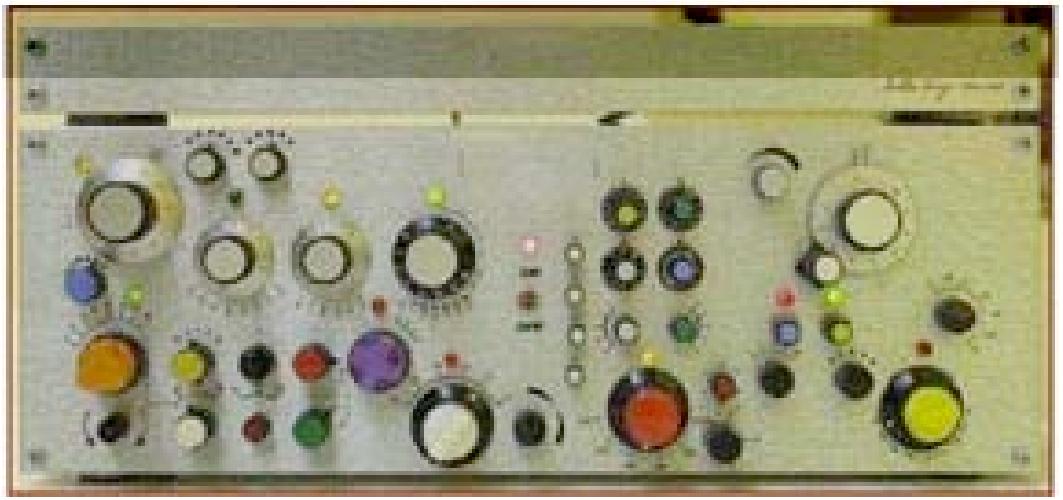


Double Maze

scottkim.com

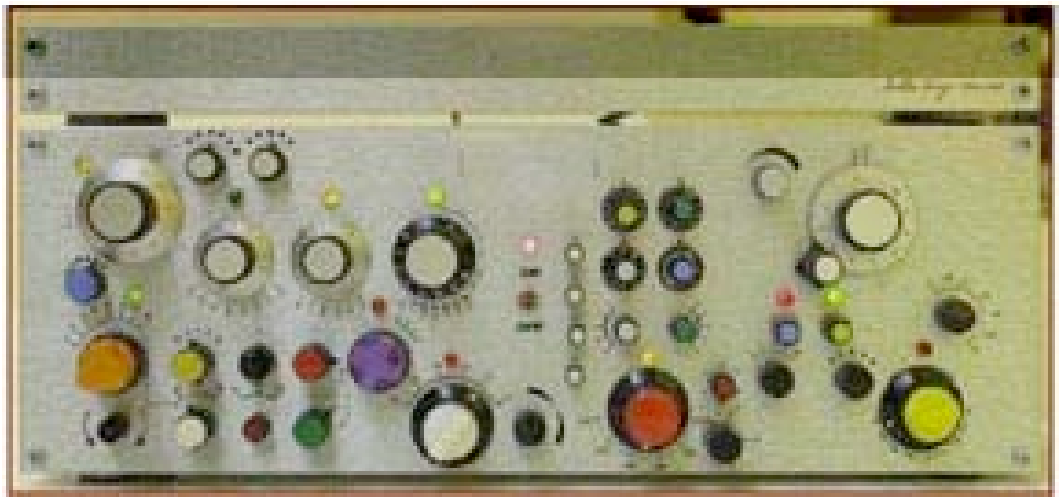
creativity is nothing but...

tweaking knobs



the right

tweaking knobs



How do we locate the knobs?

