

A Theory of Fun

!! Mtg @ 2pm !!

? Level 3
Balance ?



+ Doodle more!

created content?

3257, -196, 0



10 Years Later

Raph Koster

It's probably a good idea to start out recapping.

A Theory of Fun started out as a talk at the very first Austin Game Conference.

"Fun is just another word for learning."

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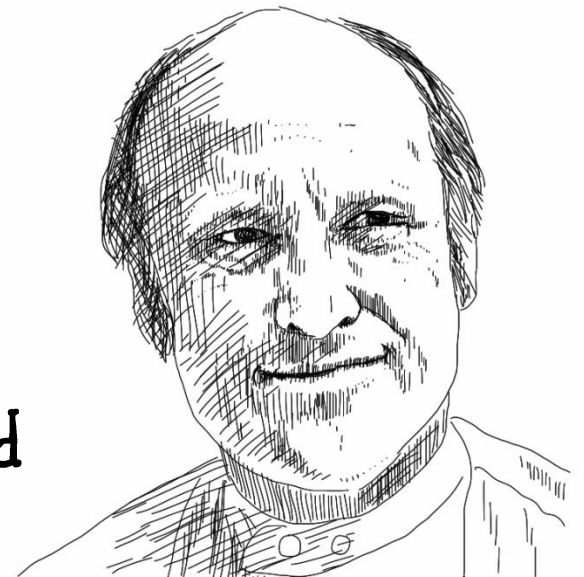
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Ahem.

Excuse me.

Chris Crawford



It's probably a good idea to start out recapping.

A Theory of Fun started out as a talk at the very first Austin Game Conference.

When I said it first, it was "fun is the emotional response to learning."

Chris Crawford

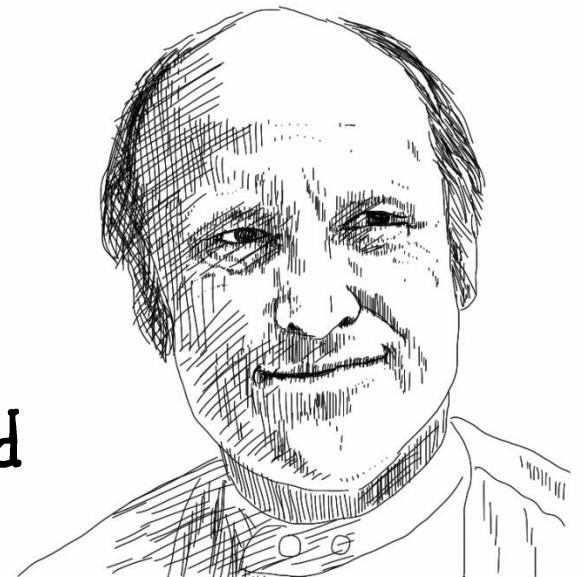


It's probably a good idea to start out recapping.

A Theory of Fun started out as a talk at the very first Austin Game Conference.

Pithier. Subtler. I daresay, more accurate.
And I am sure you want to quote correctly.

Chris Crawford



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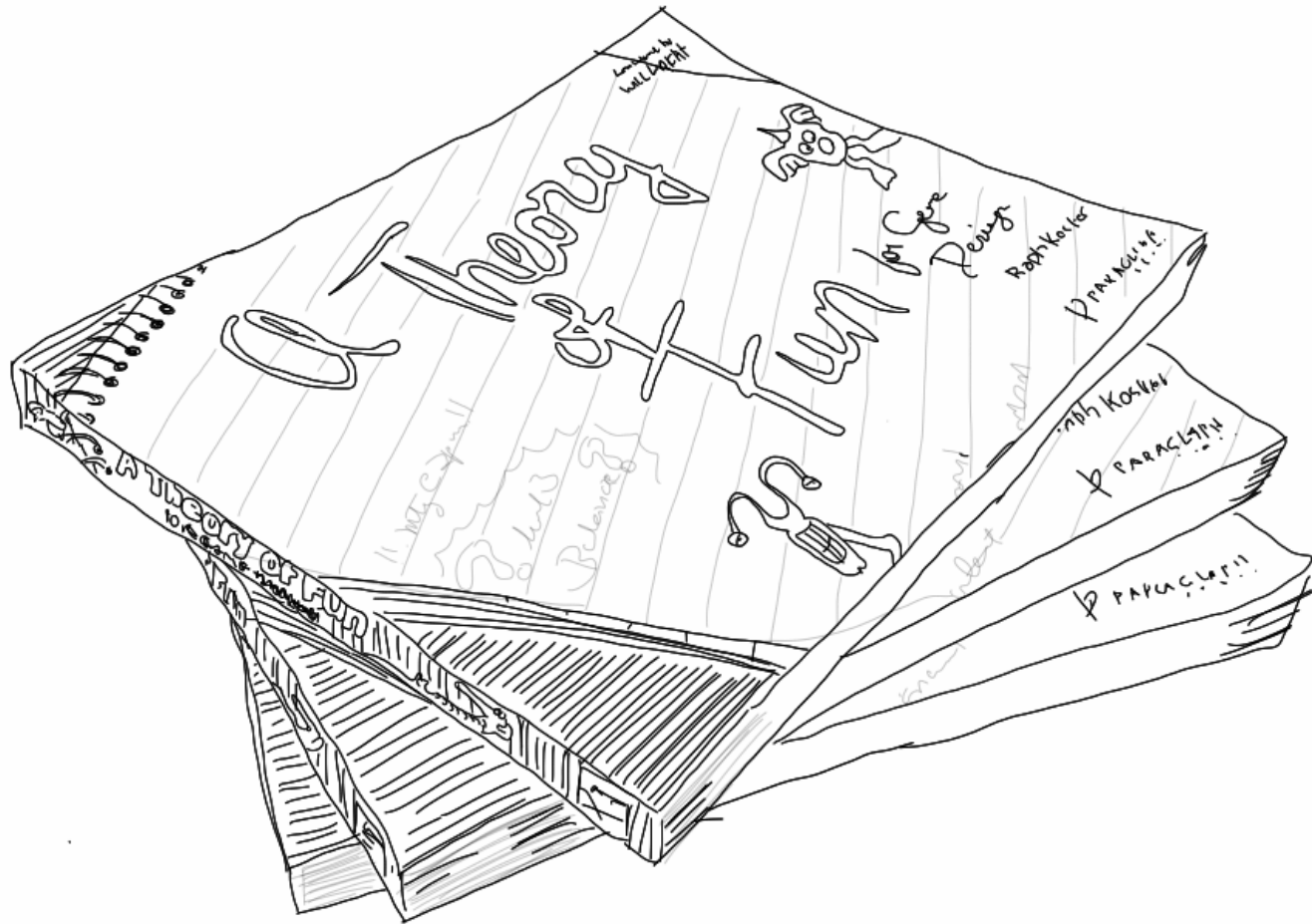
A Theory of Fun started out as a talk at the very first Austin Game Conference.

That's all.
Pray, continue.

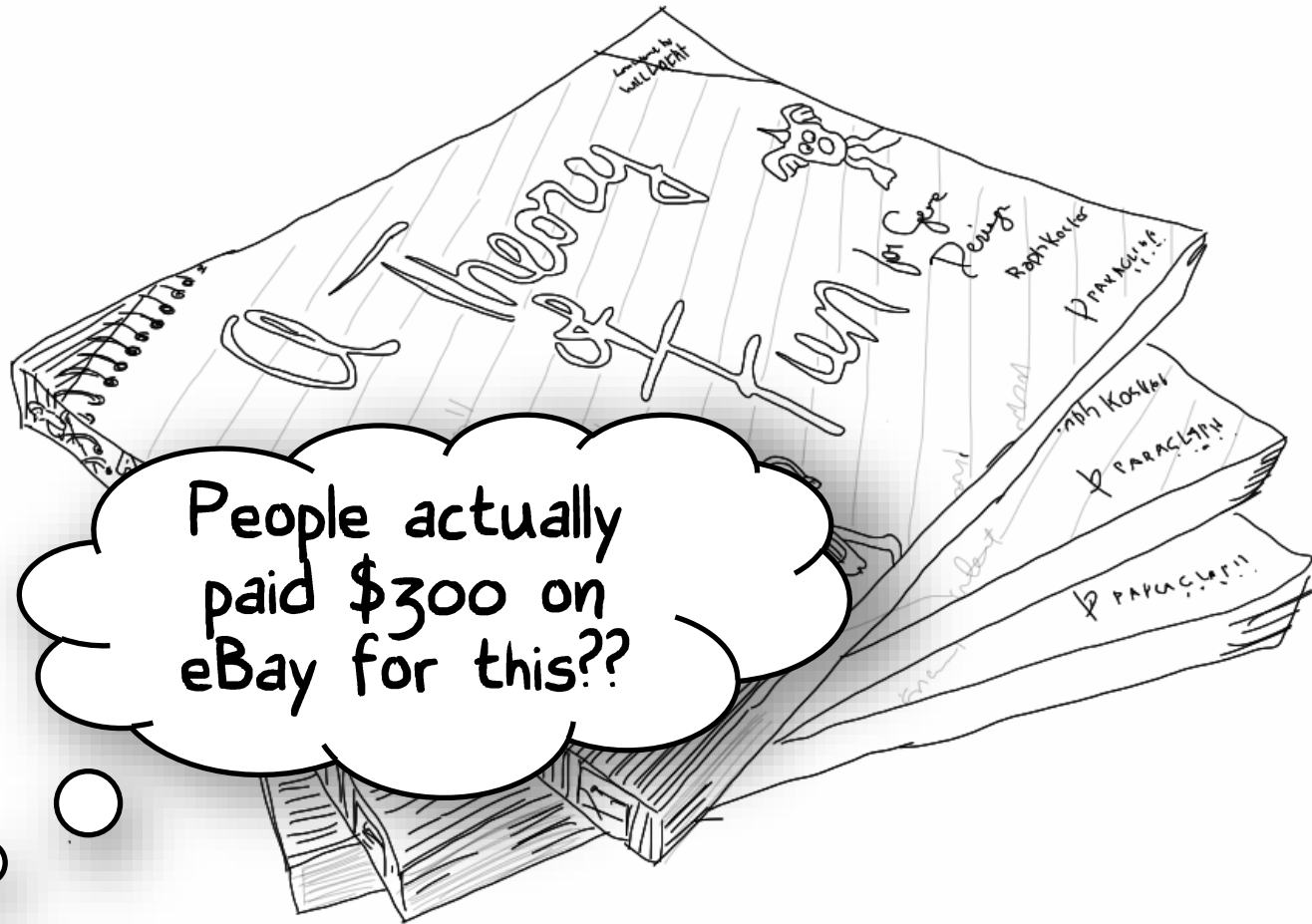
Chris Crawford



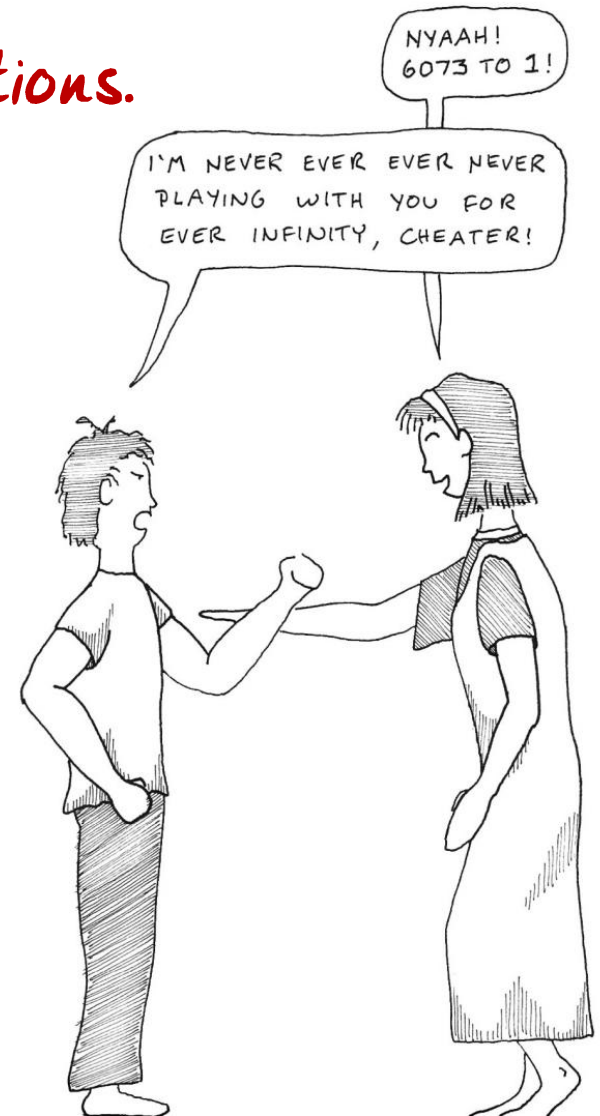
The talk led to a book,



The talk led to a book,
which fell in and out of print multiple times,



The talk led to a book,
which fell in and out of print multiple times,
and had lots of amateurish illustrations.



"Fun in games arises out of mastery.
It arises out of comprehension. It is
the act of solving puzzles that
makes games fun. With games,
learning is the drug."

... And it has sold over 30,000 copies and been
translated into Japanese, Chinese, and Korean.



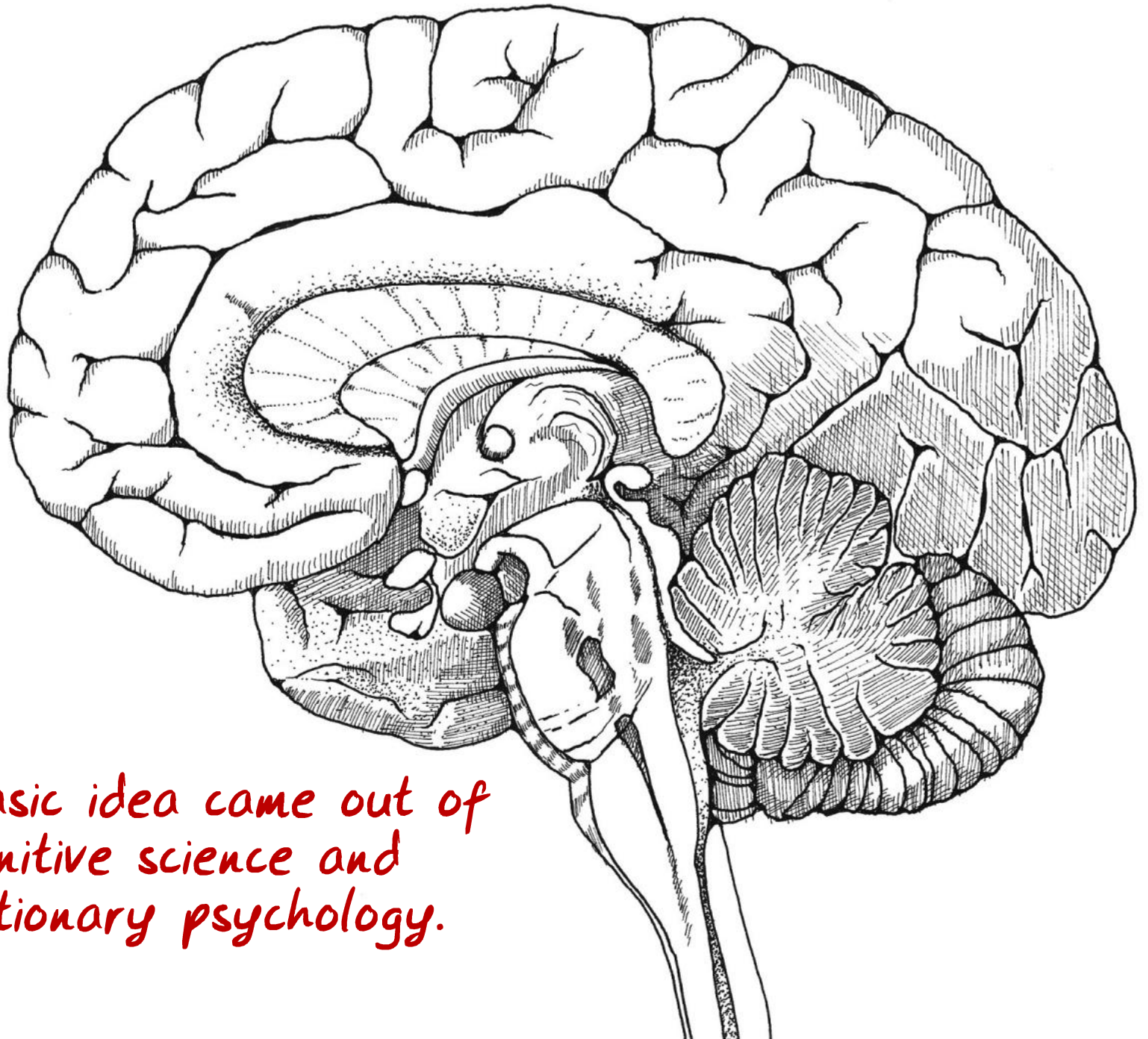
Dave Rickey

I did Theory of Fun because
I had been chatting with some
friends. . .

. . . Well, and I had been told
(not by them!)
that my games weren't actually
fun.

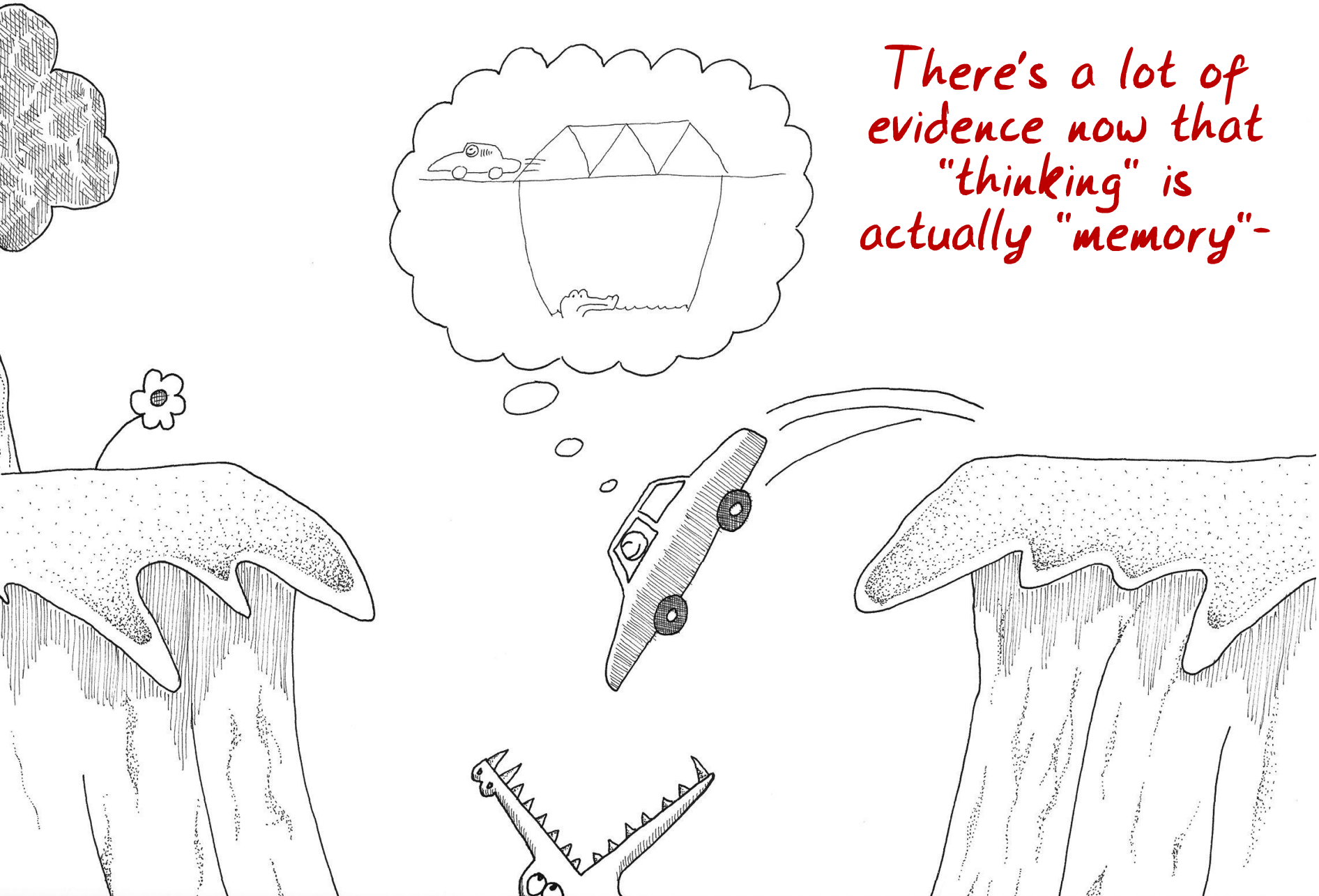
Noah Falstein

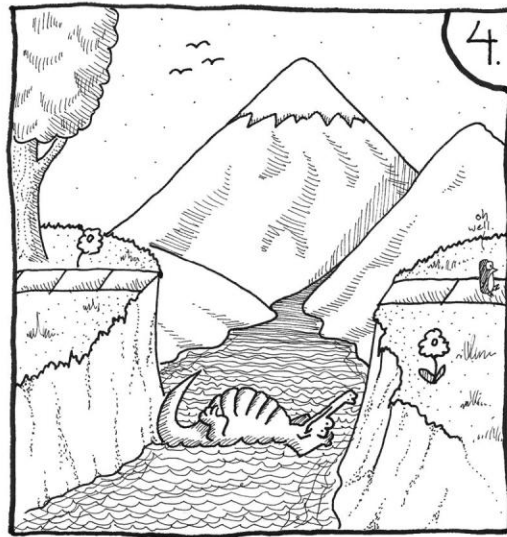
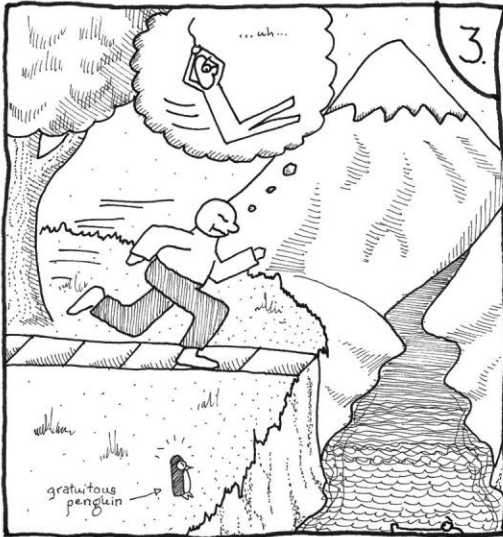
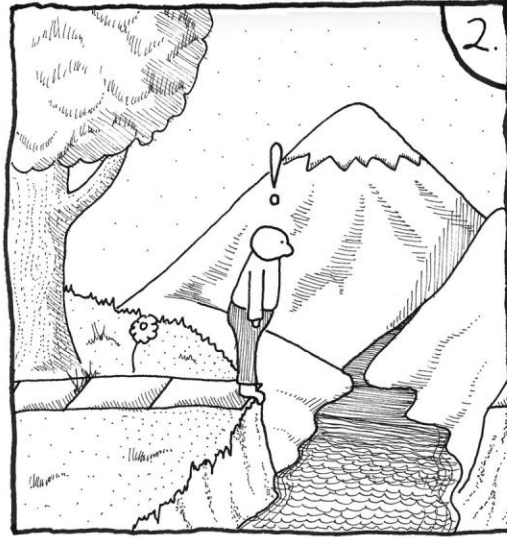
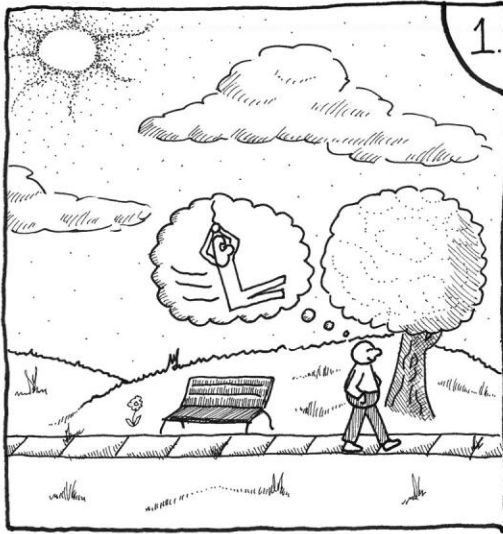




*The basic idea came out of
cognitive science and
evolutionary psychology.*

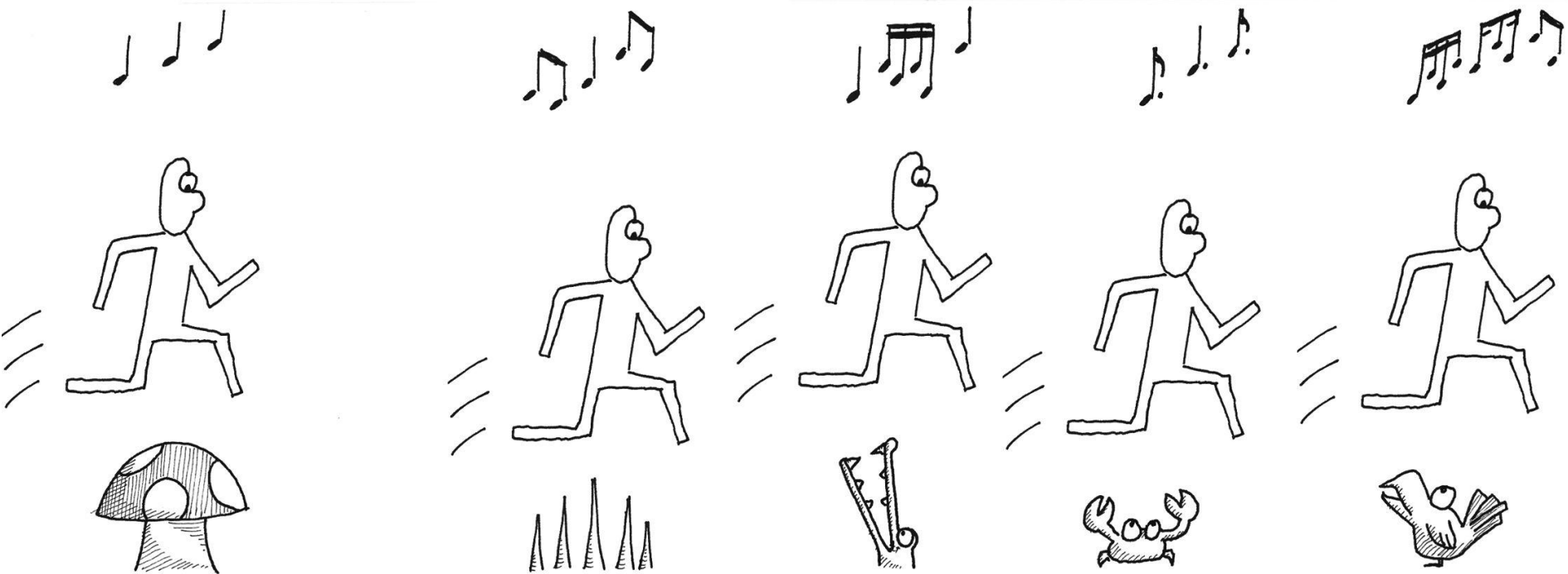
There's a lot of
evidence now that
"thinking" is
actually "memory"-

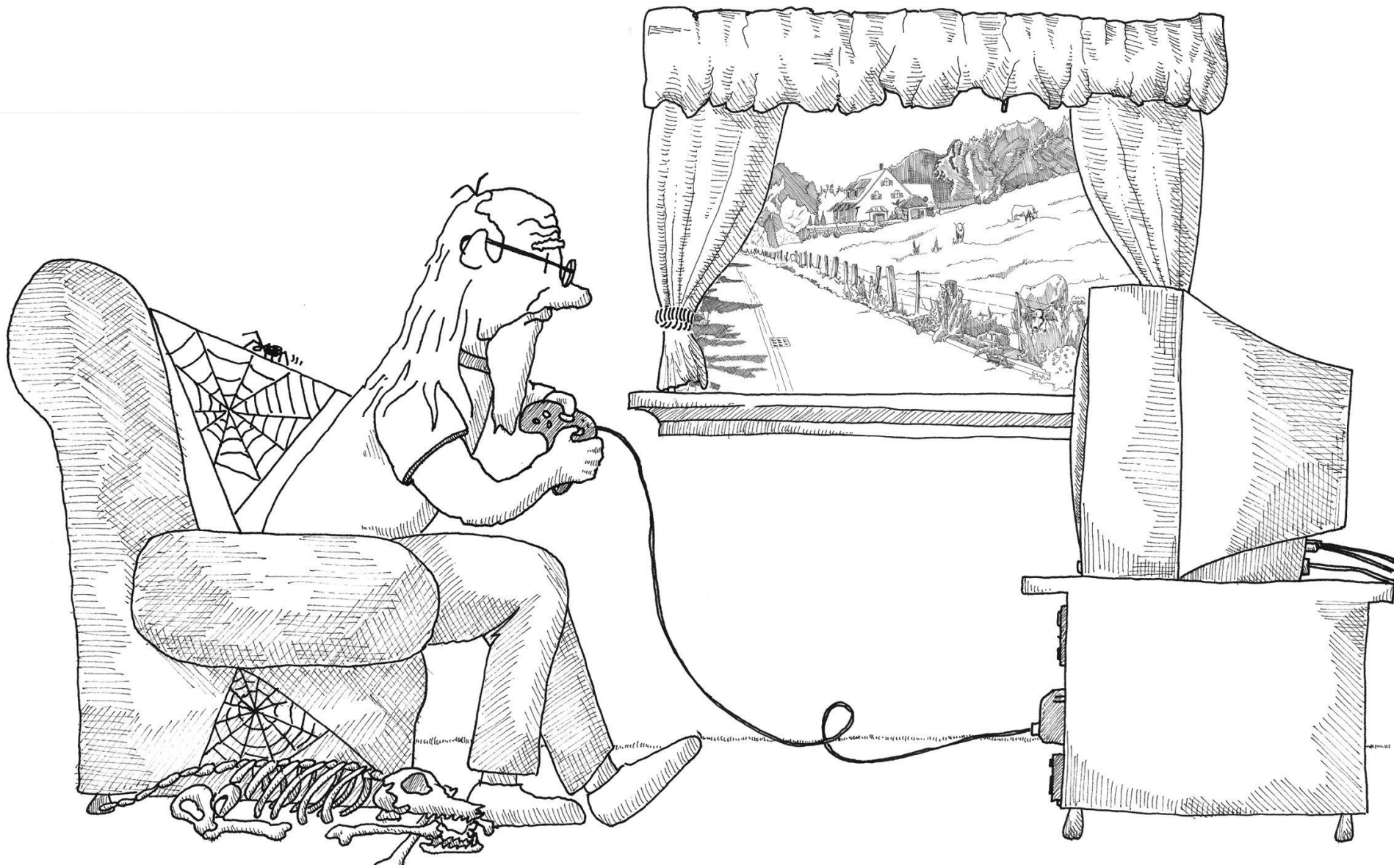




We learn patterns
and apply them to
reality, often
unconsciously.

The idea was, games are systems built to help us learn patterns.





And fun is a neurochemical reward to encourage us to keep trying.

This was not a new idea.

The most effective kind of education is that a child should play amongst lovely things.

Plato

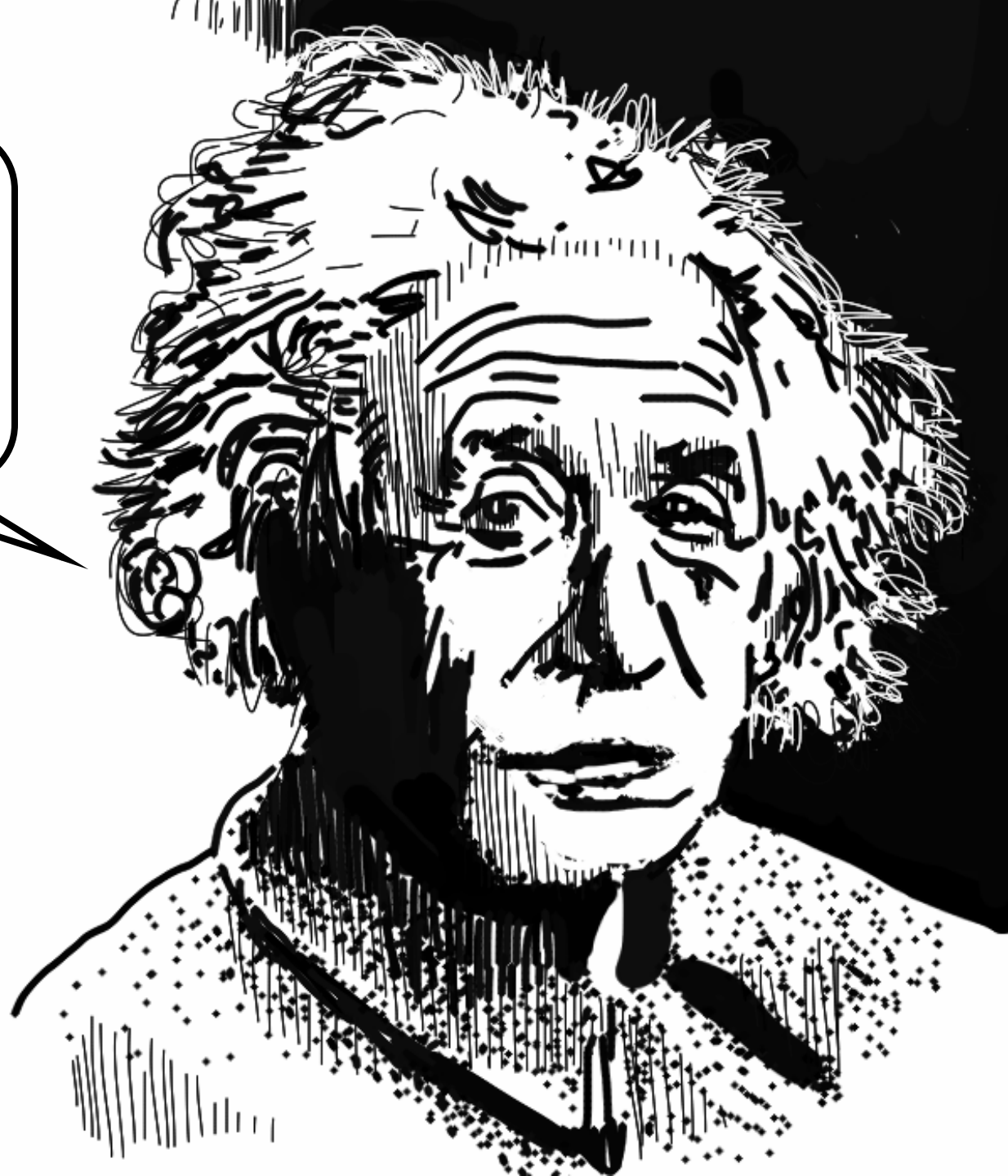




Play is the child's most
useful tool for
preparing himself for
the future and its
tasks.

Bruno Bettelheim

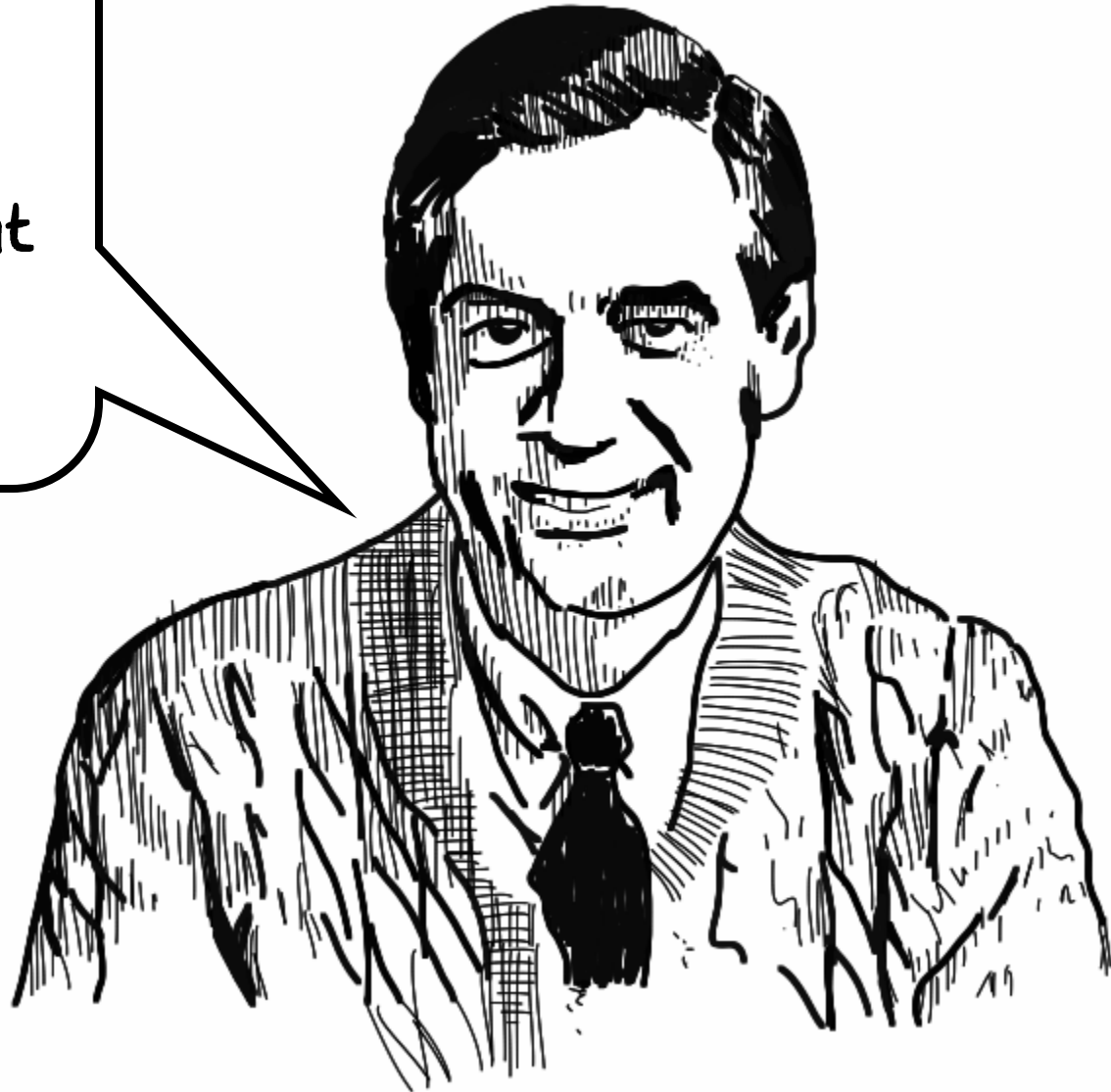
Play is the
highest form
of research.



Albert Einstein

Play gives
children a
chance to
practice what
they are
learning. . .

Mr. Rogers



I could go on . . .

For a small child there is no division between playing and learning.

Penelope Leach

I could go on . . .

For a small child there is no division between playing and learning.

Play is by its very nature educational.

Joanne E. Oppenheim

I could go on . . .

For a small child there is no division between playing and learning.

Play is by its very nature educational.

The child amidst his baubles is learning the action of light, motion, gravity, muscular force. . .

Ralph Waldo Emerson

I could go on . . .

For a small child there is no division between playing and learning.

Play is by its very nature educational.

The child amidst his baubles is learning the action of light, motion, gravity, muscular force. . .

A child loves his play, not because it's easy, but because it's hard.

Dr. Benjamin Spock

I could go on . . .

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Almost all creativity involves purposeful play.

Abraham Maslow

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Almost all creativity involves purposeful play.

Play is the answer to how anything new comes about.

Jean Piaget

Some theorists on games and play have made a point of dividing up the spectrum



FINITE GAMES

Have starts and ends
And a goal of winning

INFINITE GAMES

Are played in order to
keep playing

James P. Carse

Some theorists on games and play have made a point of dividing up the spectrum



GAMES

Externally imposed rules
Goals

PLAY

Freedom from all but
personally imposed rules
No goals

Bruno again. . .

Some theorists on games and play have made a point of dividing up the spectrum



LUDUS

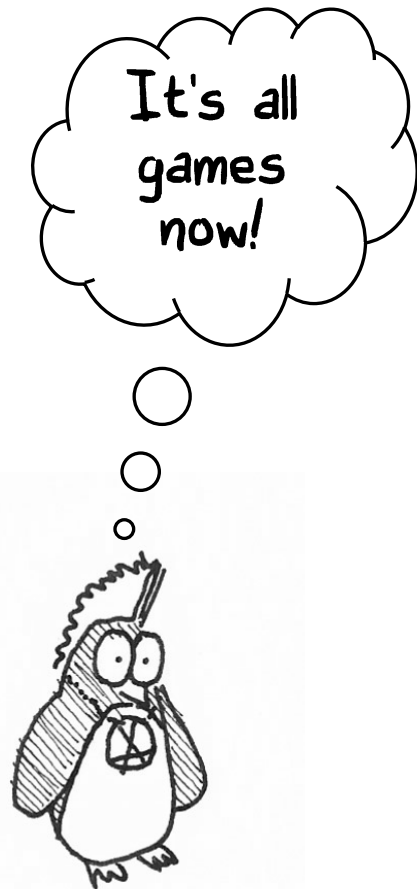
Structured activity and
explicit rules

PAIDIA

Unstructured and
spontaneous activities

Roger Caillois

... but Theory of Fun calls this a false dichotomy.



STRUCTURED PLAY
has few rules, openly
stated

UNSTRUCTURED PLAY
has tons and tons of
unstated rules

In Latin, there was just one word for all of it.



It is remarkable that
ludus, as the general
term for play, has not
only not passed into the
Romance languages but
has left hardly any
traces there, so far as
I can see...

Johan Huizinga

We live in a world of systems, and choose whether
to make a given system a game.

I said lusory
attitude, not
loser.

Bernard Suits



And further, since games implicitly teach systems - that we have an art form on our hands that actually changes brains. So we had better use it responsibly.

Cartoon idea: a guy with a Tetris block for a head says to a girl with a Ms Pac Man for a head, "Hey, what happened to that guy over there who's missing his head?"

"I dunno, he must have played too much Bomberman!"