creativity is about

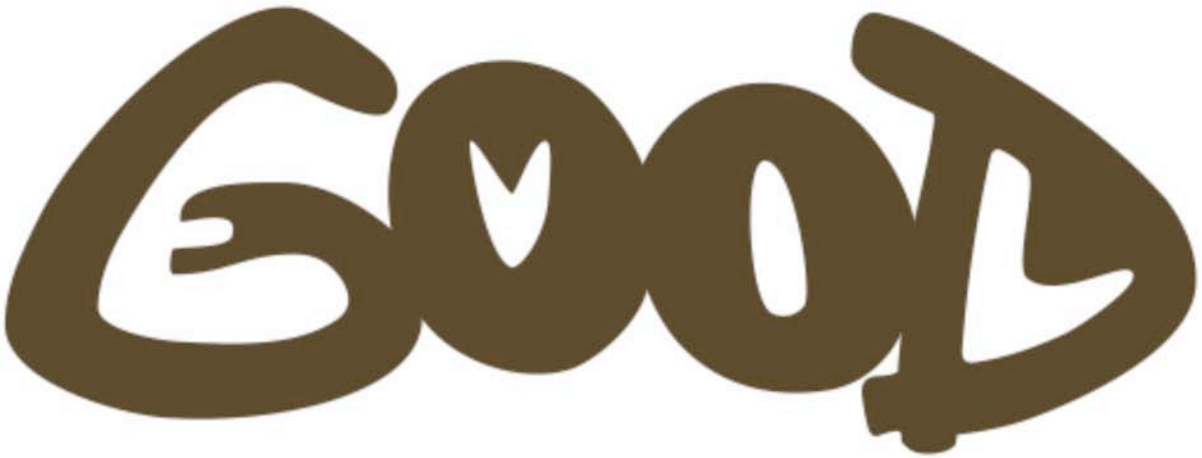
finding

the right knobs

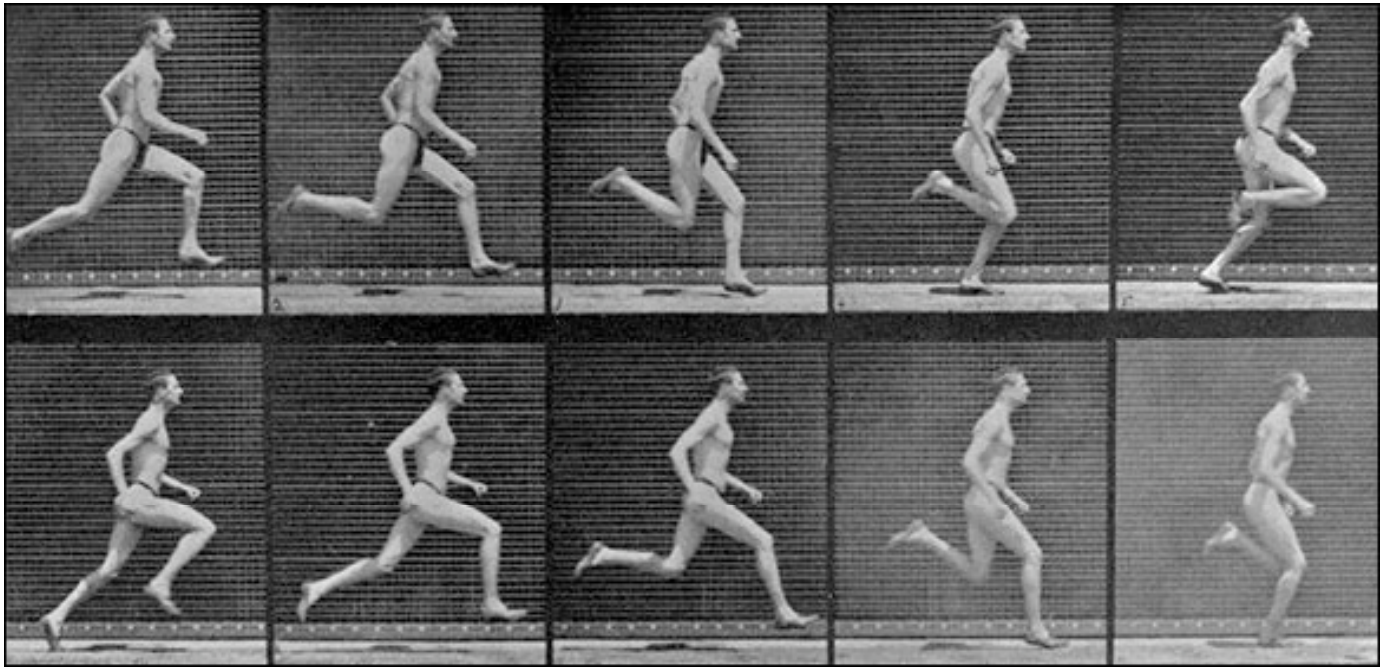
learning to see

(to wonder why?)

developing a childlike sense of wonder



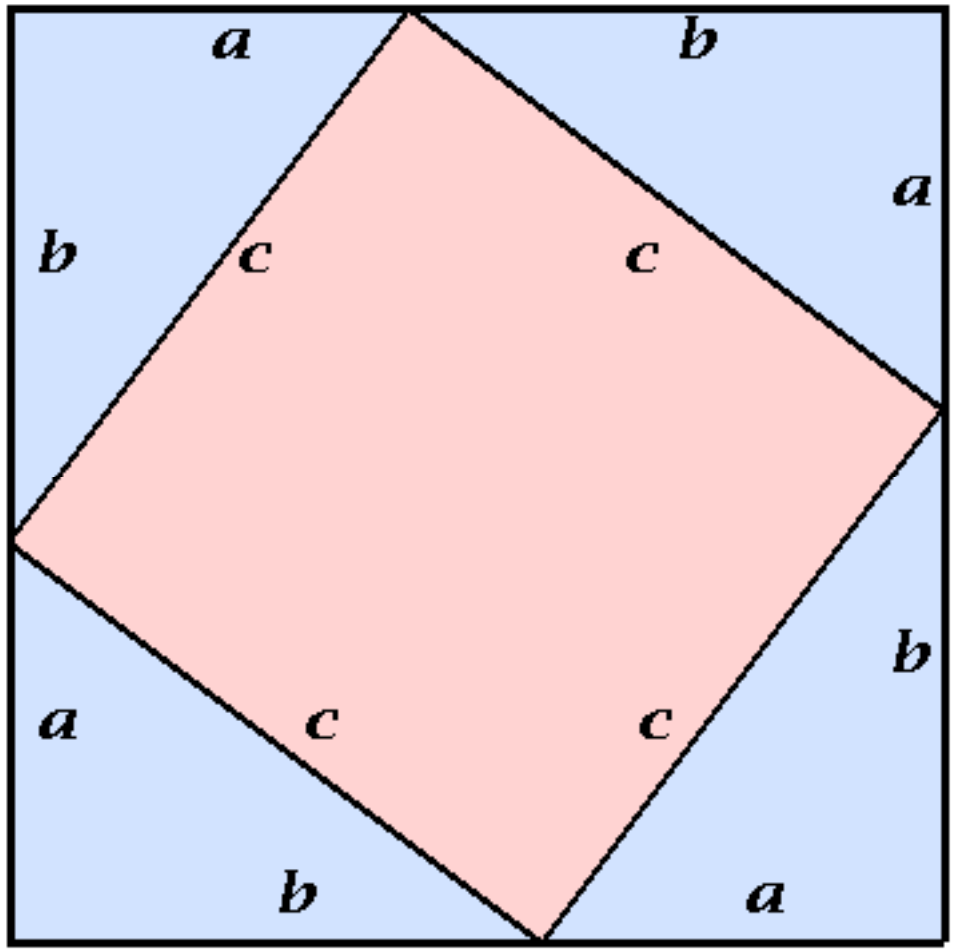
larry miller



the elliptical trainer

web based email

(sabeer bhatia)

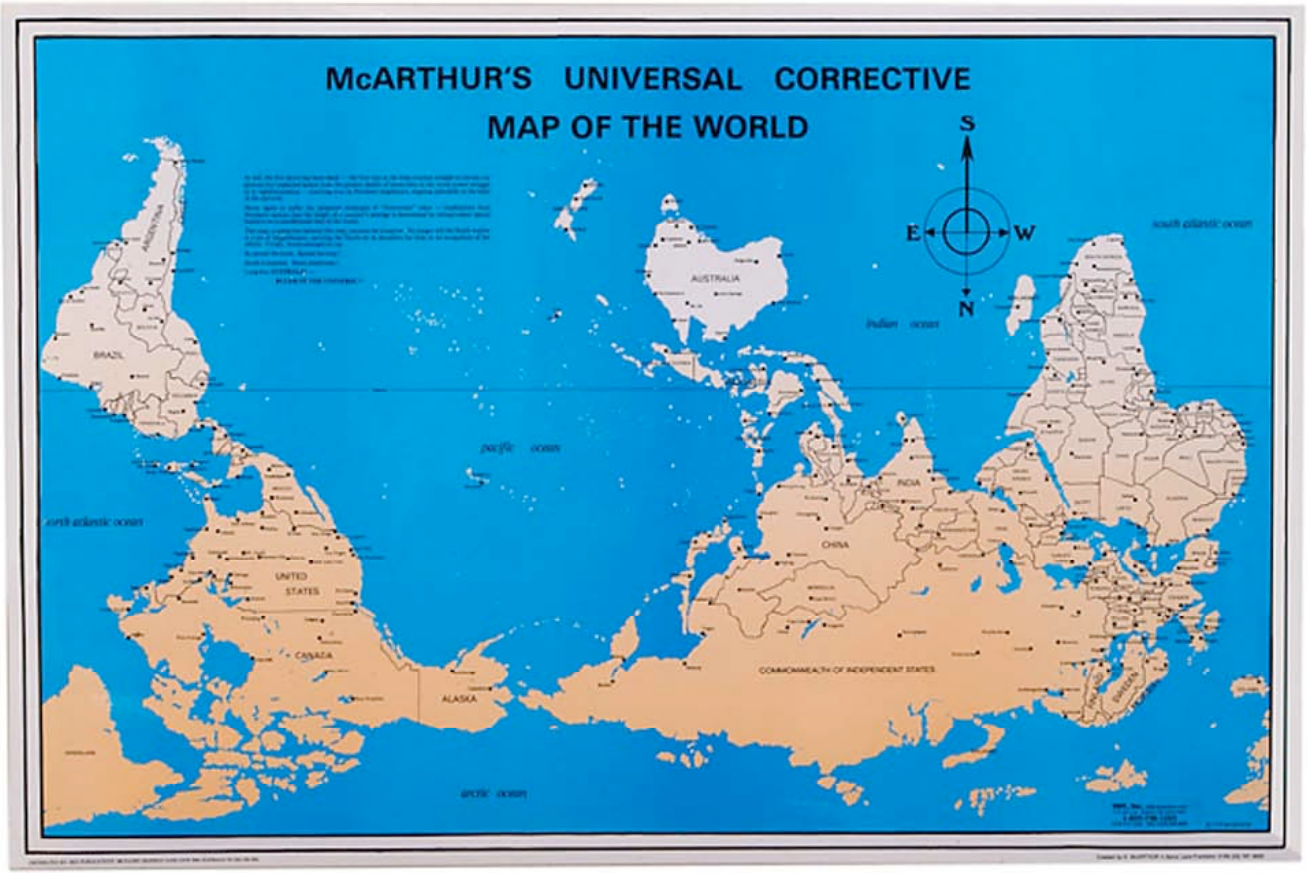

a
b
a
b
c
c
b
a
c
c
b
a

So?

what are we not seeing?

what are we not seeing?

what is your blind spot?
how can one train the eye?



what is my blind spot?
how can one train the eye?

train the eye

what are some techniques?

force

train the eye

what are some techniques?