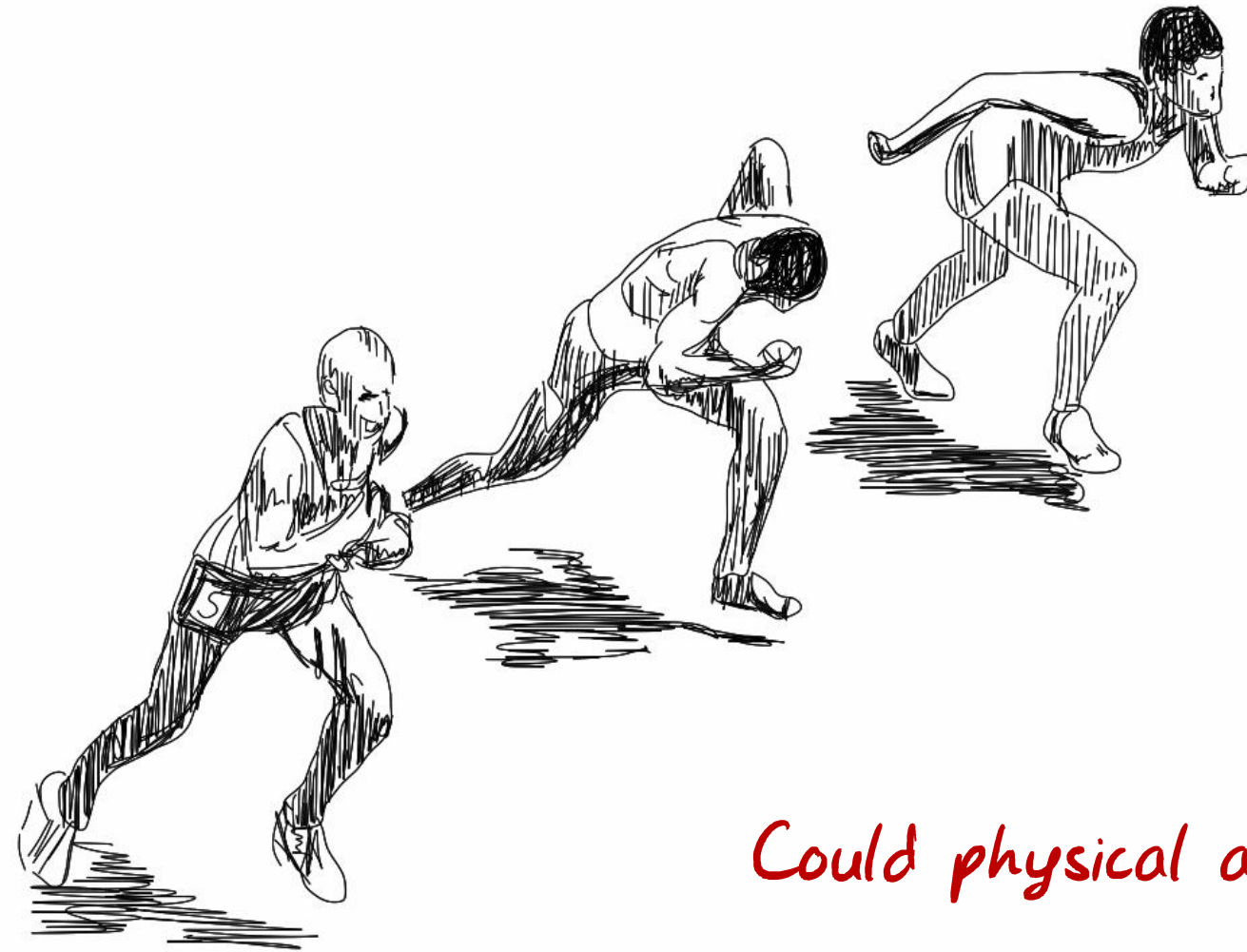
I'm here all week, folks.

There have been a range of critiques in the years since I gave the talk, especially after the book.

I really liked the book, but the cartoons were TERRIBLE. Like, painfully bad. Why didn't you get an artist to draw them? It made it hard to look at the pages, because they were so bad. It was distracting. Did someone tell you that you could draw? Because they were wrong, I mean, these are so amateurish, it's embarrassing. But I did like the book, I mean, you had good things to say, it's just too bad it was so effin' UGLY, man.

* Actual critique someone gave me once at GDC

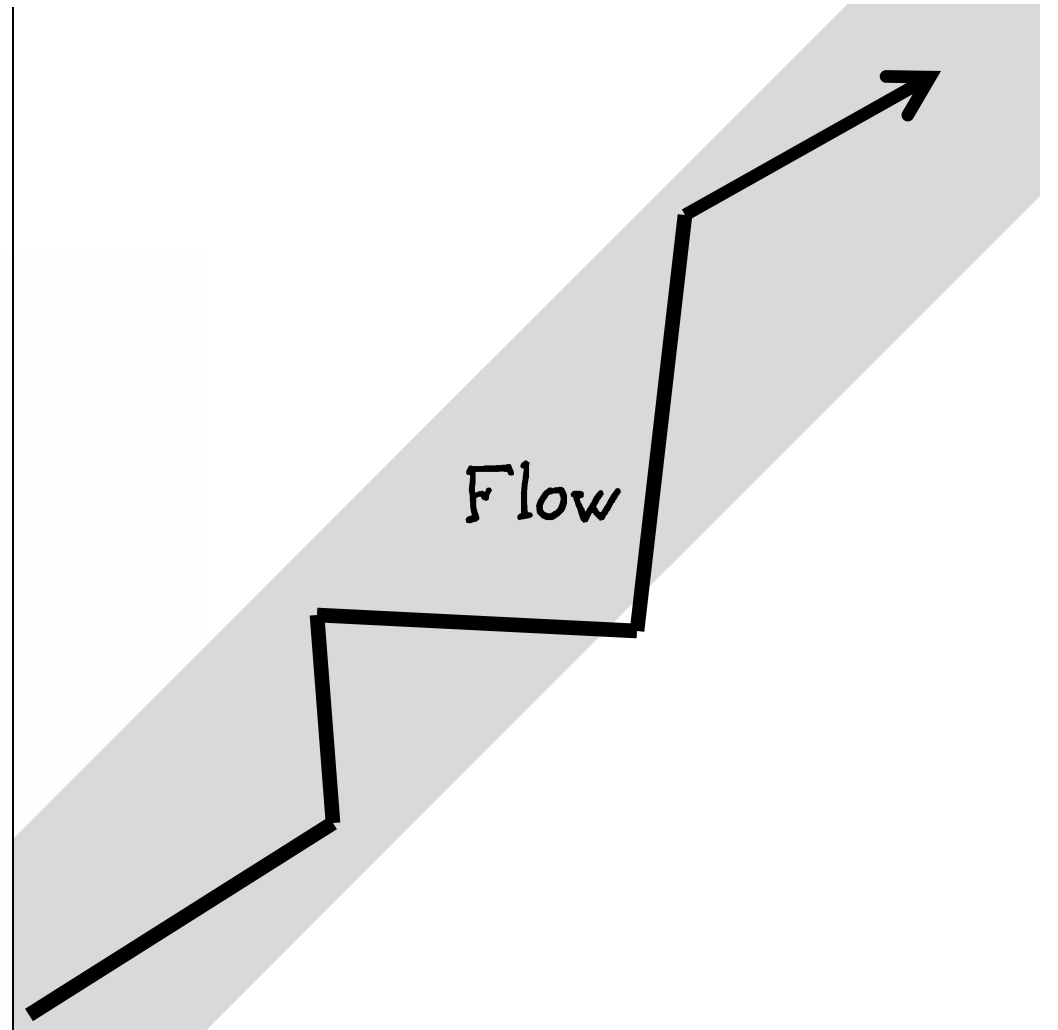




Could physical activities qualify?

My conclusion was yes.

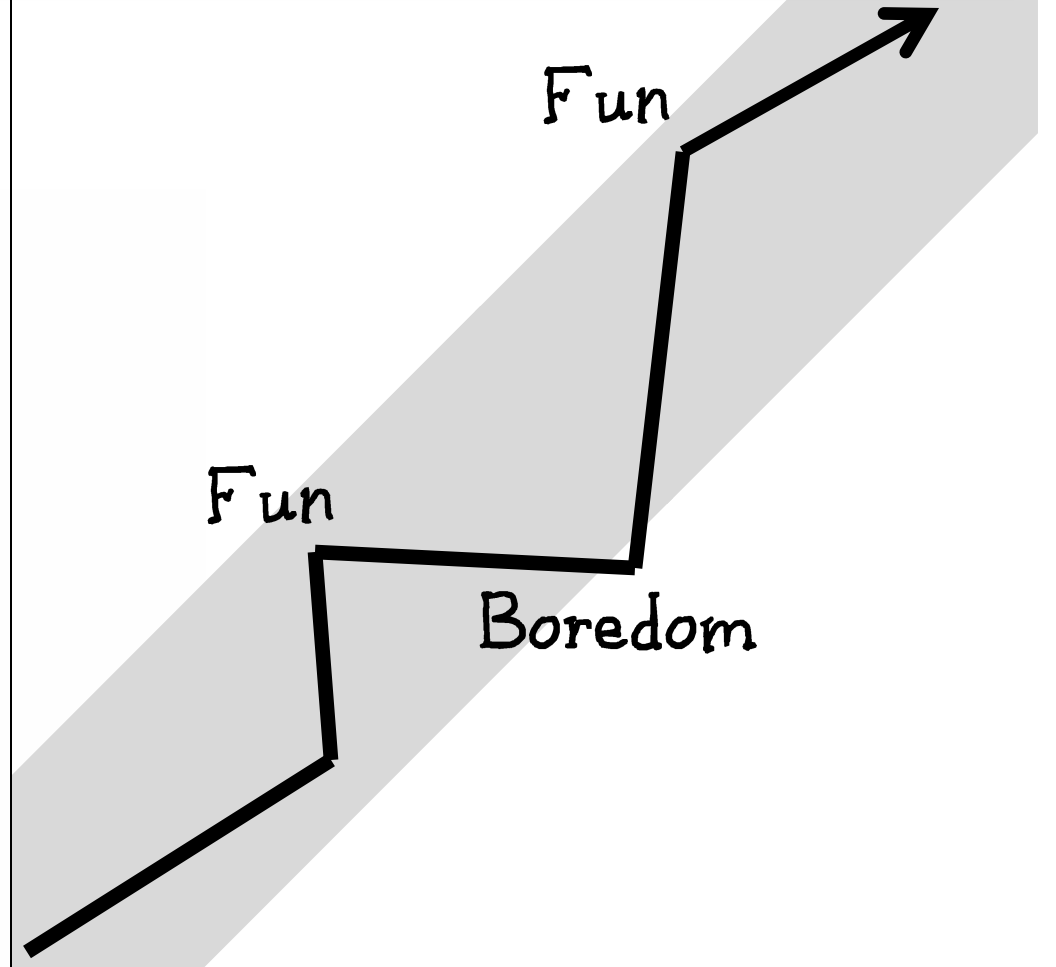
Isn't this just flow? Nah, fun was not the same thing as flow.



Mihaly Csikszentmihalyi

Flow represents a neurological event that differs in degree rather than type from other similar events.

Arthur Marr, in *Athletic Insight: The Online Journal of Sport Psychology*



*I intentionally excluded a lot of stuff we call
"fun" from the definition.*

EASY FUN

HARD FUN

ALTERED
STATES

SOCIAL FUN



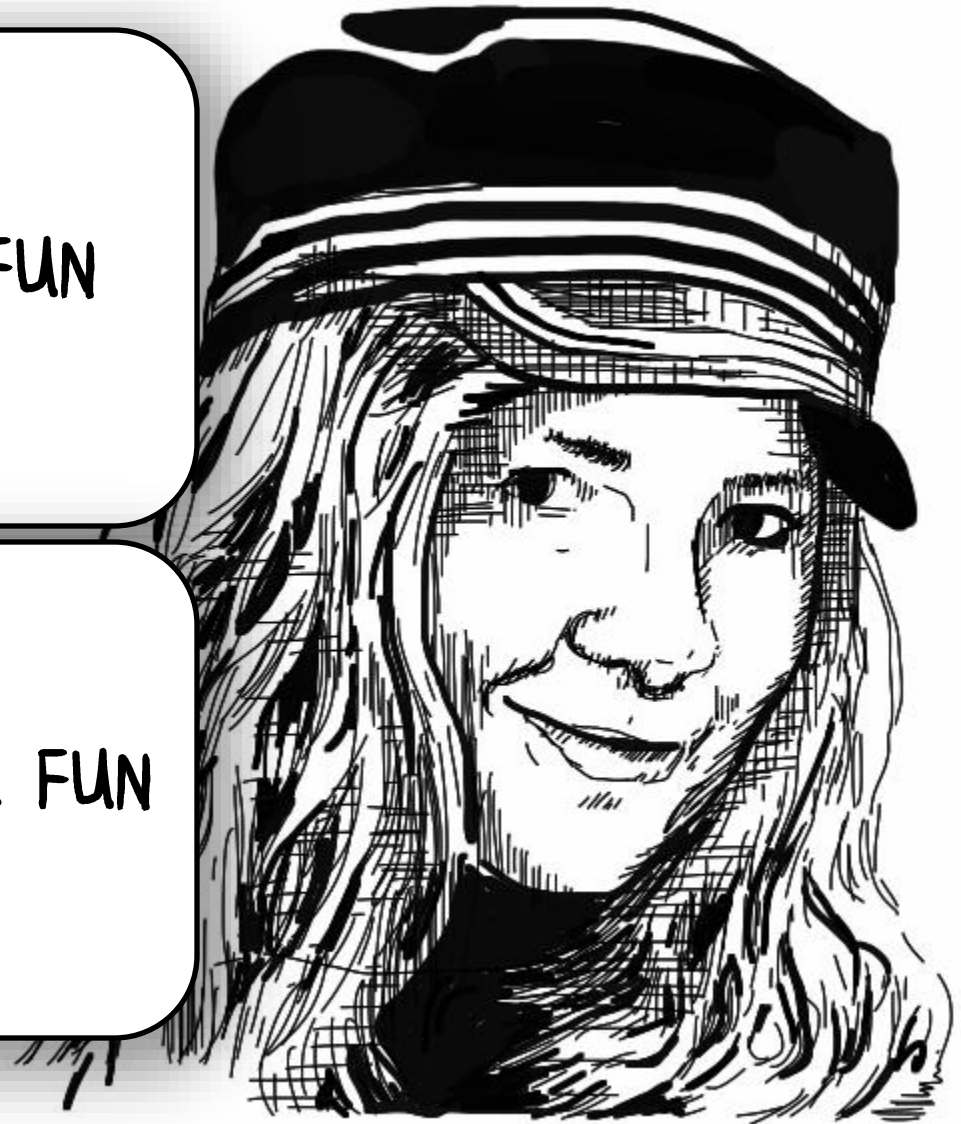
I said that delight was an act of recognition, and transitory.

*Delight,
not fun*

HARD FUN

VISCERAL
FUN

SOCIAL FUN



I concluded that social interaction IS a game to master, though it provides other emotions too.

*Delight,
not fun*

HARD FUN

VISCERAL
FUN

*Psych is
hard
Fun!*



And I also decided that mastery of your own body
is a game as well: a pattern to learn.

Delight,
not fun

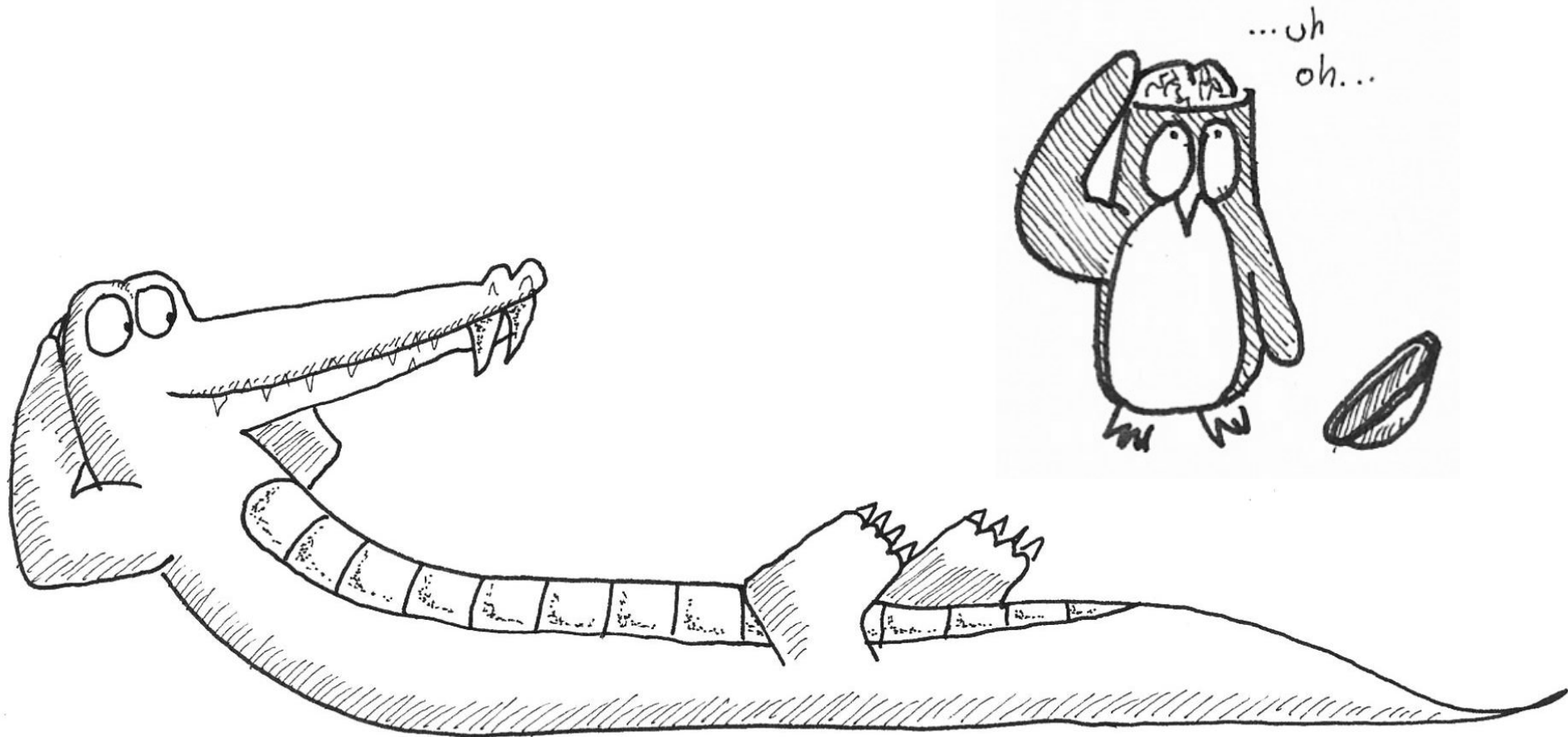
HARD FUN

Autonomic
system:
The Game!

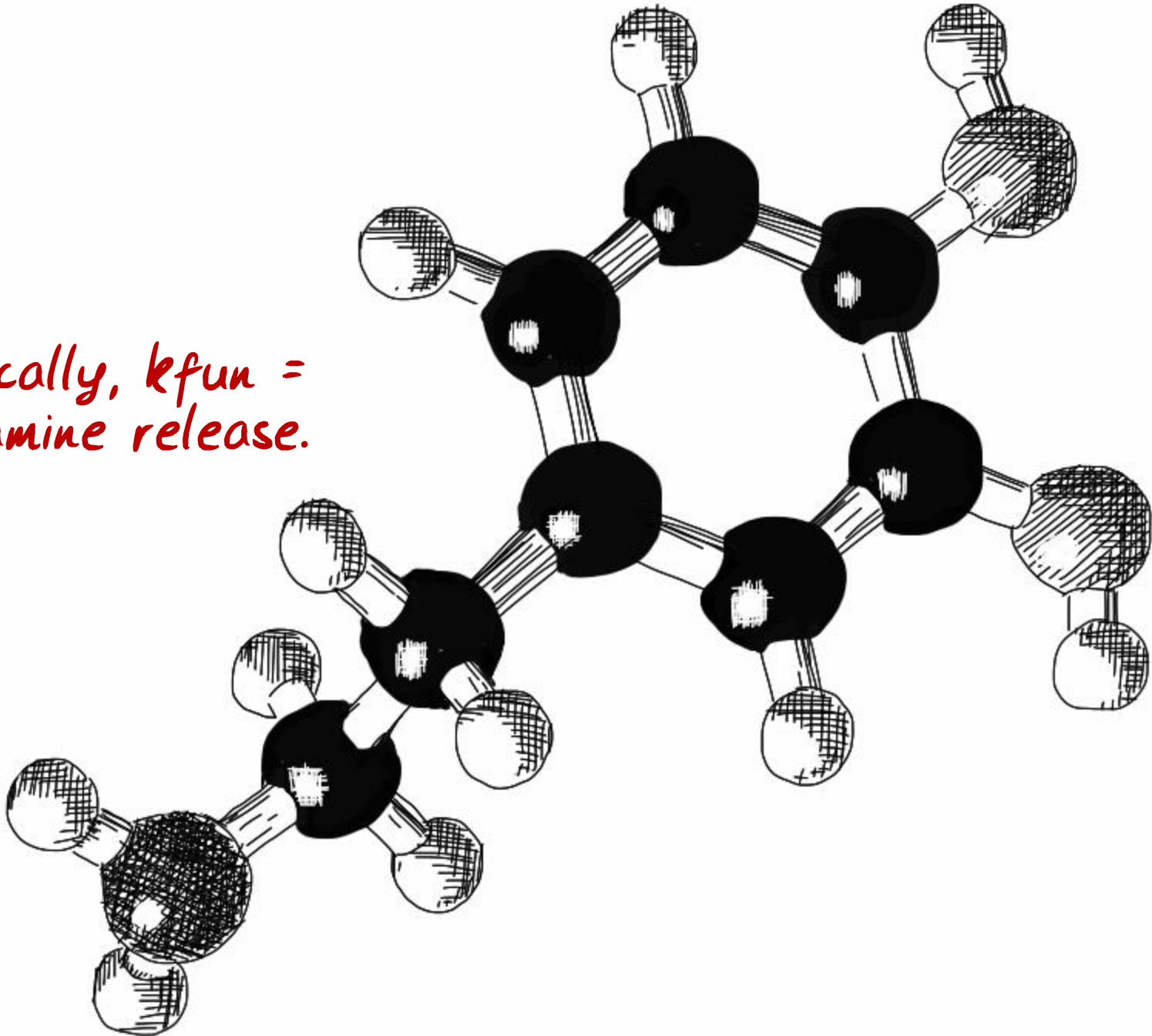
Psych is
hard
fun!