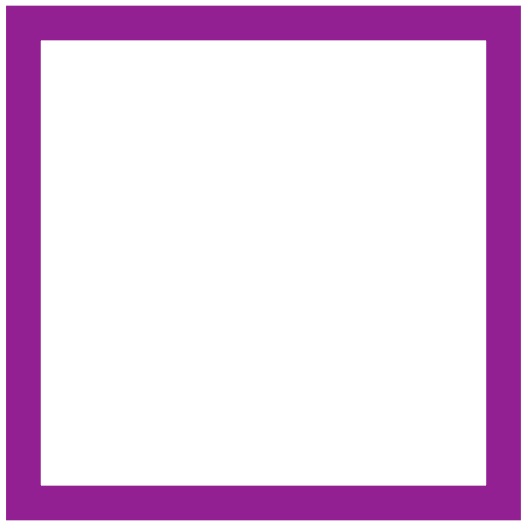
imposing a discipline

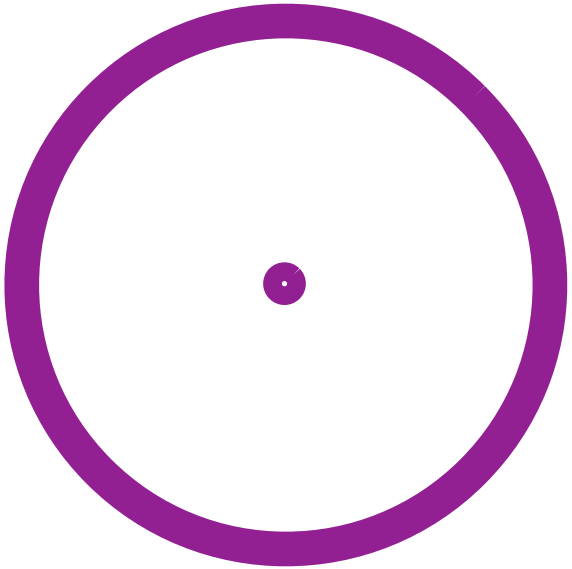
my favorite

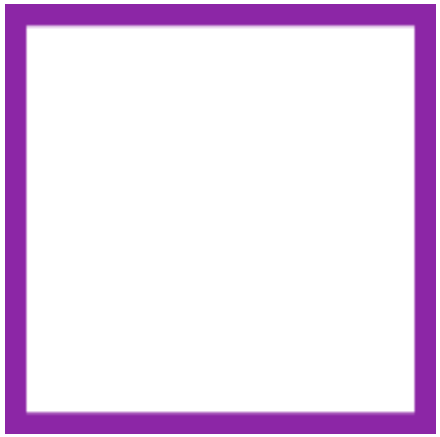
‘cos is never fails

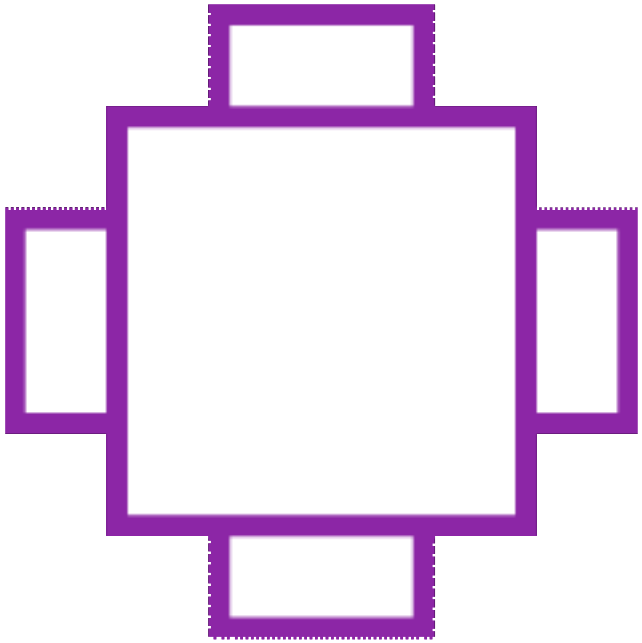
an example

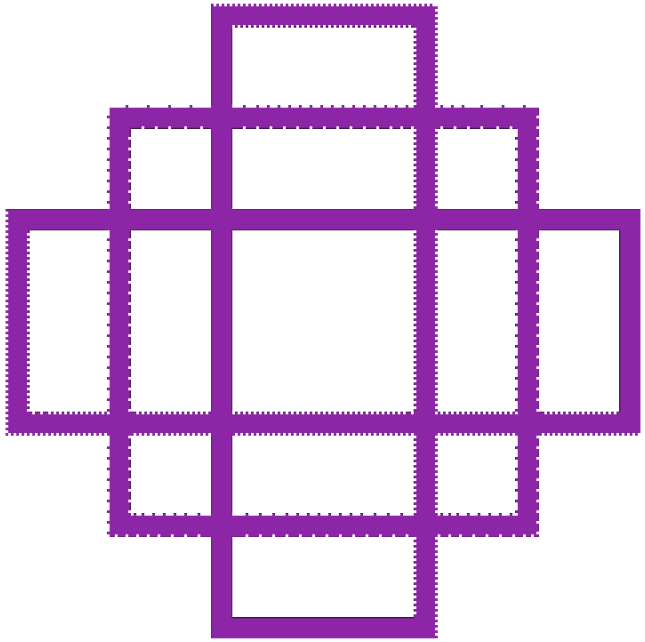
indian architecture

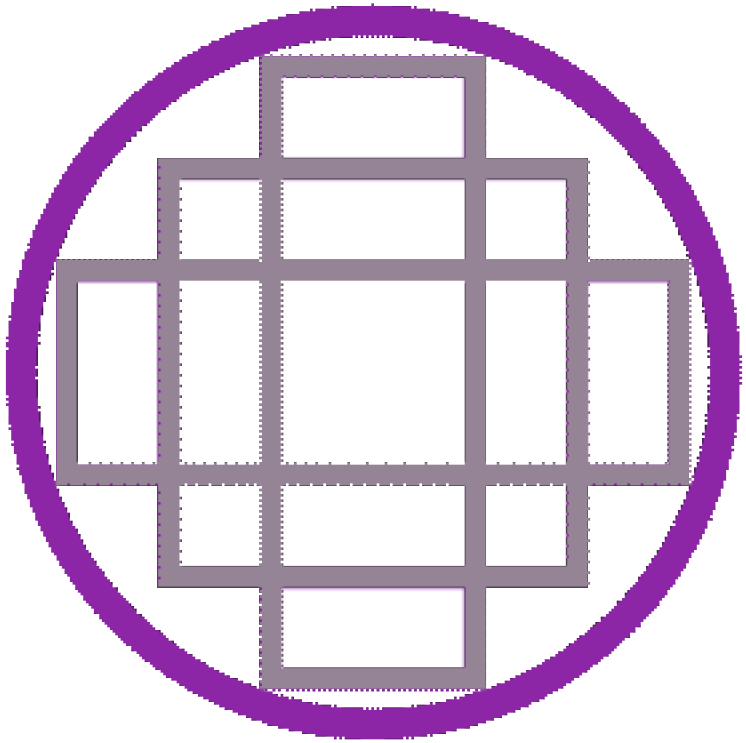


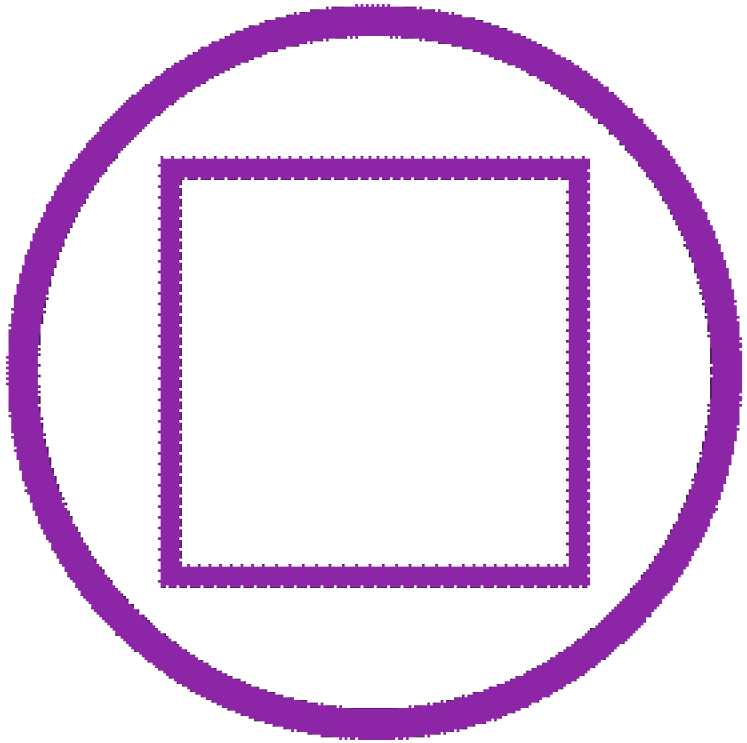


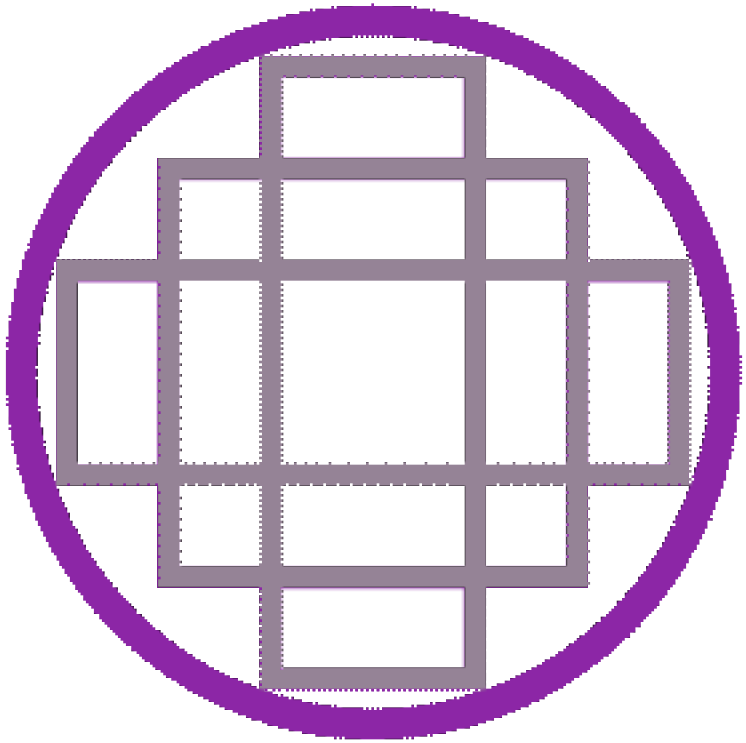


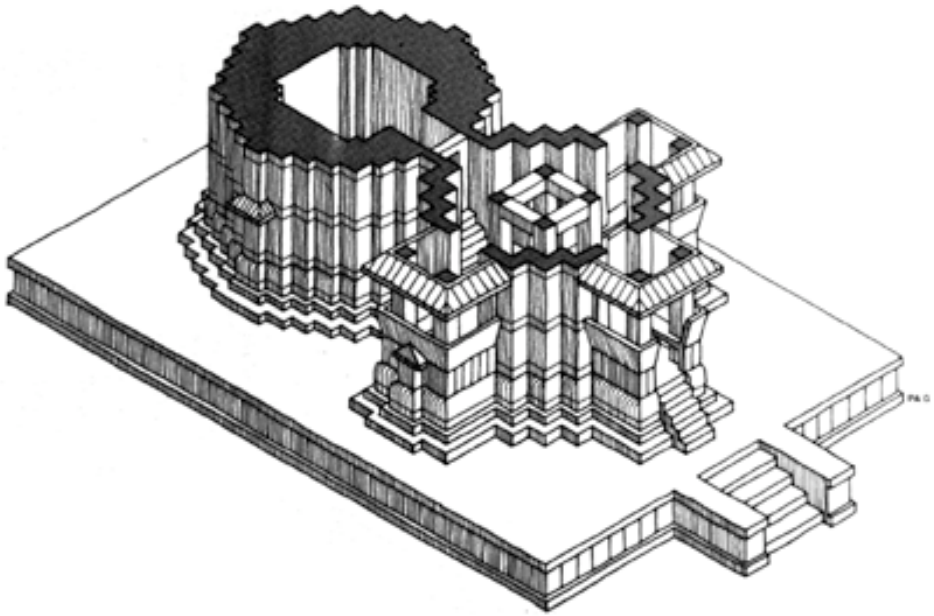


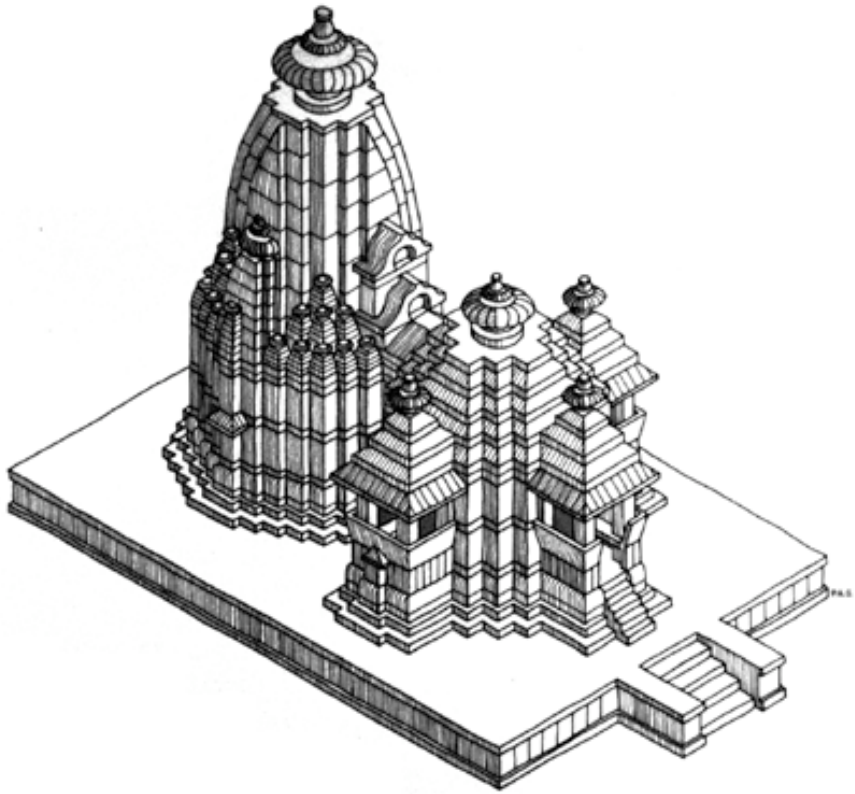












design challenge

5 minutes

List attributes of video games

Ok, what do we have?

video games

1. Levels of increasing difficulty
2. Immediate feedback
3. Entertainment/engaging
4. Interactive
5. Increasing complexity
6. Live out your fantasies
7. Learn by making mistakes
8. Role playing
9. Cheat codes to get ahead
10. Negotiation
11. Rules
12. Help menu
13. Risk taking
14. Constrained resources
15. Finite set of options
16. Incentives
17. Save and resume
18. Recognition
19. Competition
20. Targets/goals
21. Time bound
22. Colorful
23. Possibility of early exit
24. Control
25. Disincentives / punishment
26. Limited changes / start all over
27. Exploratory - open ended
28. Learning by doing
29. Integrated incidental learning
30. Networking, social and distributed learning

what if

teaching is like playing a video game?

5 minutes

teaching as

teaching as

falling in love?

teaching as

falling in love?

tending a garden?

teaching as

falling in love?

tending a garden?

coaching basketball?

teaching as

falling in love?

tending a garden?

coaching basketball?

learning to smoke

build on peer pressure, intense advertising, make it cool, make first dose easily available, make it addictive

video game...

video game...

... and a lesson plan

video game...

... and a lesson plan

... and classroom management?

video game...

... and a lesson plan

... and classroom management?

...do these metaphors matter?

do they let you
see knobs
(you didn't see before)?

quick recap

new ecology

standard
solutions

creativity
the only solution

creativity

novel effective whole

and we get there...