Some folks, in fact said that we might as well call
my kind of fun KFUN.



Basically, k_{fun} =
dopamine release.





Irving Biederman

Research says that
dopamine can release for
"richly interpretable"
situations.



Edward A Vessel

*This means it can happen in all sorts of situations;
but not all game experiences may trigger it.*

Perfectly
valid
non-fun
reasons
to use
games.

PRACTICE

Can be fun done right, but often isn't

STORY

Usually works best with minimal game

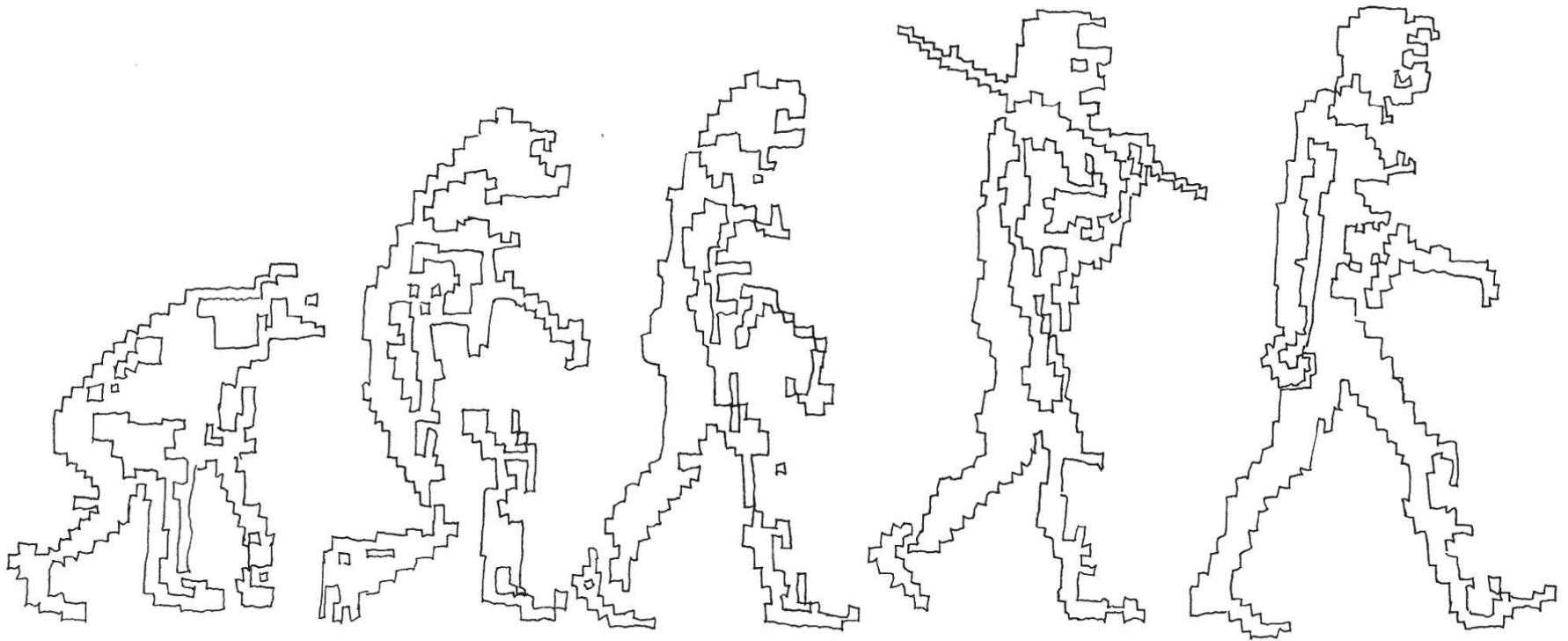
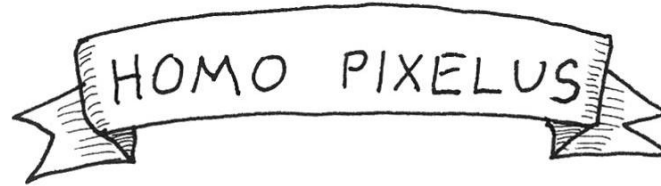
MEDITATION

As a focus for repetitive action

COMFORT

is comforting, not fun

A fair amount of people just hate evolutionary psychology. . .



But honestly, the more science comes out, the more the basic premises of the theory are validated.

Subjects who played casual games for 30 minute periods showed an 87 percent improvement in cognitive response time and a 215 percent increase in executive functioning.

East Carolina University's Psychophysiology Lab

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Expert gamers outperform novices across several measures of attention and perception

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Brain structure appears to predispose you towards game skill - and more, towards success in *specific* skills.

Erickson, U Pittsburgh

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Playing games can cure "lazy eye" better than an eye patch.

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Playing video games - especially those that require planning and strategy - and Sudoku also were beneficial to working memory

Alloway,
University of
Stirling

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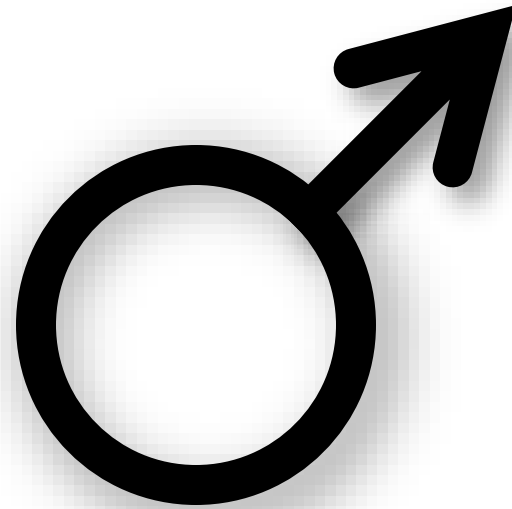
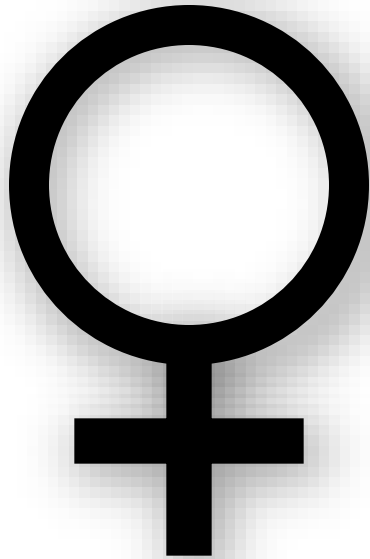
Training with Wii Fit and Wii Sports improved balance in Parkinson's patients

One of the things people complained about in the book
was a perceived sexism.



I admit, for some reason
I did a cartoon based
on the Lockharts.

That said, it's undeniable at this point that there are cognitive differences that must affect predisposition towards specific games.



Possibility of
tetrachromats

Faster response
time for seeing
static objects

Male child leaves
DNA in the brain

Frequently
dichromats

Faster response
time for seeing
moving objects

And rather than all the various different personality models I mentioned in the book, I'd probably point towards the Big Five or OCEAN model today.



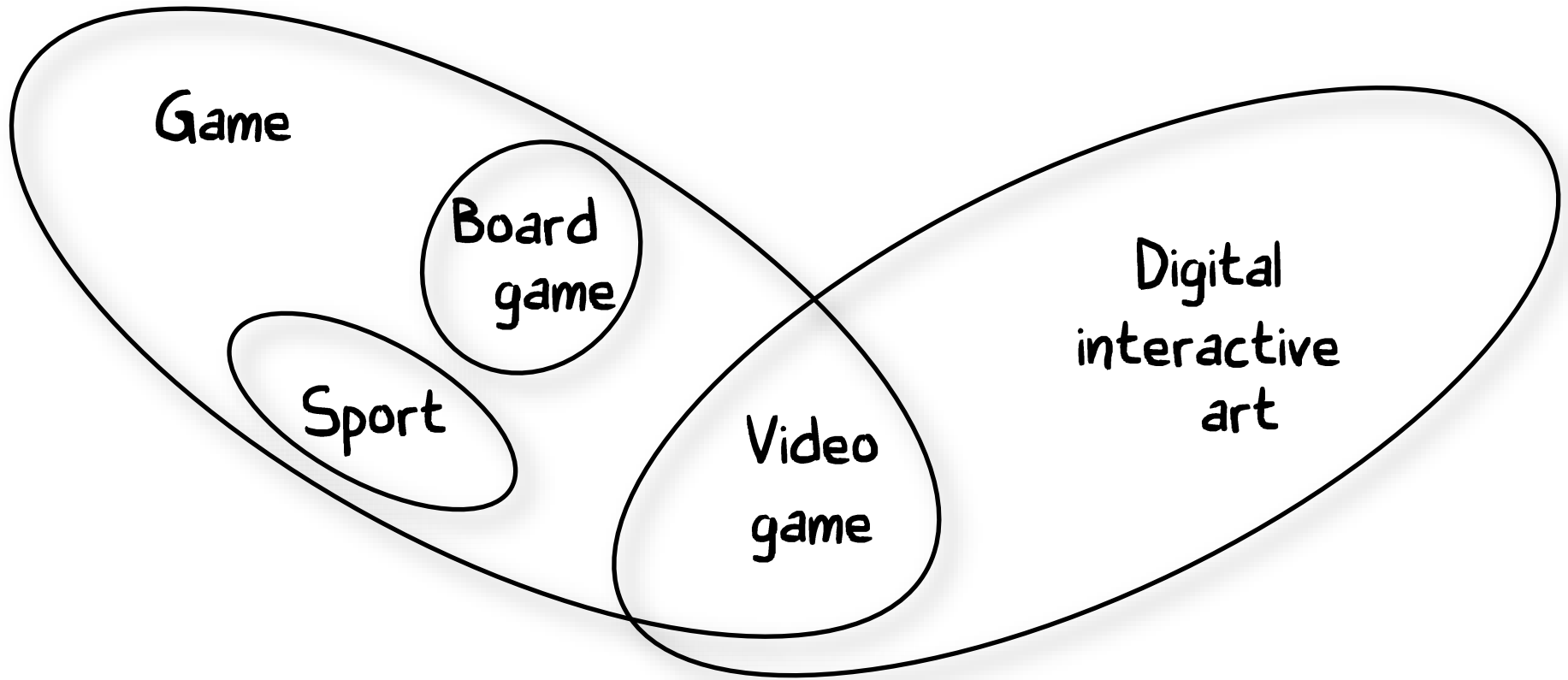
We should quit
making up models,
and use

Openness
Conscientiousness
Extraversion
Agreeableness
Neuroticism
instead.

Jason VandenBerghe

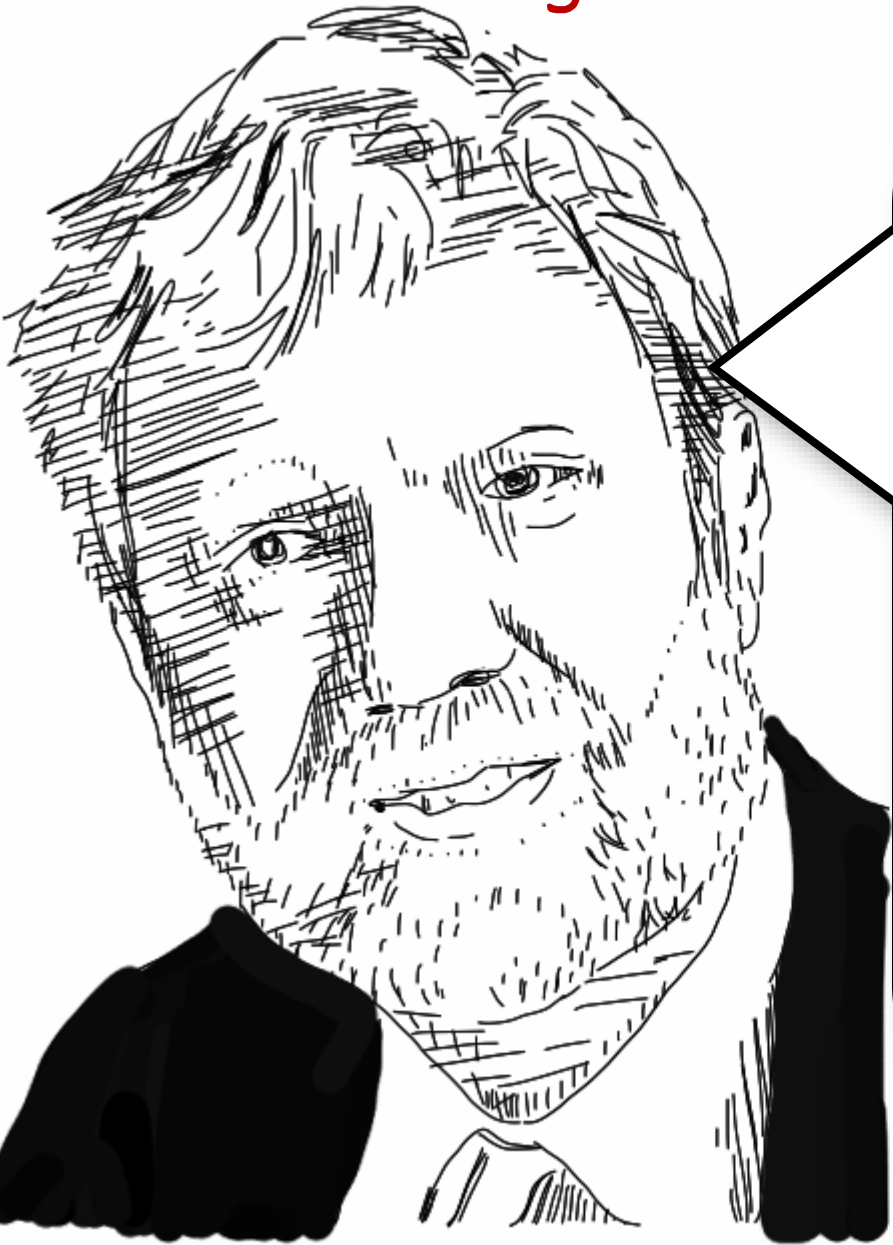
Oh, and in the book I commented on how there weren't any farming games anymore.





A consequence of all this was being led into approaching games themselves in a science-y way.

I came to see games as "deliberate practice" machines.



Designed to improve performance? Check.
Repeated a lot? Yup.
Continuous feedback?
Sure!

Mentally demanding (focus
& concentration)? Of
course!

Hard, like off the top end
of flow? Absolutely!

Requires clear goals? That's
it, it's deliberate practice!

K. Anders Ericsson

I ended up finding a definition that encompassed both this notion and the earlier thoughts about turning anything into a game-

Playing a game is the act of solving statistically varied challenge situations presented by an opponent who may or may not be algorithmic within a framework that is a defined systemic model.

A "game" is an intentionally designed artifact for the above.

PUZZLE

Closed solution set; the opponent does not fight back.

TOY

Goal not externally imposed; open solution set.

GAME

Goal; opponent who fights back; open solution set.

In this I drew other people's thoughts on toys, puzzles and riddles.

Greg Costikyan



PUZZLE

Closed solution set; the opponent does not fight back

TOY

Goal not externally imposed; solution

Actually, I hope you don't mind, but I deserve some credit here too...

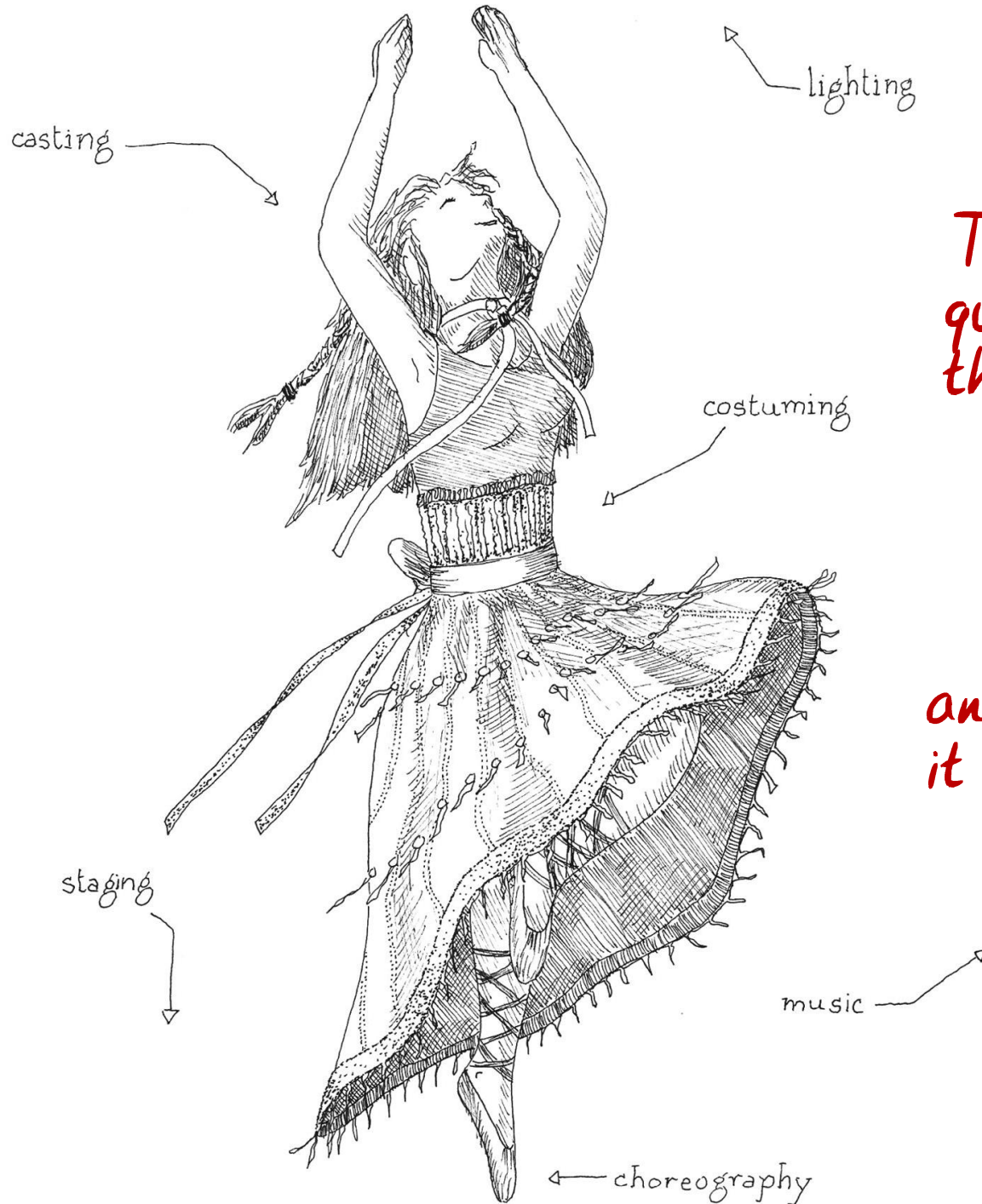
Goal; opponent who fights back; open solution set.

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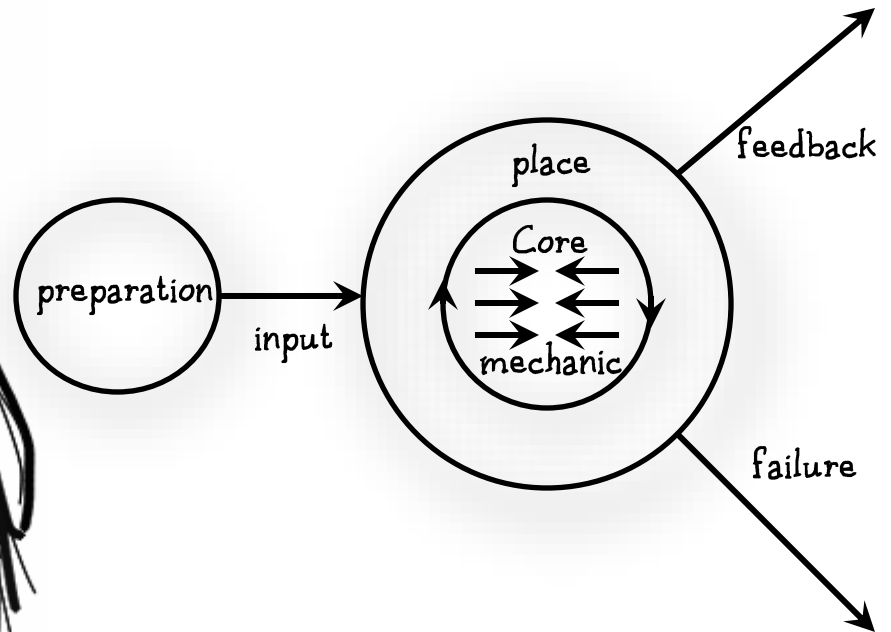
This led me to the
question of whether
there is a Grammar
of Games,

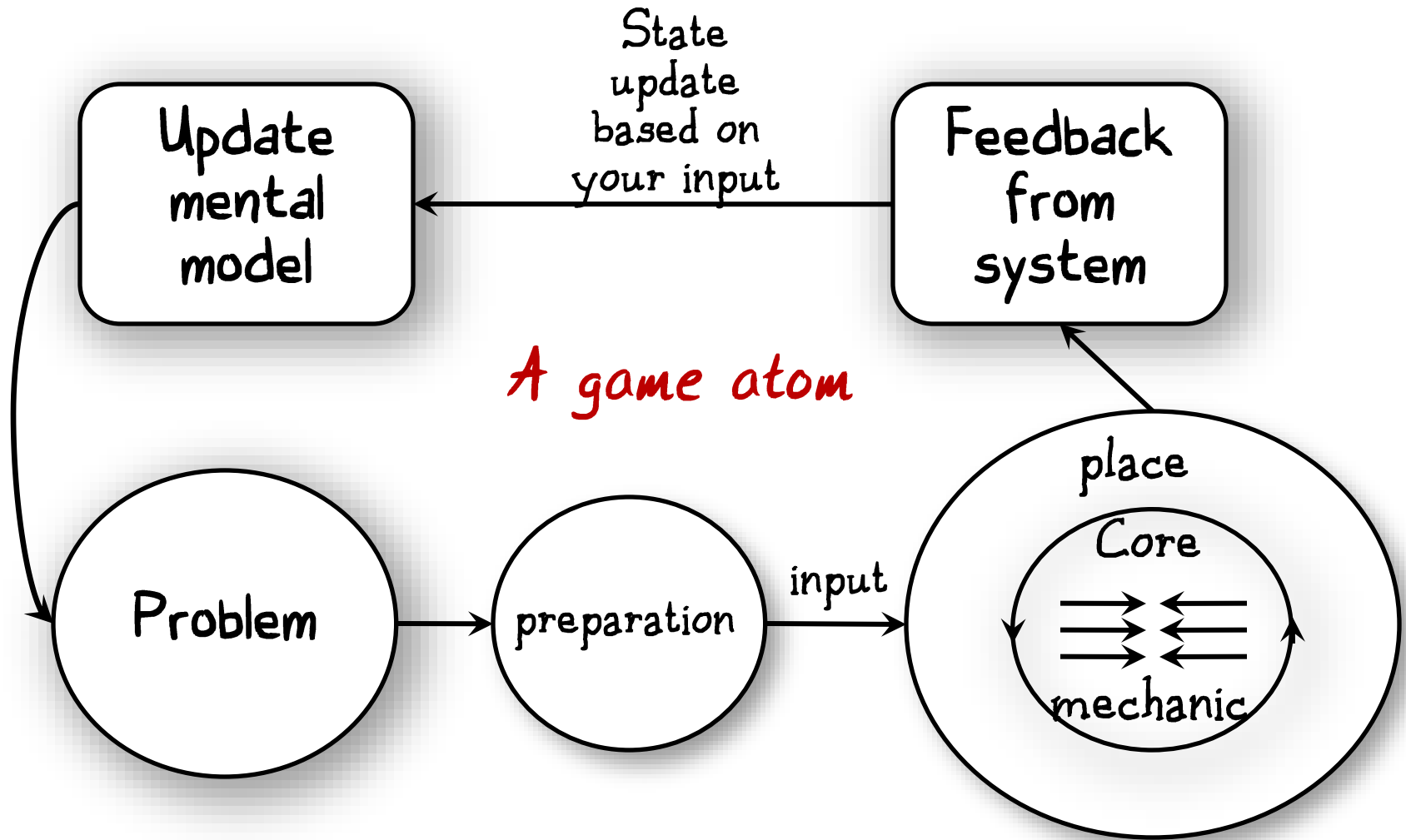
and if there is, could
it be written down in
notation?

The basic structure was born from another conversation with a friend, as we tried to solve a specific design problem.



Rod Humble





One of the key premises of
Theory of Fun is the vast
gulf between a game's surface
and its actual meaning. . .



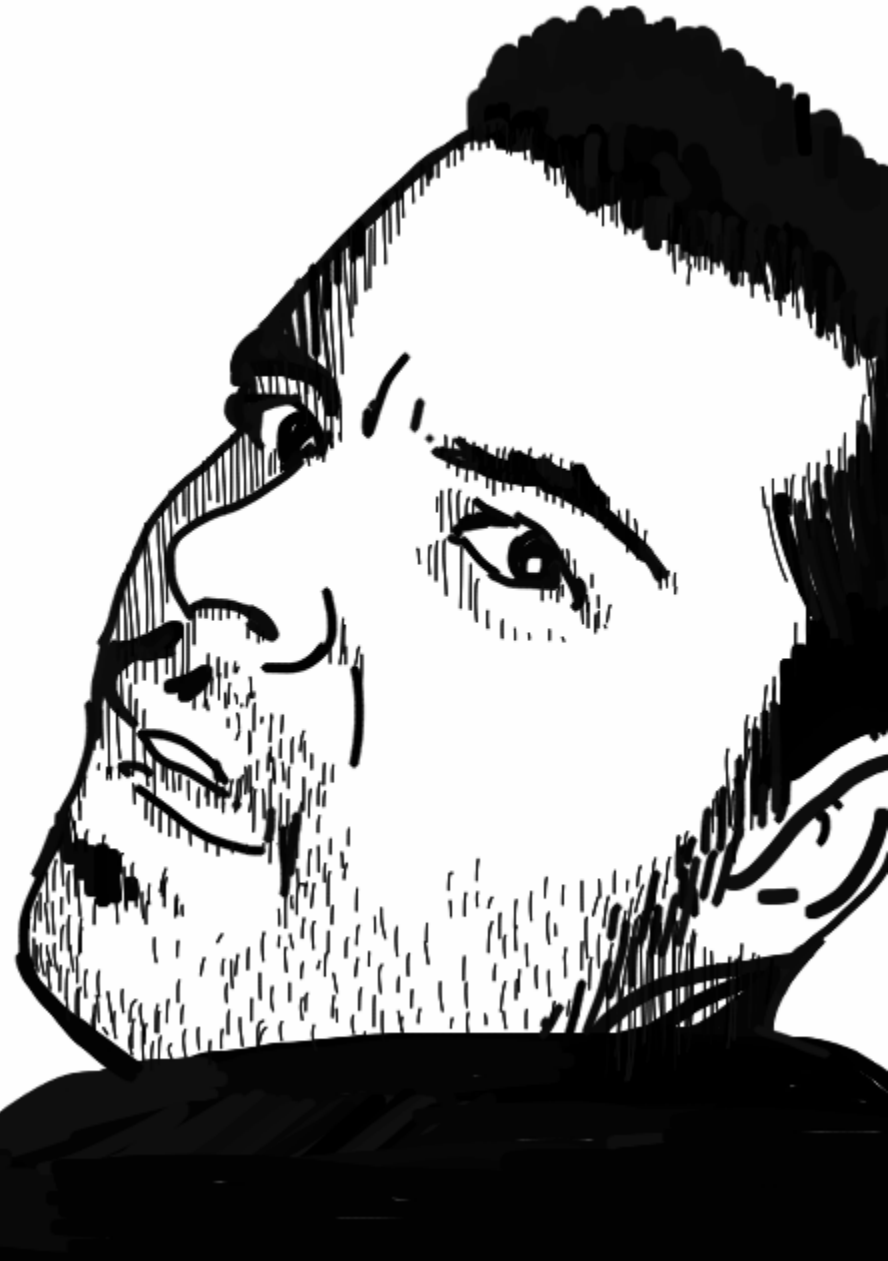
Katie Salen and Eric Zimmerman



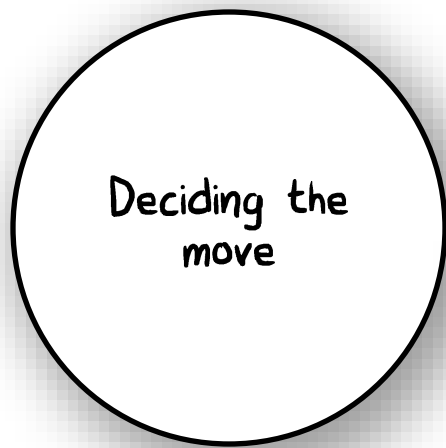
An avenue of discussion
that these days is
known as

"ludonarrative
dissonance."

Clint Hocking



Magnitude of problems



A board game

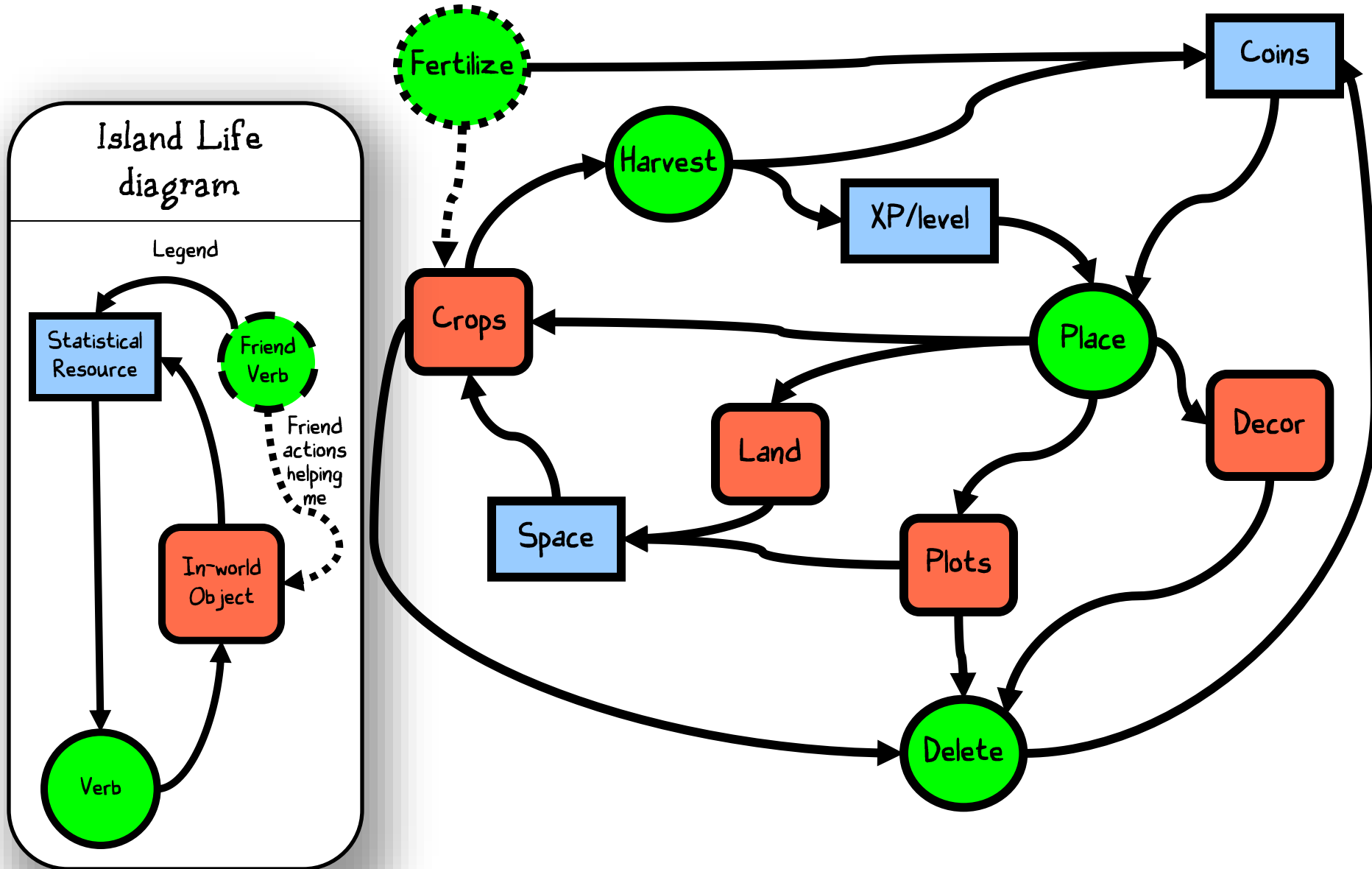


A racing game

Game grammar went further. For example, we talk about "the game is the interface" but game grammar says it isn't.

The interface might be *ANOTHER* game, though.

Instead games are like this, abstract models.



Dan Cook



Game grammar has been developed largely independently by several folks at this point, and it's important.

This is very much the birth of a science of game design. . . We are seeing some of the mathematical and structural bones of our folk systems laid bare.

"Skill atoms"



Ben Cousins
Early work on
cognitive
patterns

Stéphane Bura
Petri Net game flows





Joris Dormans and Ernest Adams

*The Machinations framework
and interactive tool*



The only four core mechanics in games

Solving problems
perceived as
NP-hard using
heuristics

Understanding
other people &
social
relationships

Mastering your
physical
reactions

Exploiting the
brain software
bug around
probability
estimation

I ended
up
concluding
that there
are only
four kinds
of
problems
sitting at
the center
of game
atoms.

Four other core mechanics in games

AGON

Competition or
contest

MIMICRY

Roleplay and
make-believe

ILINX

Visceral
reactions and
vertigo

ALEA

Chance
operations

*Of course,
plenty of
others
have
found
similar
patterns.*

Caillois

Four other core mechanics in games

AGON

is hard fun vs
an NP-hard
problem or
opponent

MIMICRY

Roleplay and
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Caillois

Four other core mechanics in games

AGON

is hard fun vs
an NP-hard
problem or
opponent

MIMICRY

is pattern
mastery of
NP-hard
frames of
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frames of
reference

ILINX

is the hard
fun of
mastery of
autonomic body
systems

ALEA

Chance
operations

Of course,
plenty of
others
have
found
similar
patterns.

Caillois

Alas, all this did was reinforce the degree to which
"games are math."

AGON

is hard fun vs
an NP-hard
problem or
opponent

MIMICRY

is pattern
mastery of
NP-hard
frames of
reference

ILINX

is the hard
fun of
mastery of
autonomic body
systems

ALEA

is a brain bug
tricking us into
thinking chance
is an NP-hard
problem

He's
misappropriating
my terms, the
jerk.



It made me
unhappy to think
that, and I
questioned what
games could achieve
as an art form.

Or a game with shades
of gray, instead of 256
levels of grayscale?

Can you make a
game about the
taste of a
peach?



Andean Bird

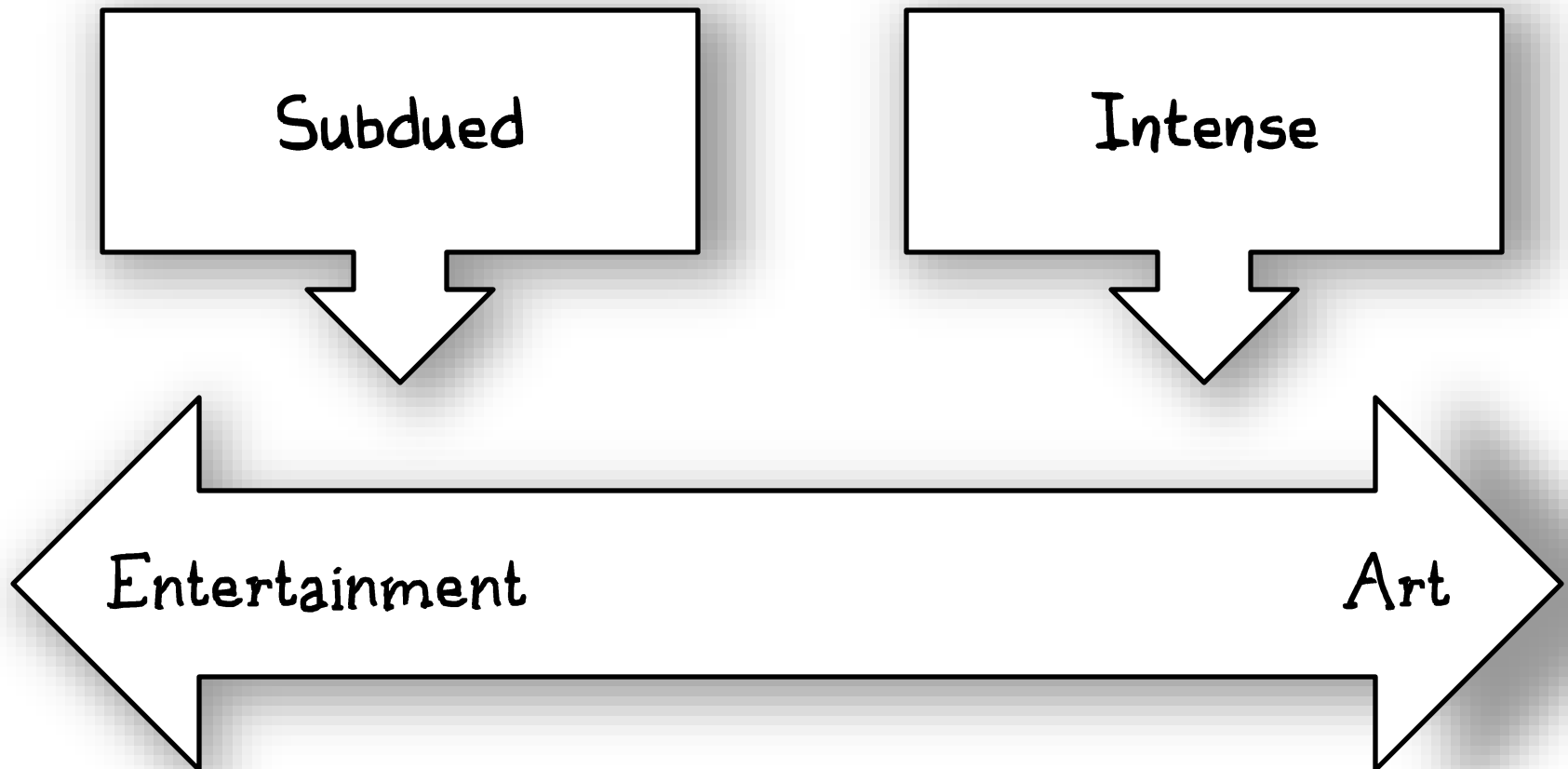


Rod Humble, "The Marriage"

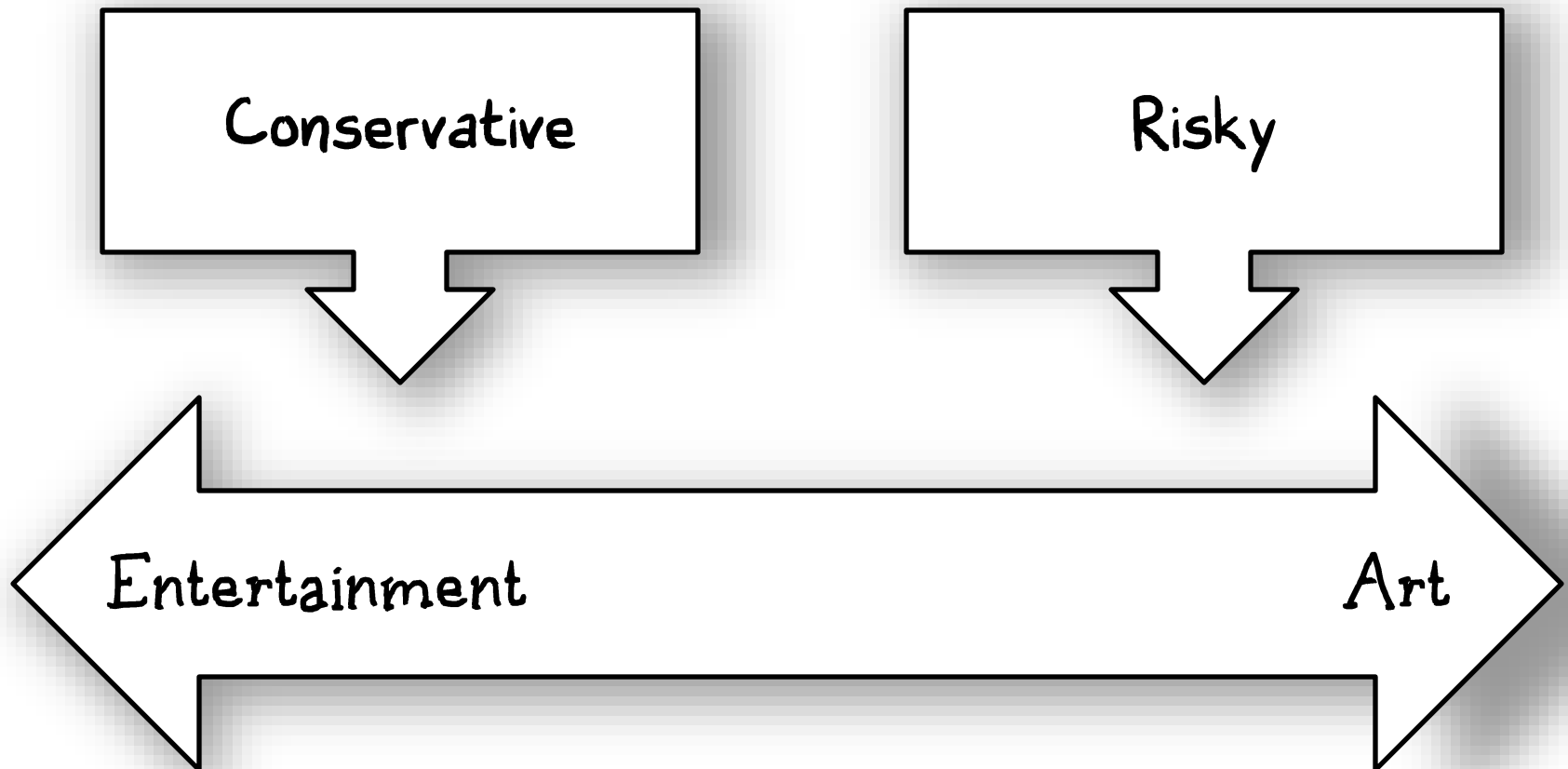
Jason Rohrer, "Passage"

See, an unintended consequence of Theory of Fun was inspiring key folks in the art games movement.