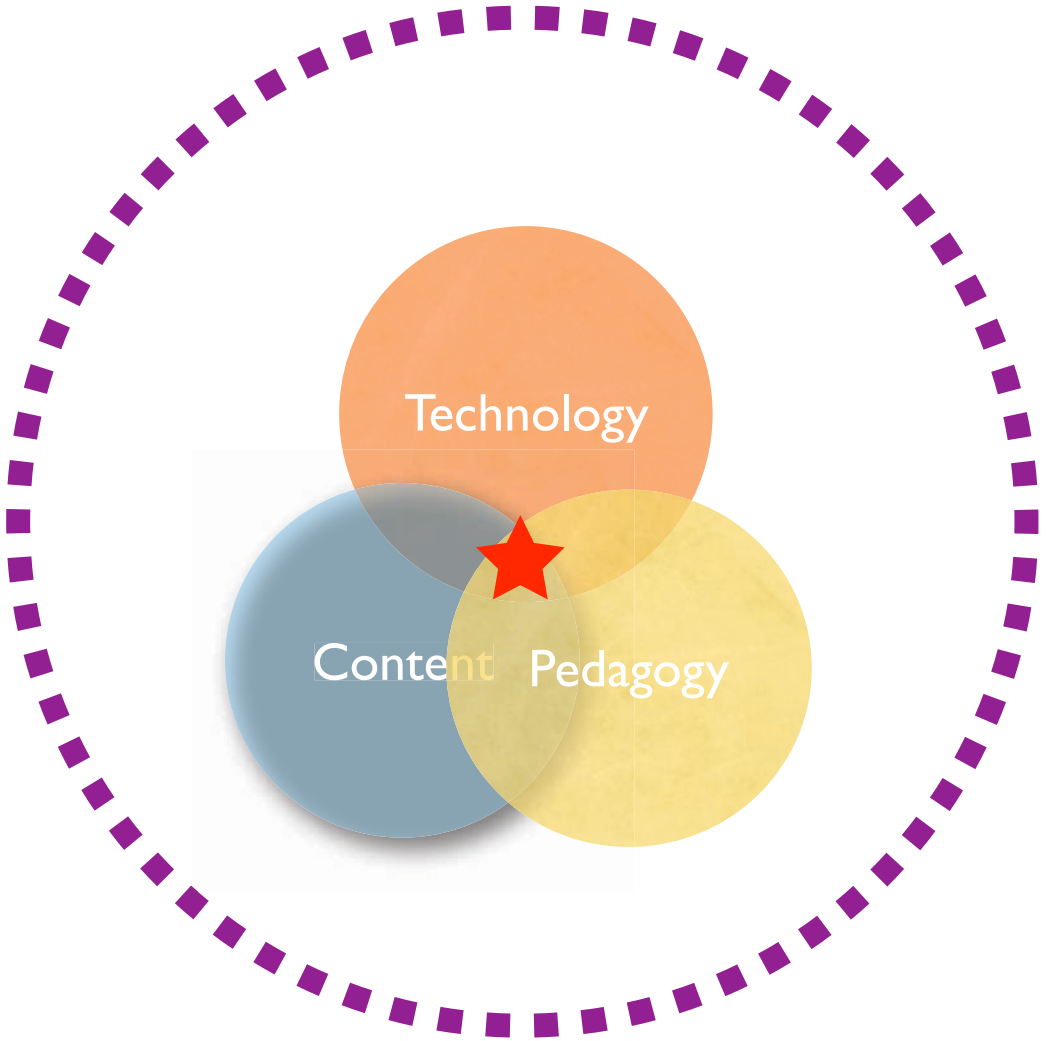
magic

playful process

of finding
& tweaking knobs

pause

Art, creativity & IT



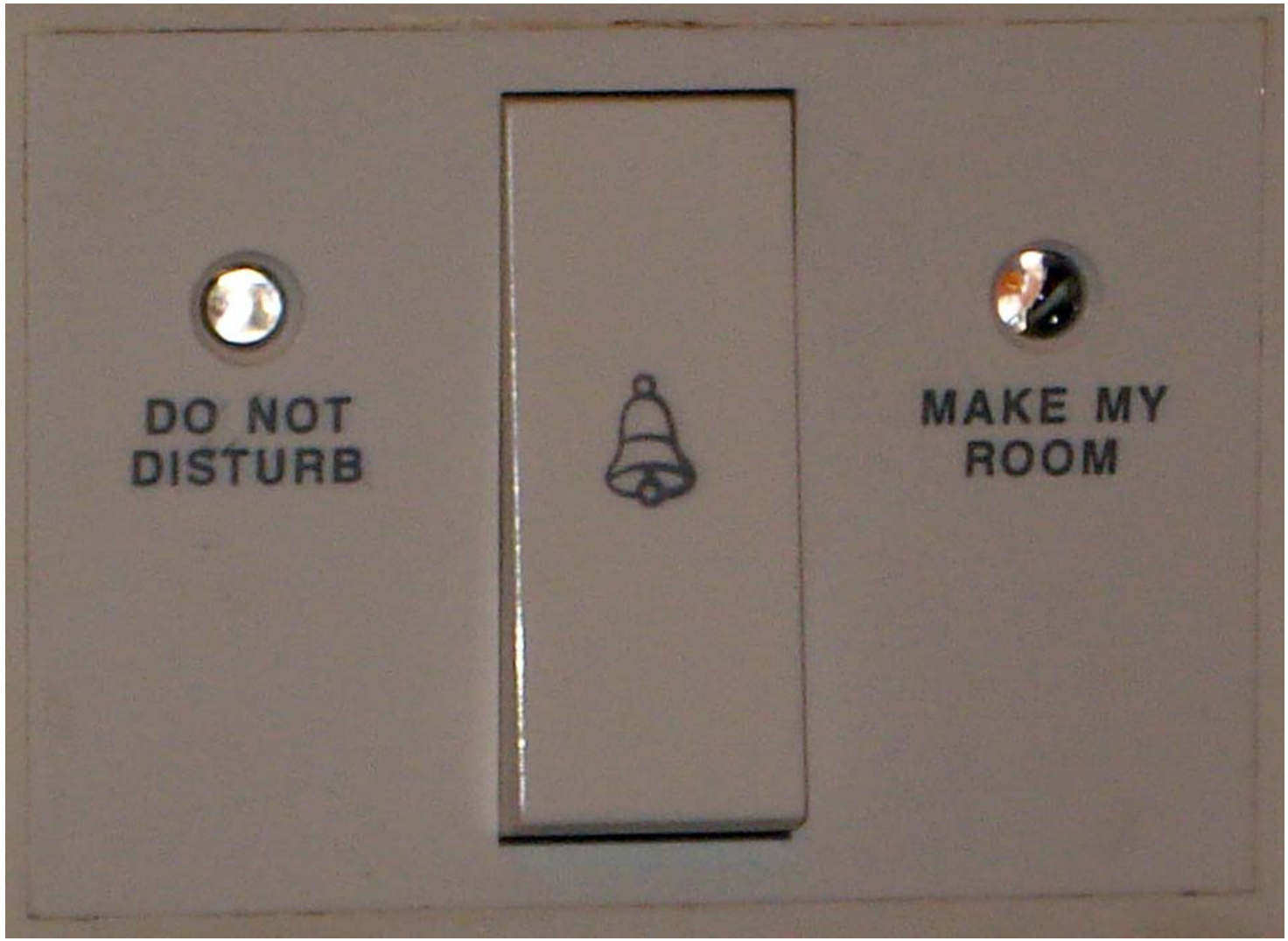
Context

mechanical	use
meaningful	integrate
generative	innovate

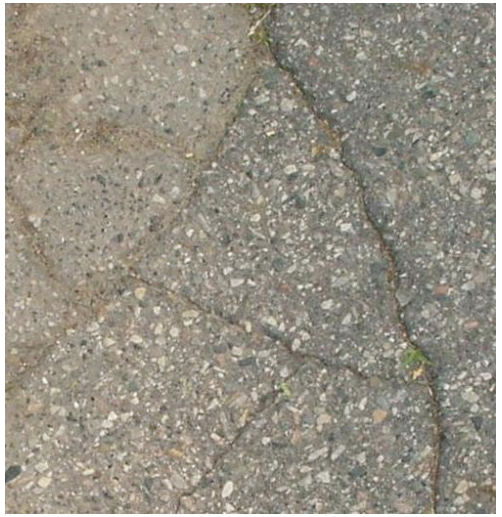
3 classroom activities

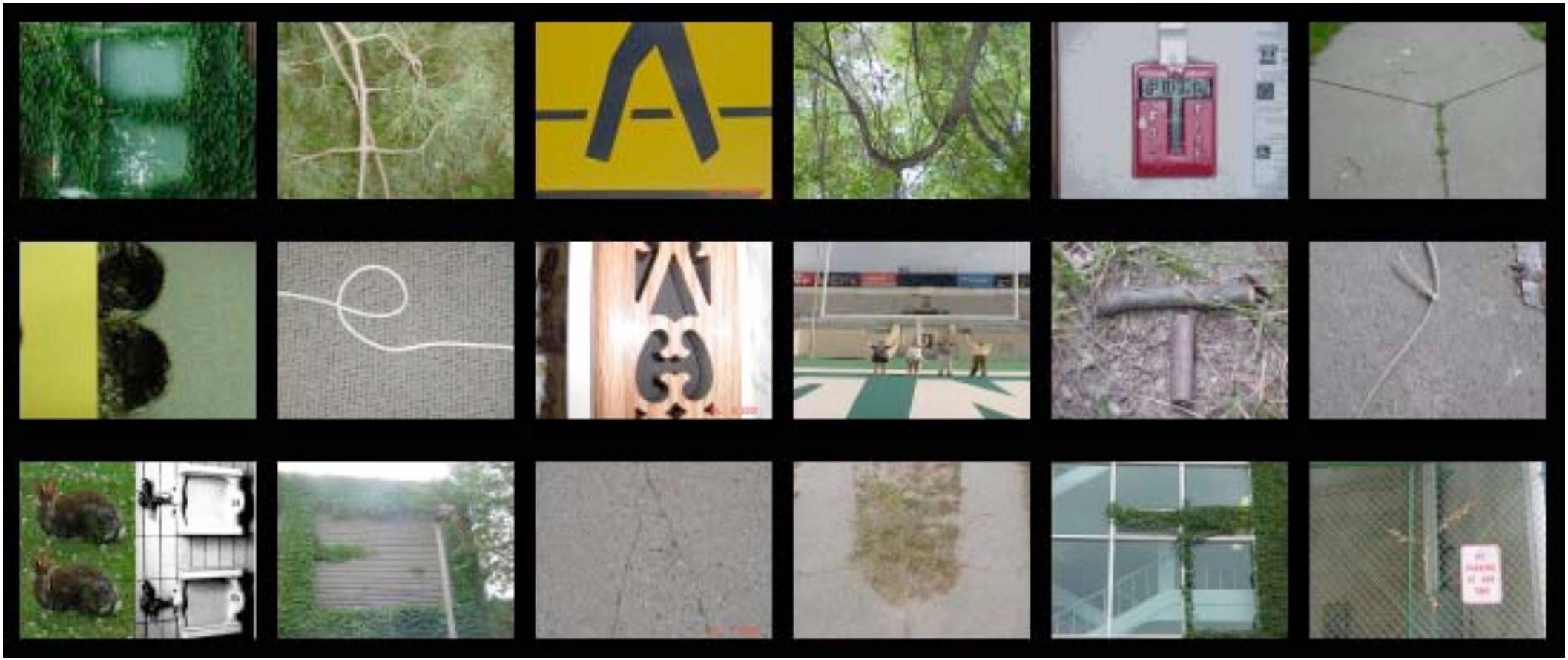
CASIO
EXILIM
CASIO
EXILIM
EXILIM

Learning 2 see


DO NOT
DISTURB
MAKE MY
ROOM

Gentle
FEMININE
NAPKINS
Created Exclusively
for Feminine Needs
Away from Home
HOSPITAL SPECIALTY CO.
Cleveland, Ohio





ROCK ROSE
CAUTION

How would you use this activity?

which grade level?

how does a ball fall?

Flip

Let’s do it!

What else can you do?

Understanding
understanding

In a teacher professional development program

What else can you do?

To end

A possible guiding structure

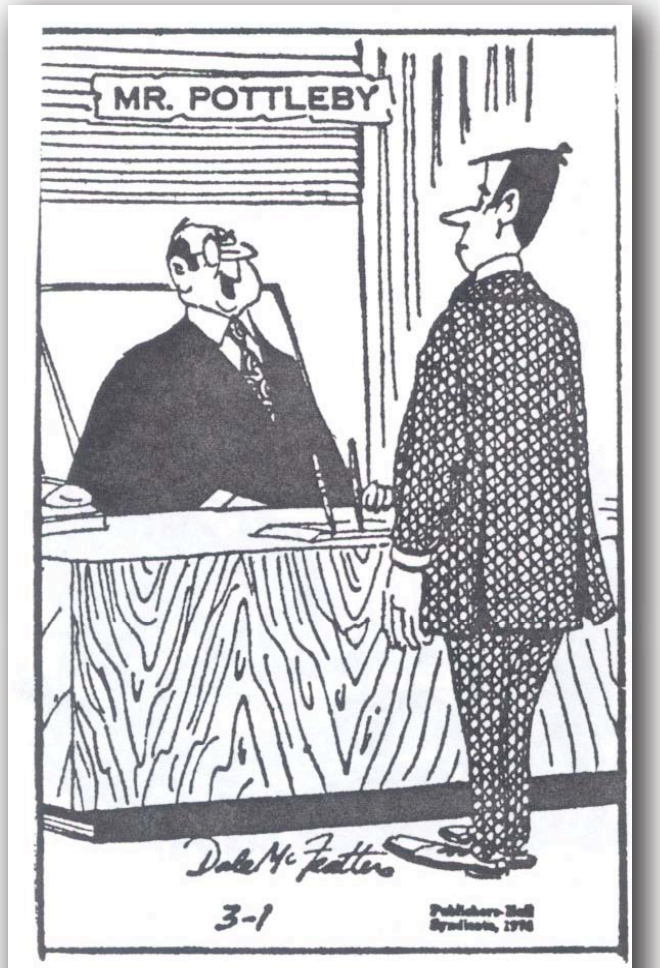
* Framework developed by Steve Yelon

Conditions	Process	Result
Be confident and willing to risk - motivated, inspired - know your stuff (T, P & C) - be driven	Seek and find problems - ask questions - seek problems in an enjoyable domain - express the problem	Artful / Creative instruction - Produce applications that are Novel, Effective & Whole
Create opportunities to think - reduce threat - find time - remove distractions	Create opportunities to think - don't evaluate early - make unusual associations - restructure the problem	(be prepared to fail, and go back to step 1)

* Framework developed by Steve Yelon

creativity **killers**

"Never, ever, think outside the box."



"We expect our young executives to produce creative, innovative ideas, without upsetting our time-honored customs."

not invented here

let me play devil's advocate

this can't be done

done that and failed

what does s/he know

to end...

start small
& keep playing

how can you make the
familiar strange?
or the strange familiar?

remember the photo-shoot assignment

making a purple cow!

a final word
from our favorite
philosopher

short clip from “dead poets society”

thanks

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