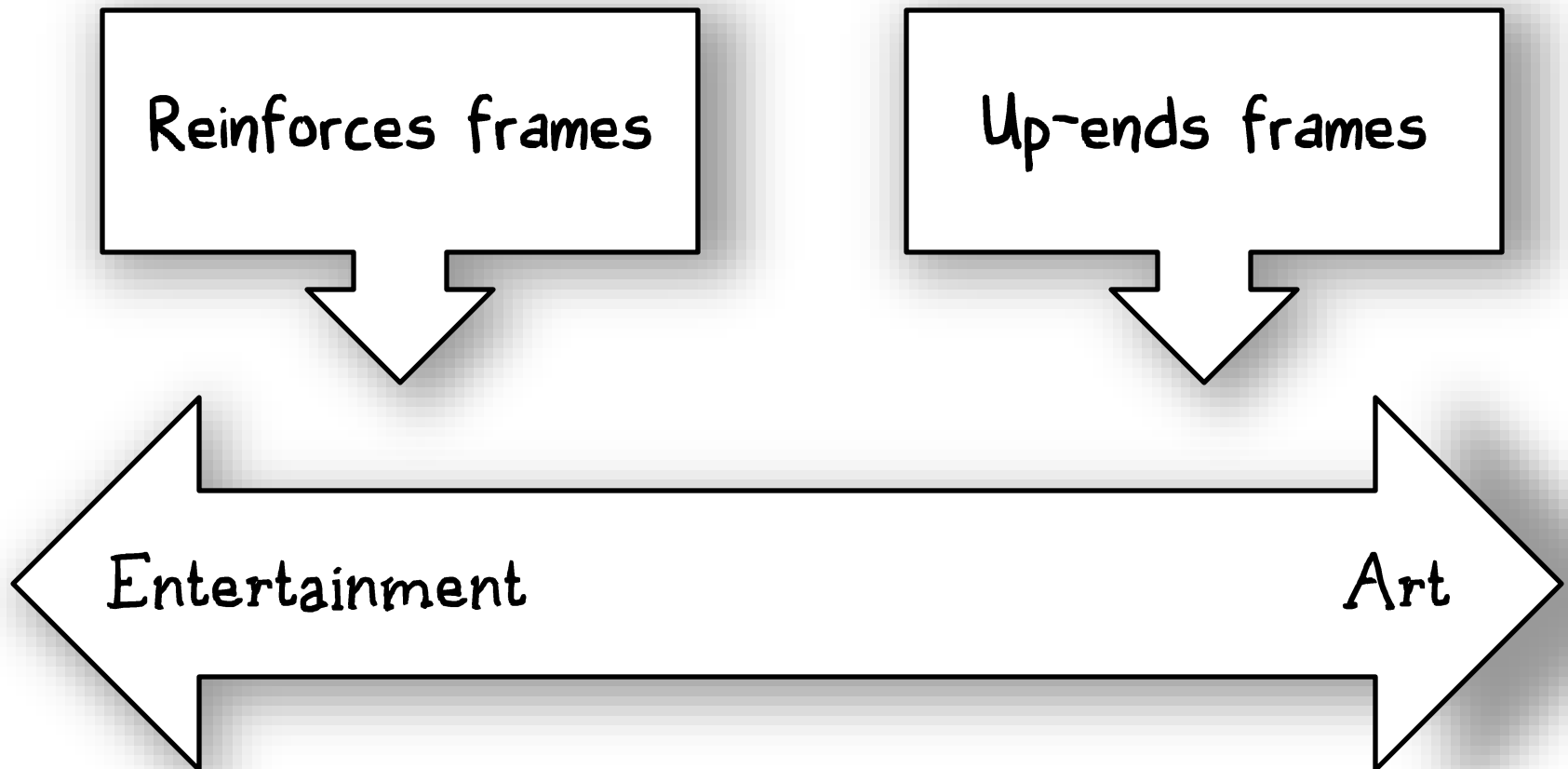
The book explicitly called for the key artistic messages in games to be embedded in the mechanics.



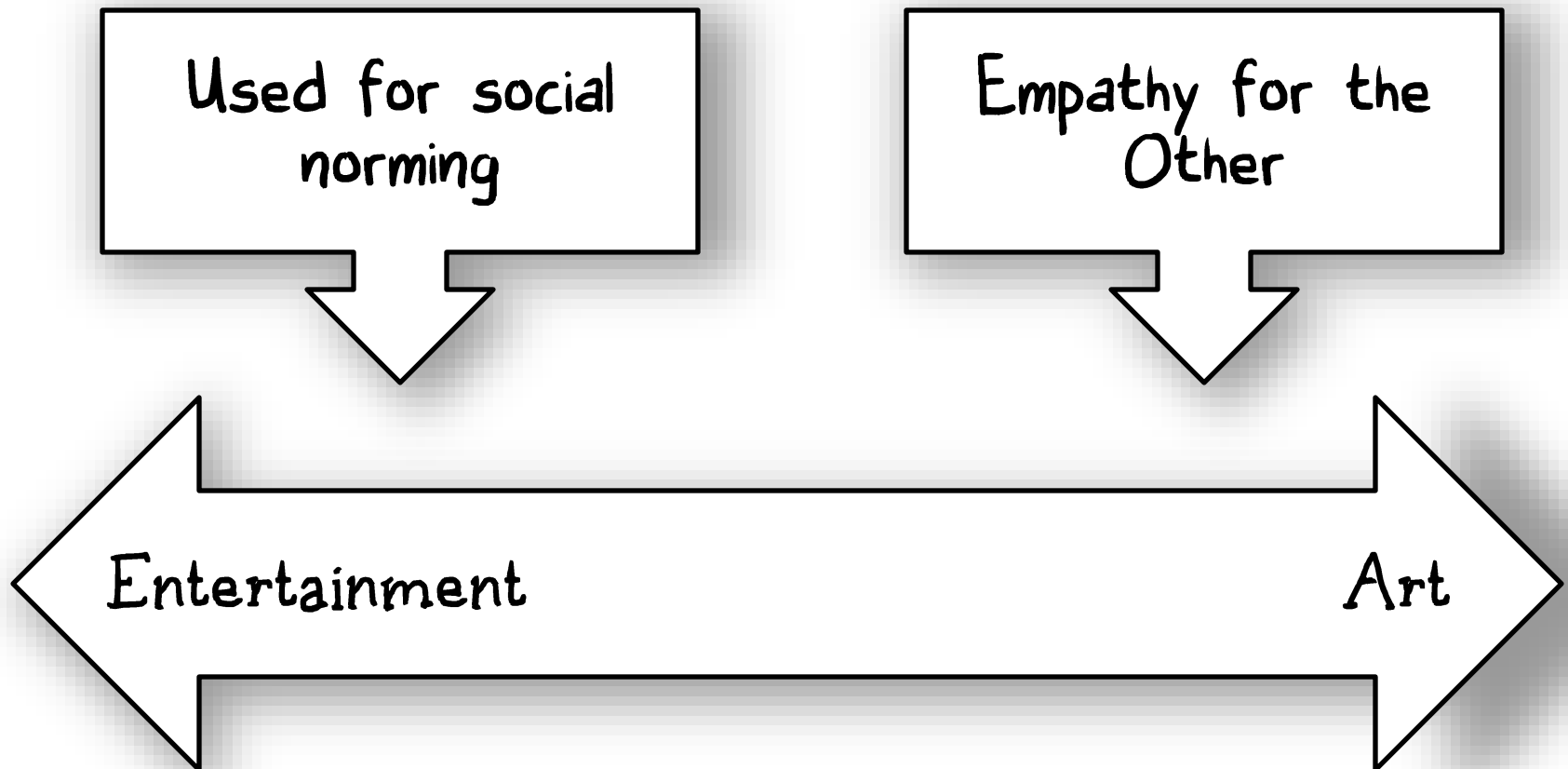
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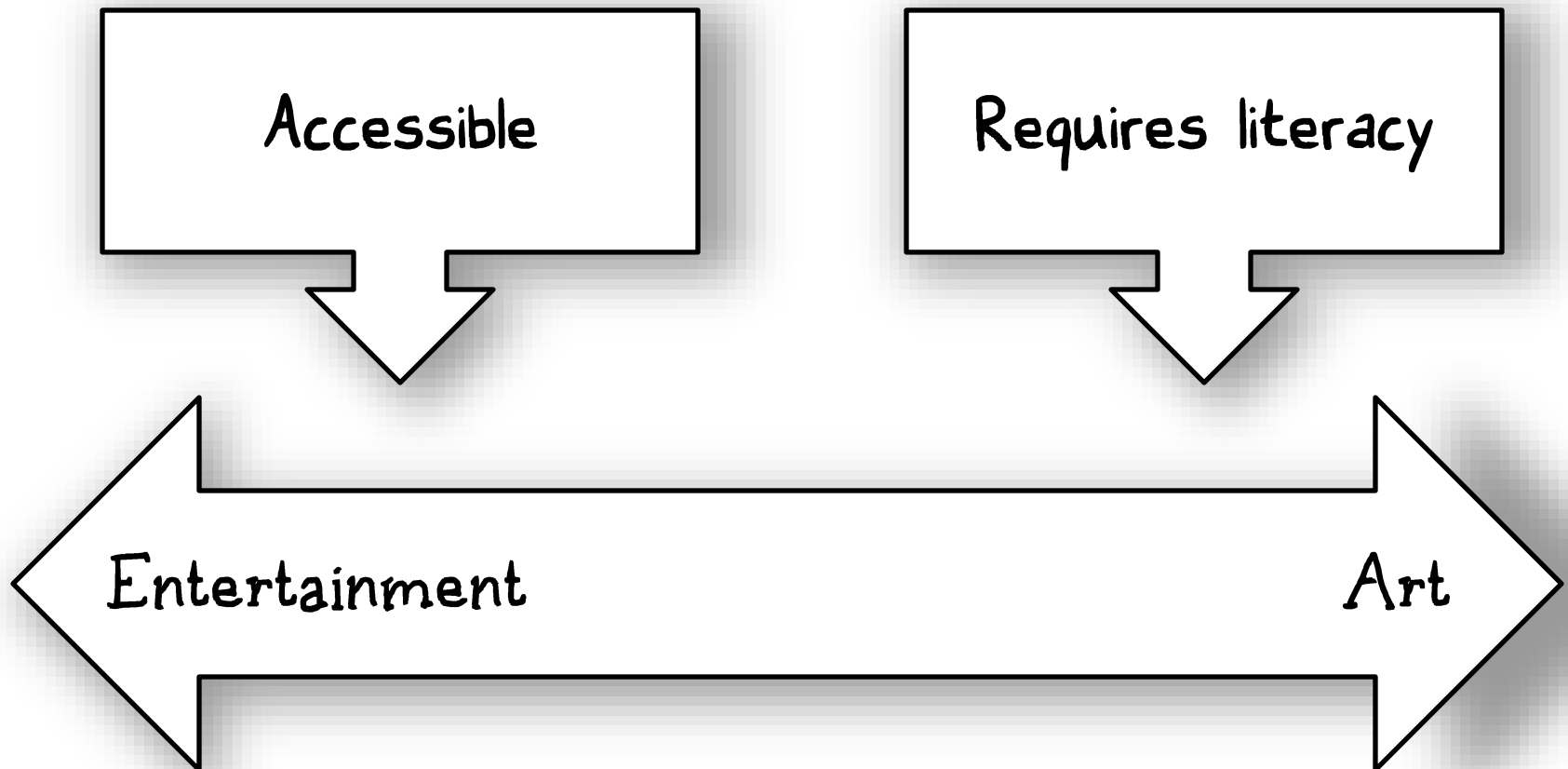
The book explicitly called for the key artistic messages in games to be embedded in the mechanics.



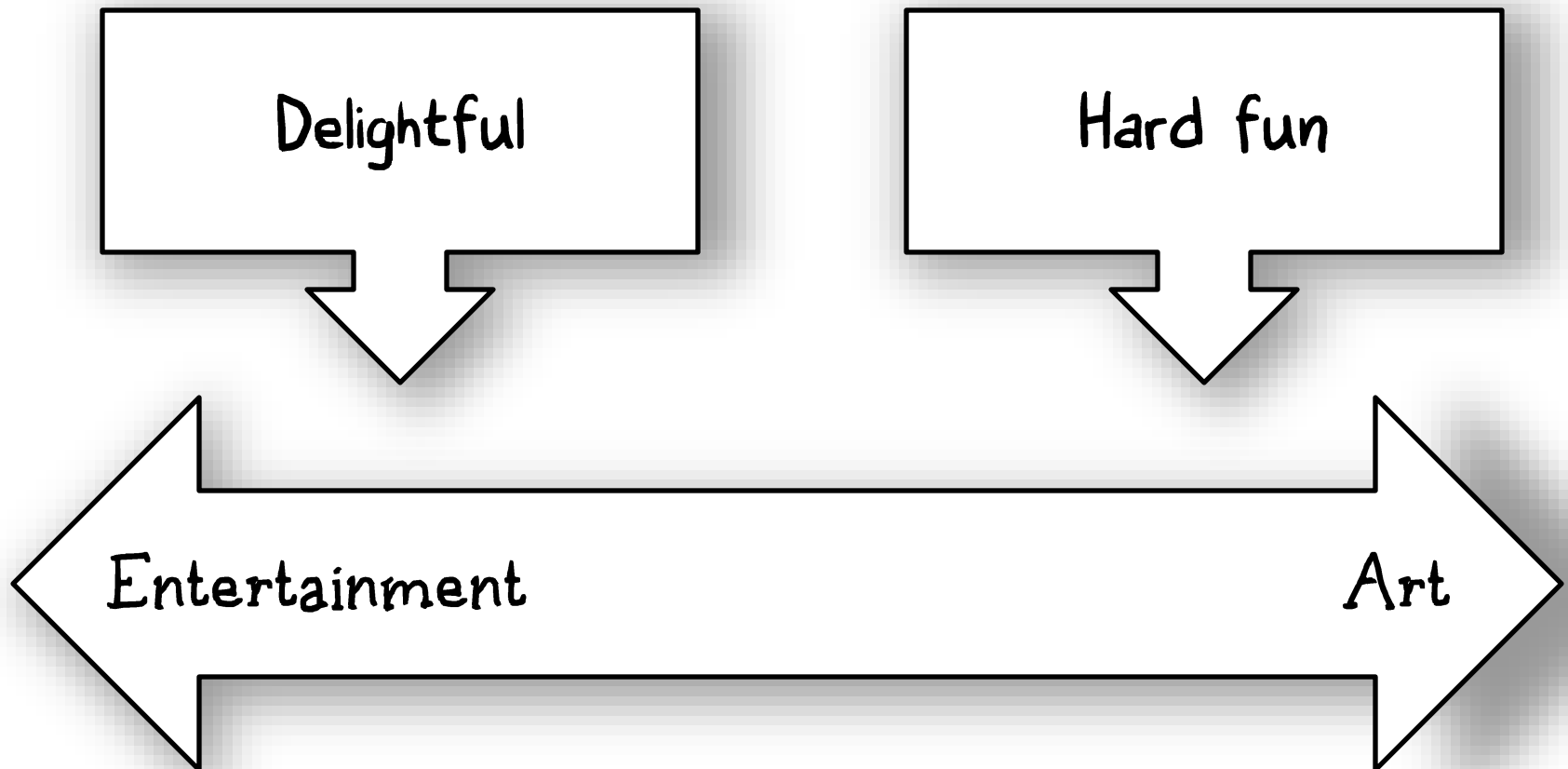
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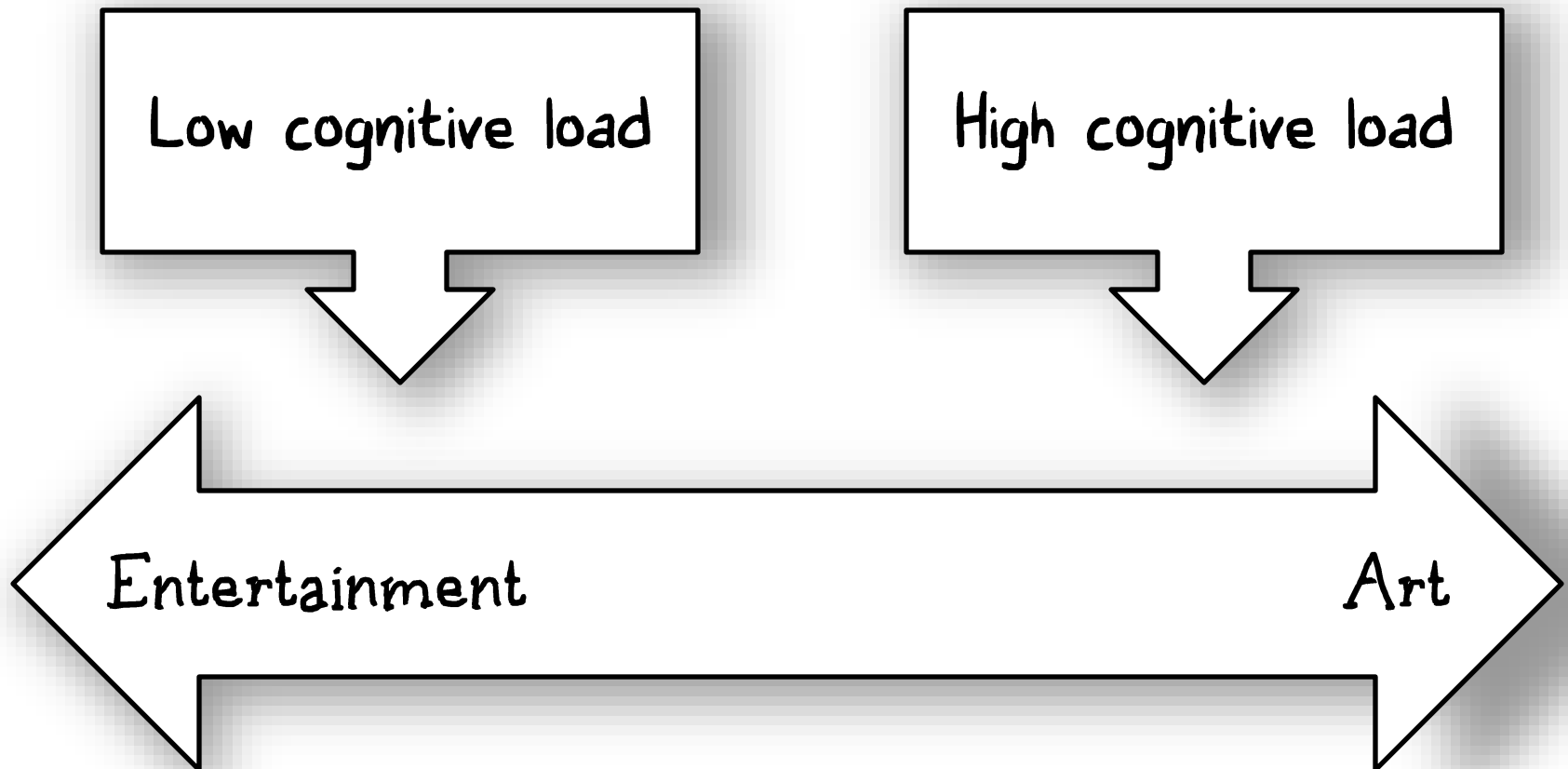
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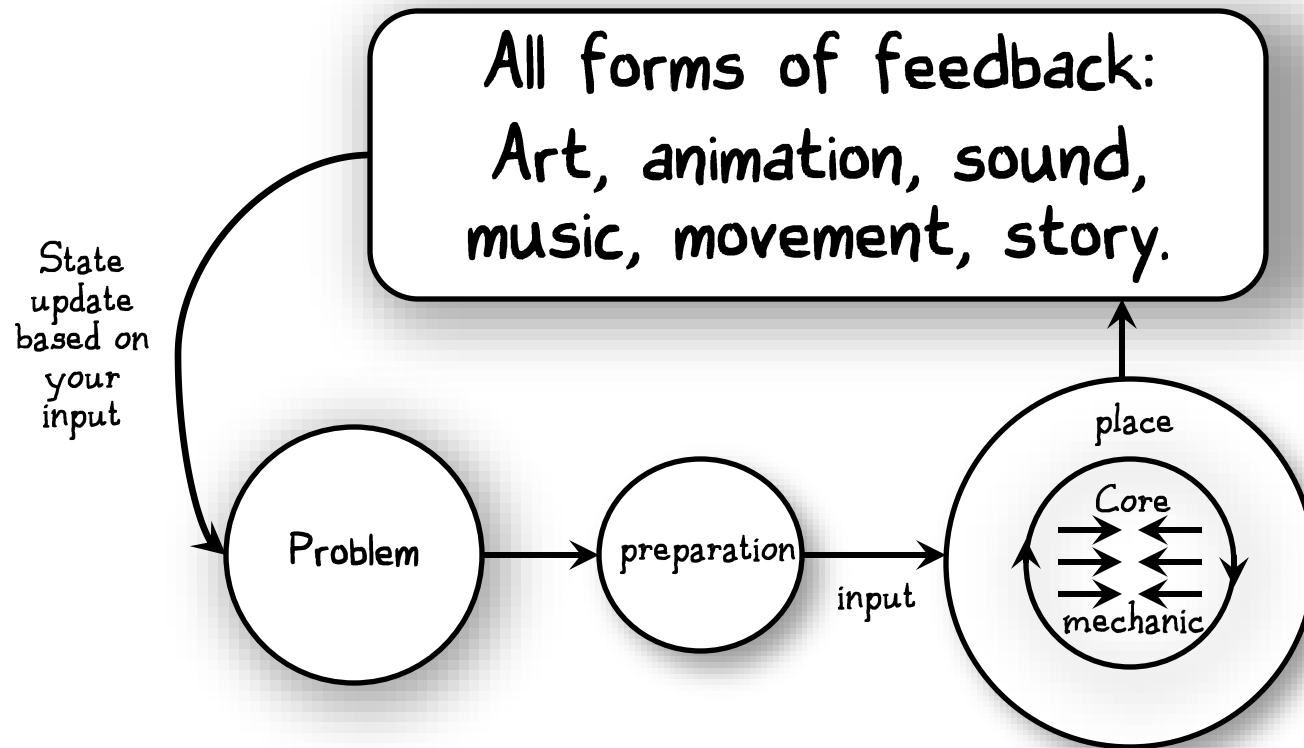
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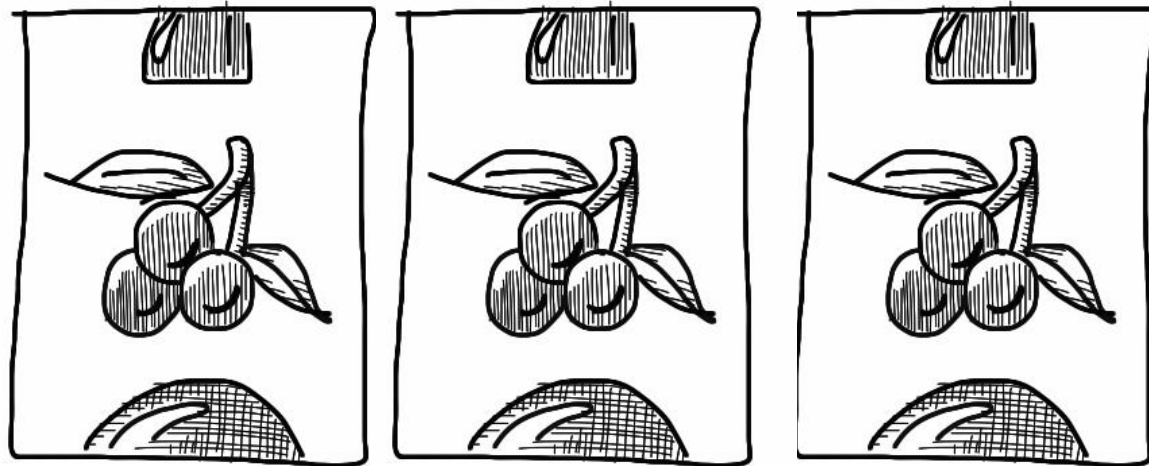
The book explicitly called for the key artistic messages in games to be embedded in the mechanics.



The further I got into game grammar, the more I saw surface elements as being part of the way the game gives you feedback on your actions.

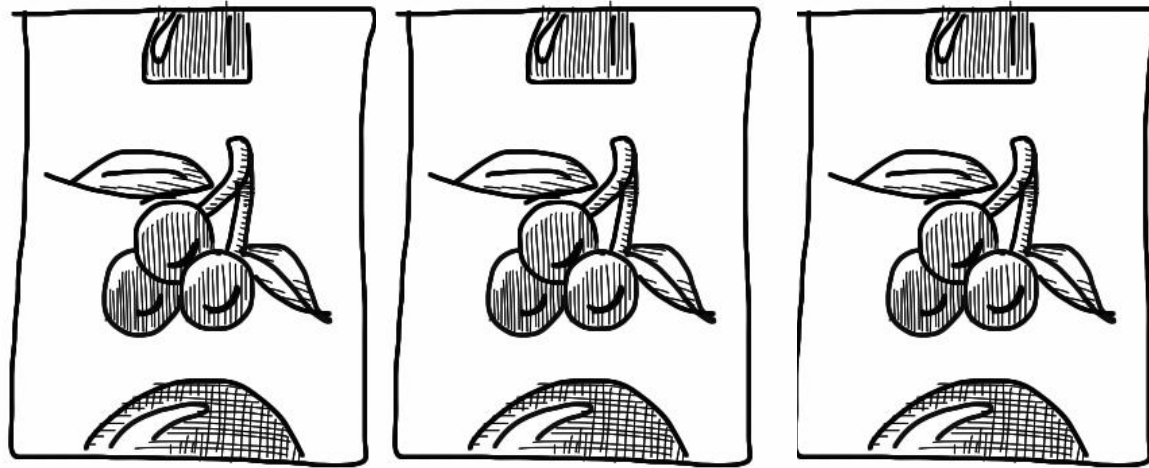


Brain hacks turn out to be

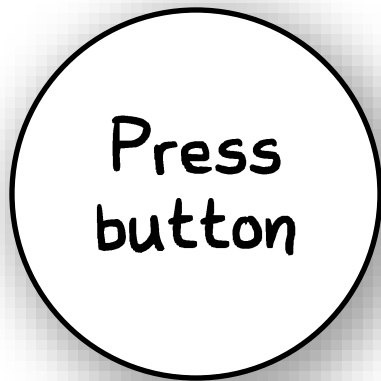


a core aspect of game design . . .

Brain hacks turn out to be

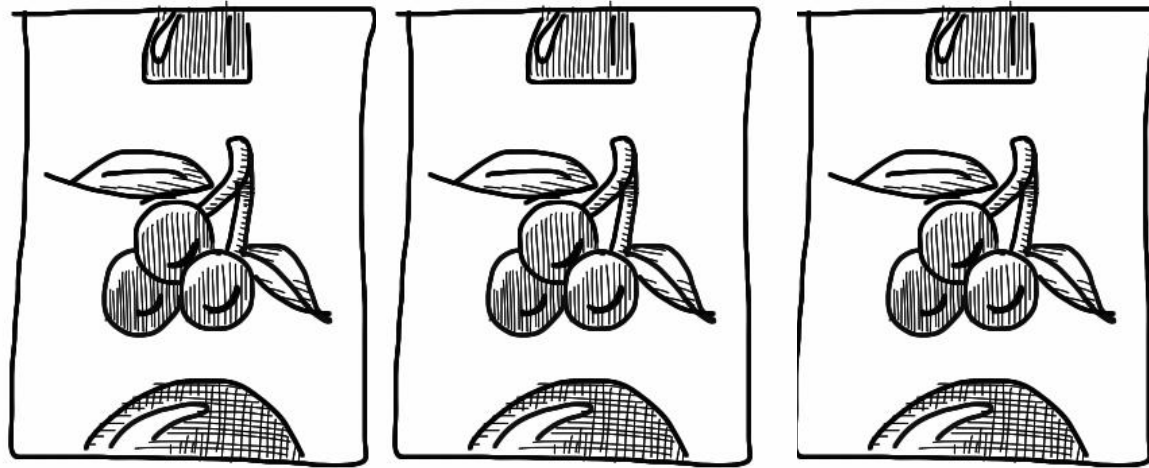


a core aspect of game design . . .

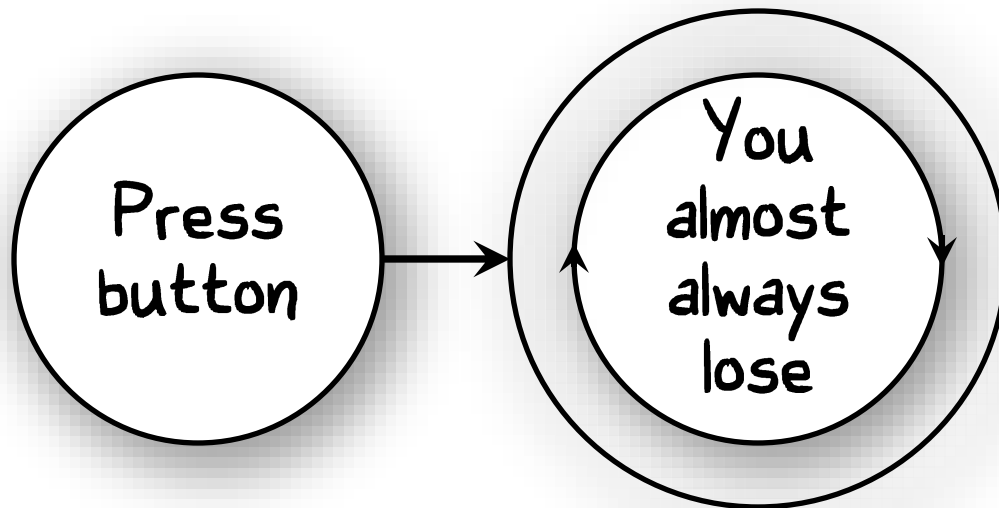


Small problem

Brain hacks turn out to be

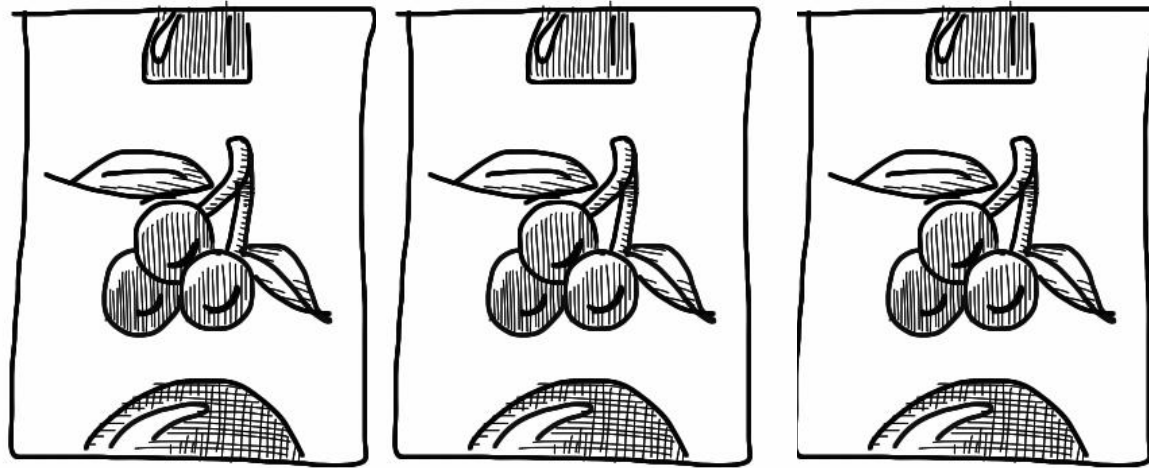


a core aspect of game design . . .

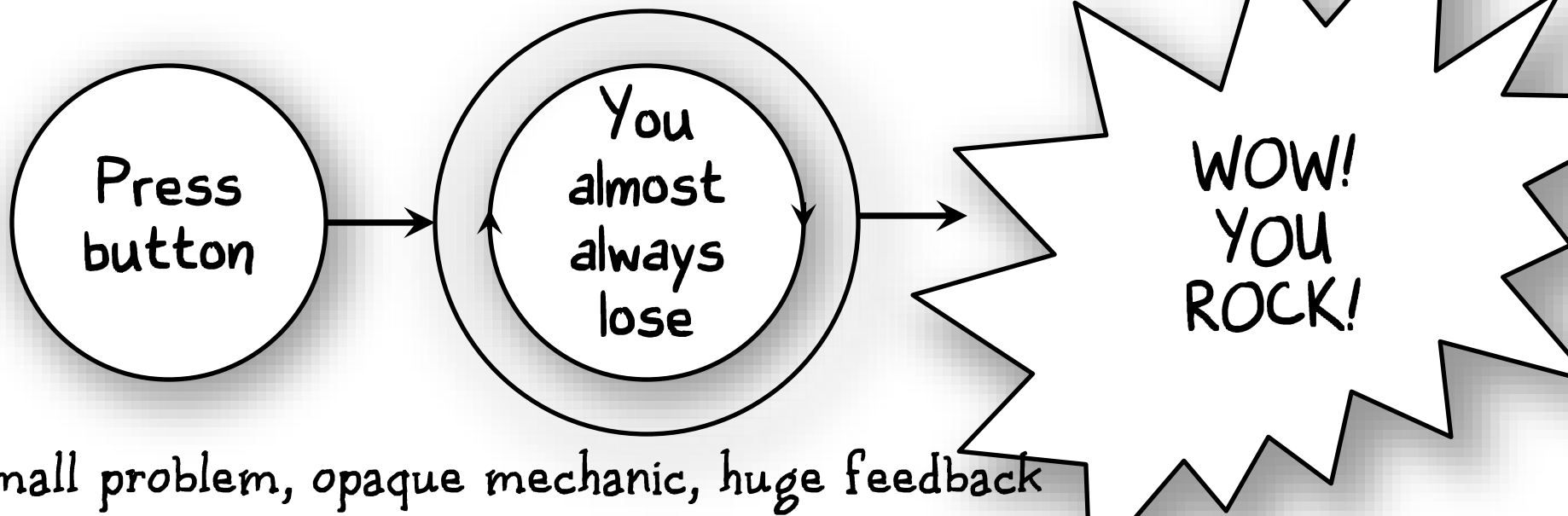


Small problem, opaque mechanic

Brain hacks turn out to be



a core aspect of game design . . .



Small problem, opaque mechanic, huge feedback

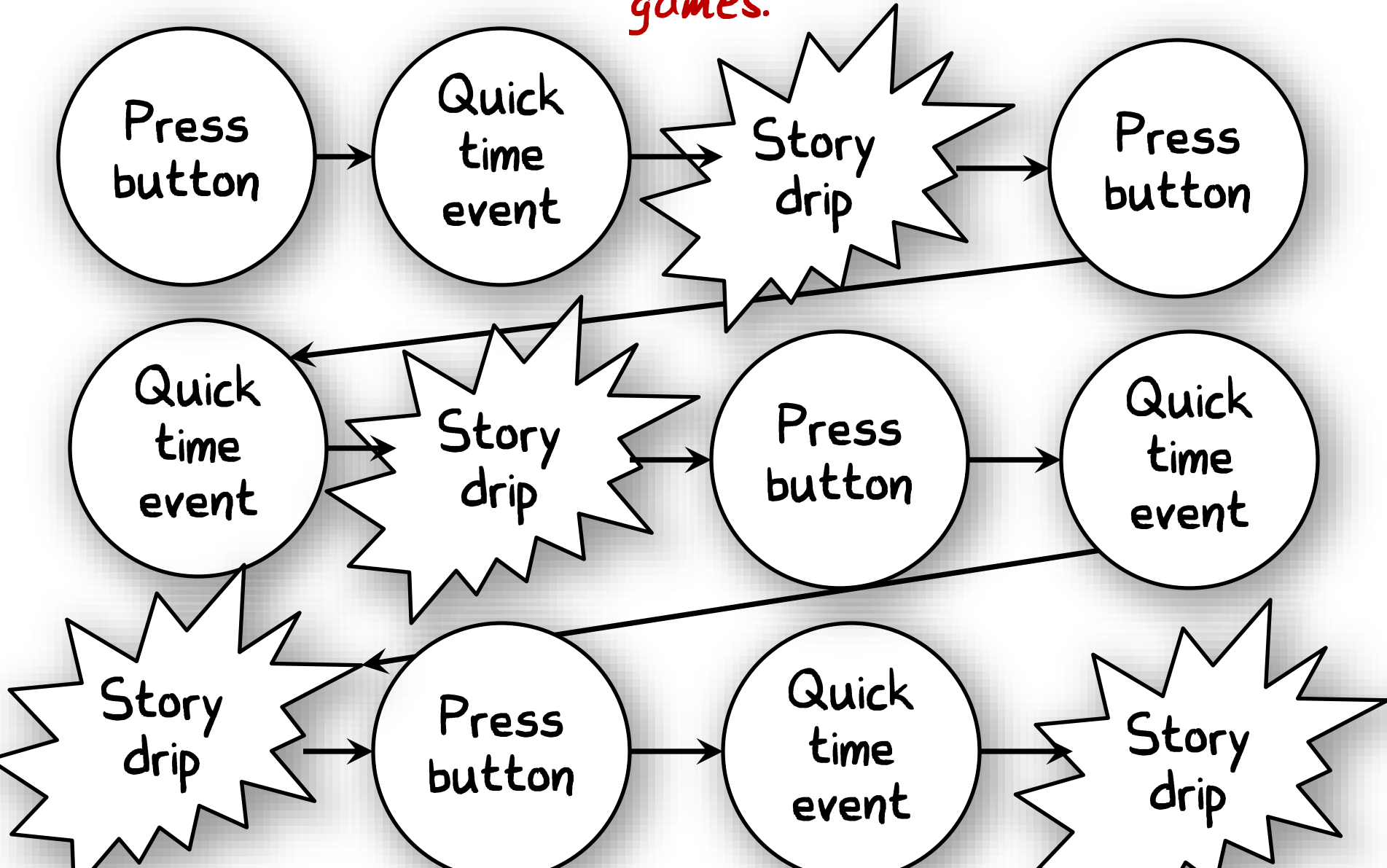
... which also led
to the book being
a key inspiration
to the nascent
field of
gamification.

Which has a whiff
of evil.

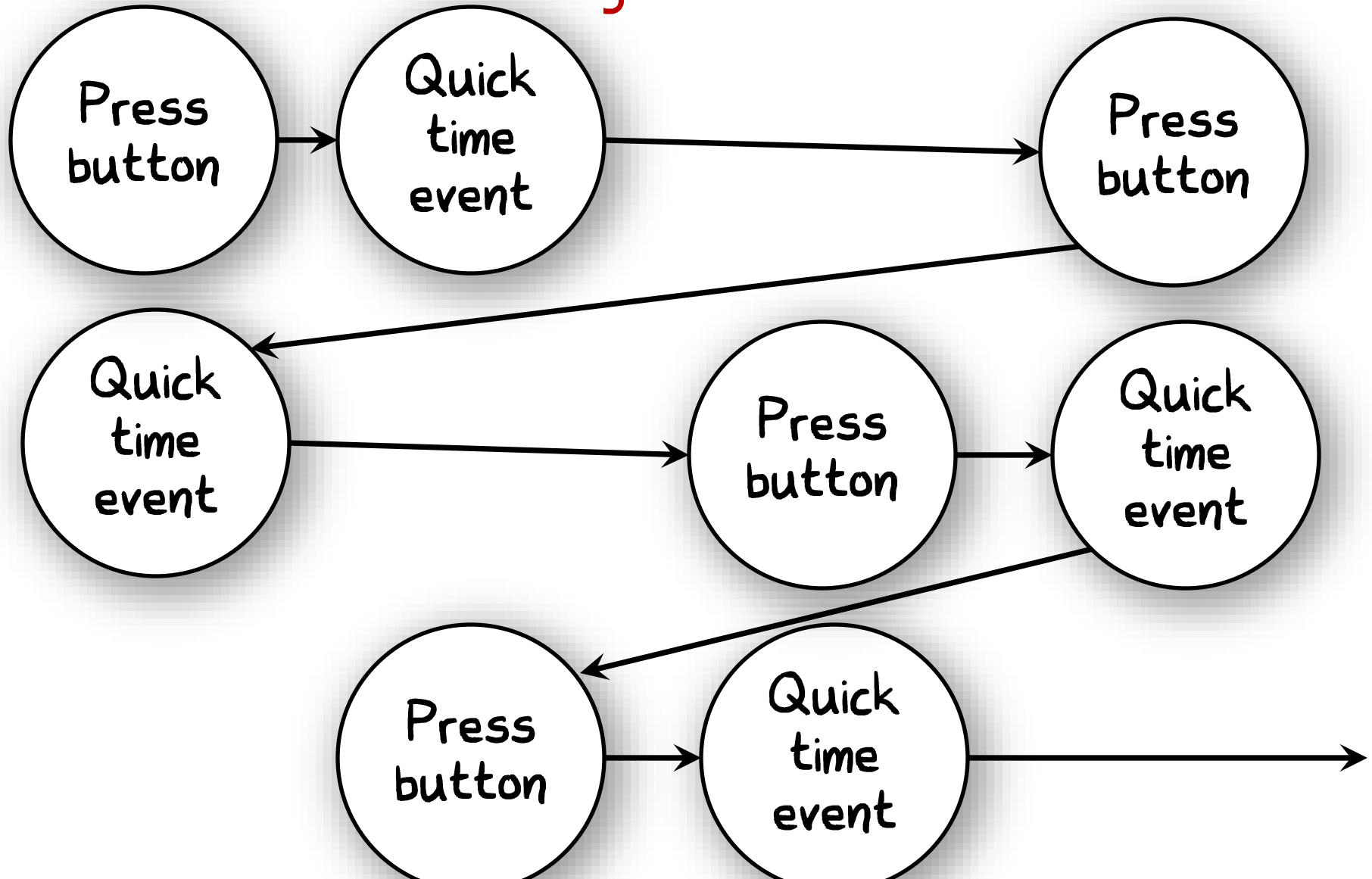
Ian Bogost

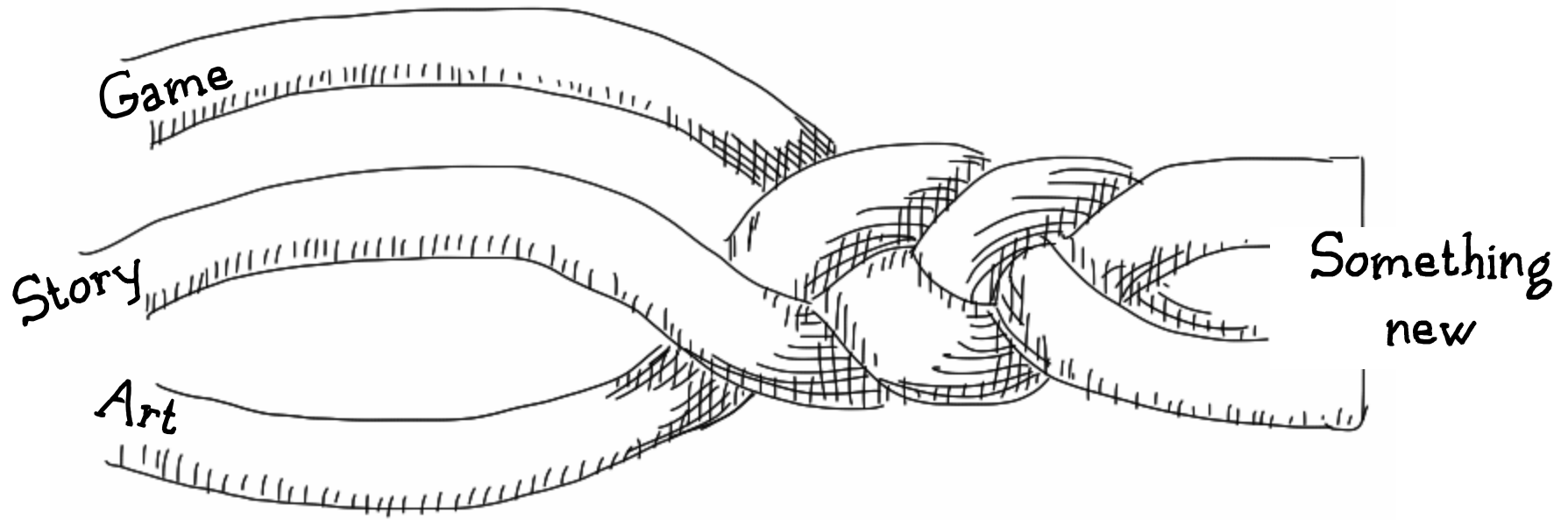


This led me to become deeply skeptical that authorially constructed story has a formal role in games.



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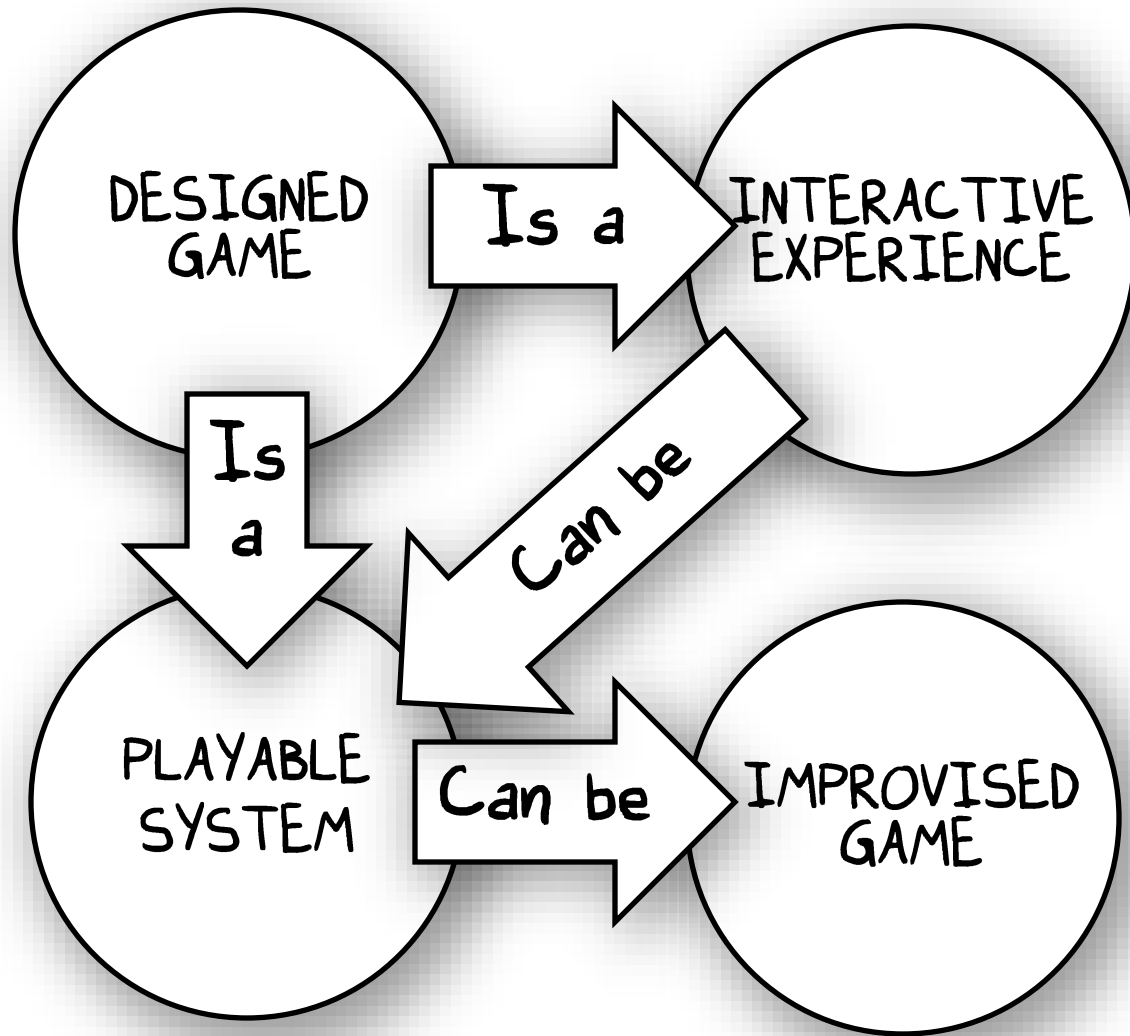


Not that it shouldn't exist, but that it is like a
second medium woven into games.

Which means we maybe need a new name for some kinds of what we call games.

Exists independent of any and all presentation: e.g., chess in your head.

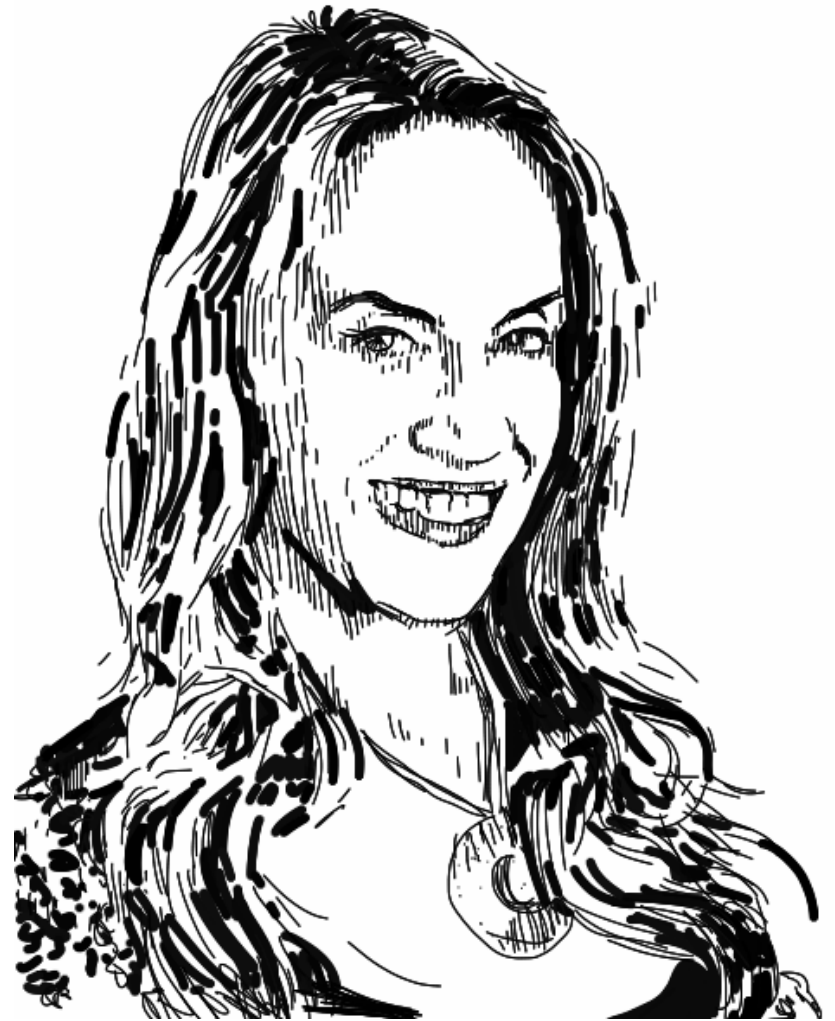
This includes many of life's systems. Economic, politics, etc.



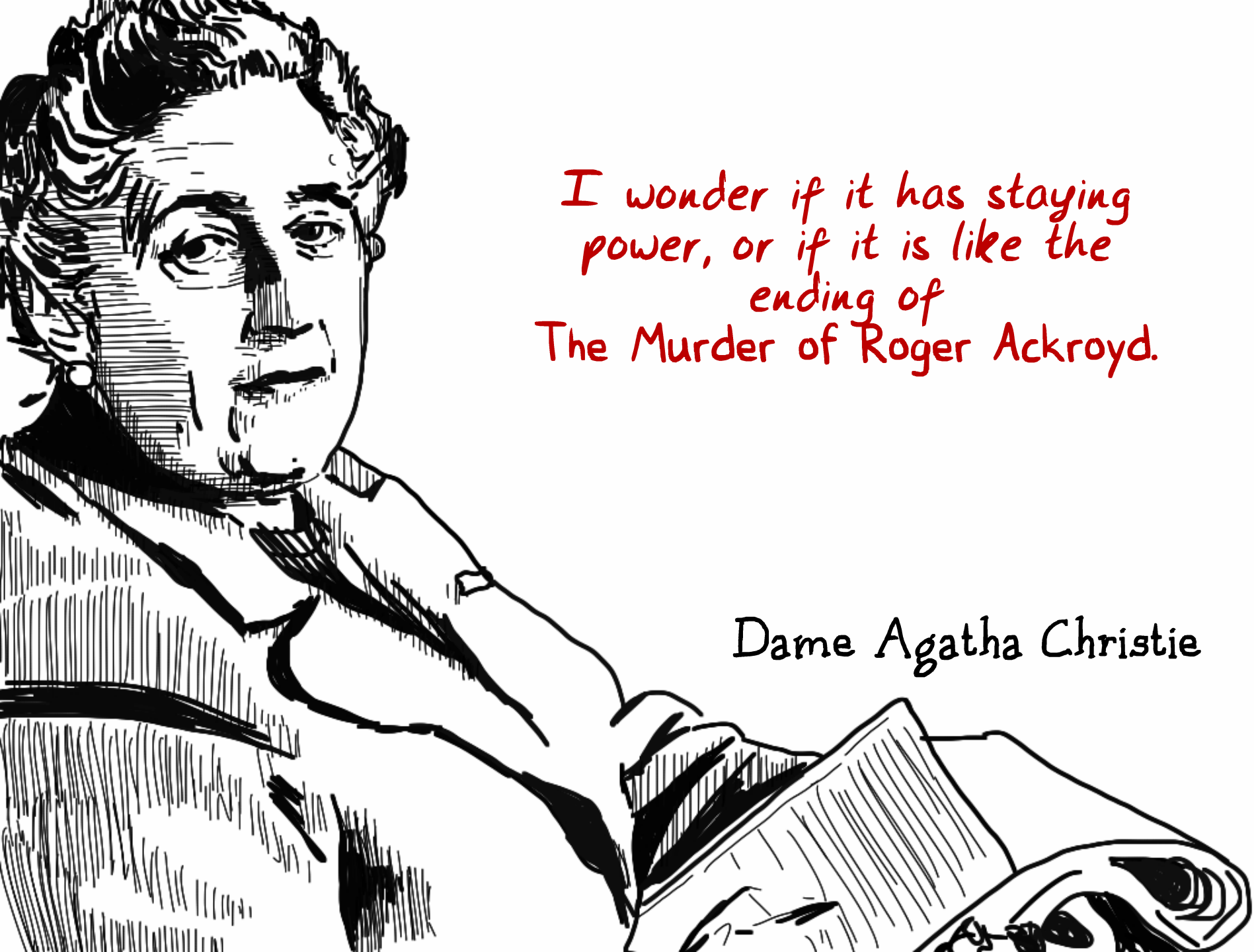
There are things here that are not "formally" games, like the interactive fiction Photopia.

A ball is a toy. Catch is a game with a ball and the physics ruleset.

One of the things I
have come to wonder
about is the "Train
gambit" - where the
mechanics of a game
are designed to make
you complicit in
something distasteful,
unethical, or outright
evil.



Brenda Garno Brathwaite

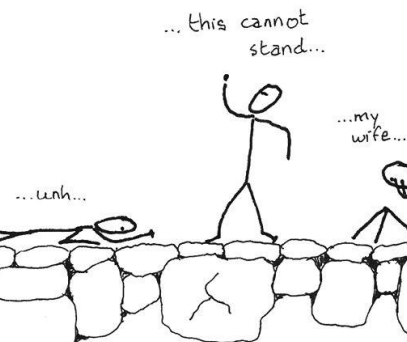
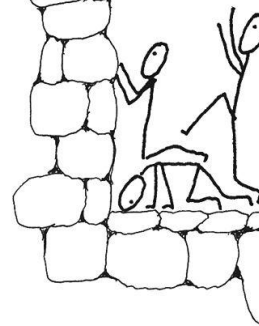
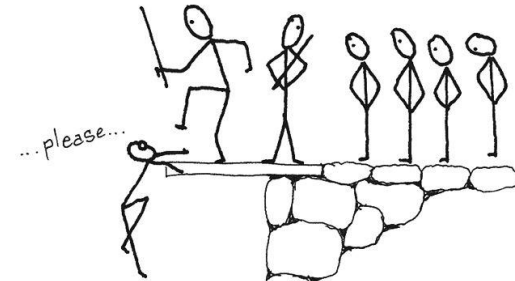


*I wonder if it has staying
power, or if it is like the
ending of
The Murder of Roger Ackroyd.*

Dame Agatha Christie

...you're next...

Or, perhaps,
there is a sort
of ludonarrative
consonance,
where mechanics
are surprisingly
apt for a fiction.



I think games have two ways of meaning:
prescriptive and descriptive.

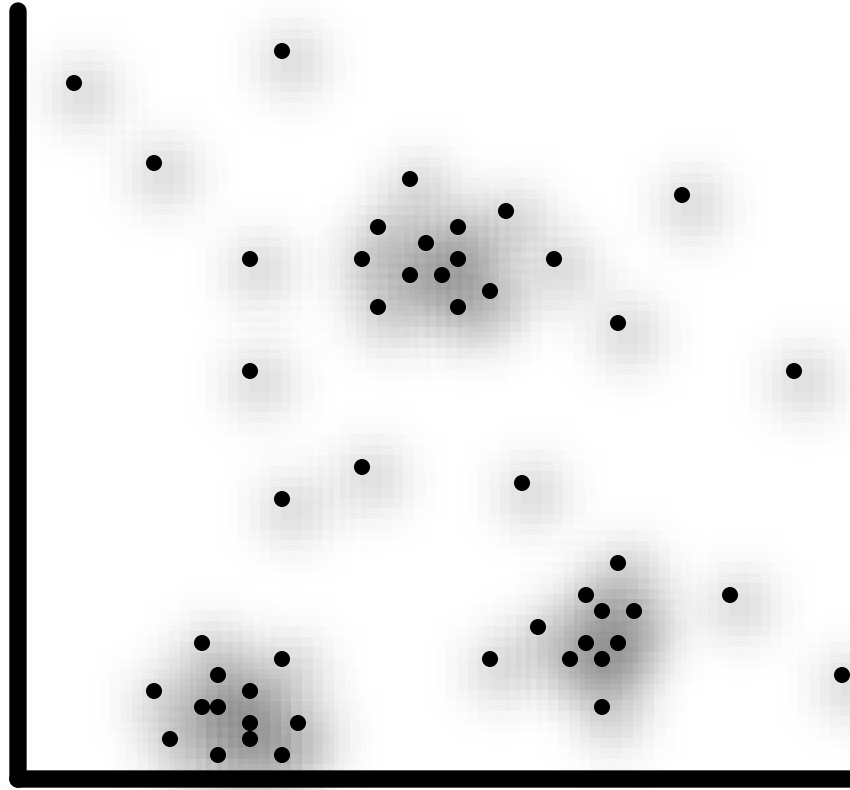
It is questionable whether the
descriptive form is really even
possible.

In either case, we can
understand "what" happens
without understanding "why."



Will Wright

That's a bit scary.



*What, really, is the gap between a cluster analysis
and a stereotype?*

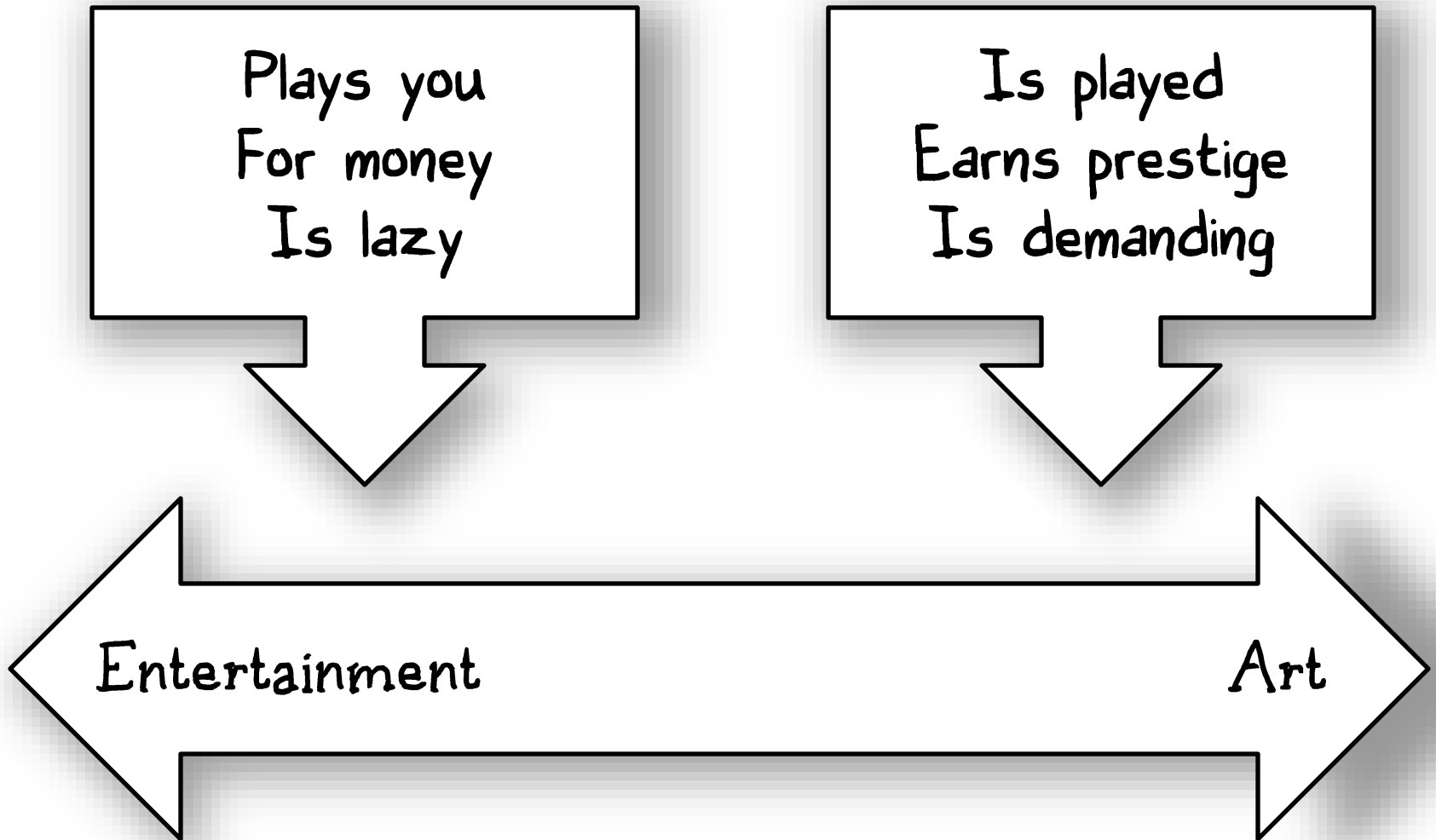
Entertainment is useless, in that sense.

Plays you
For money
Is lazy

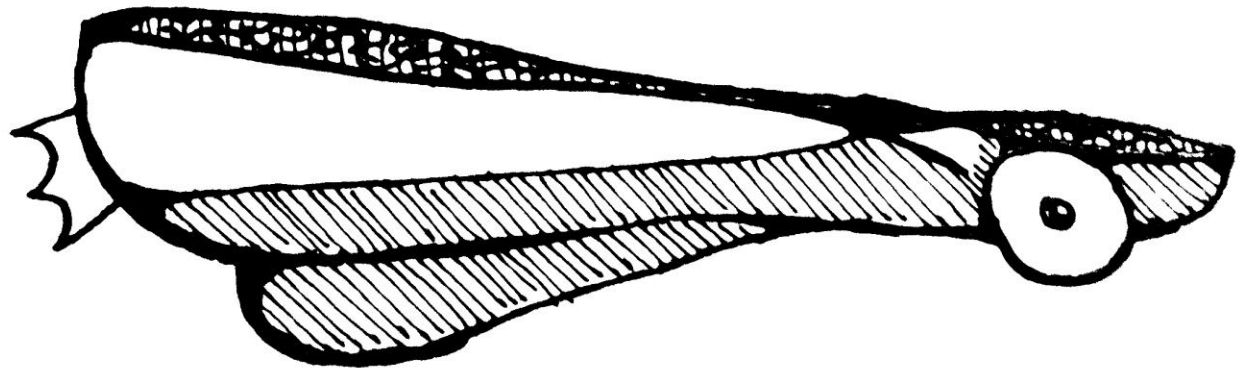
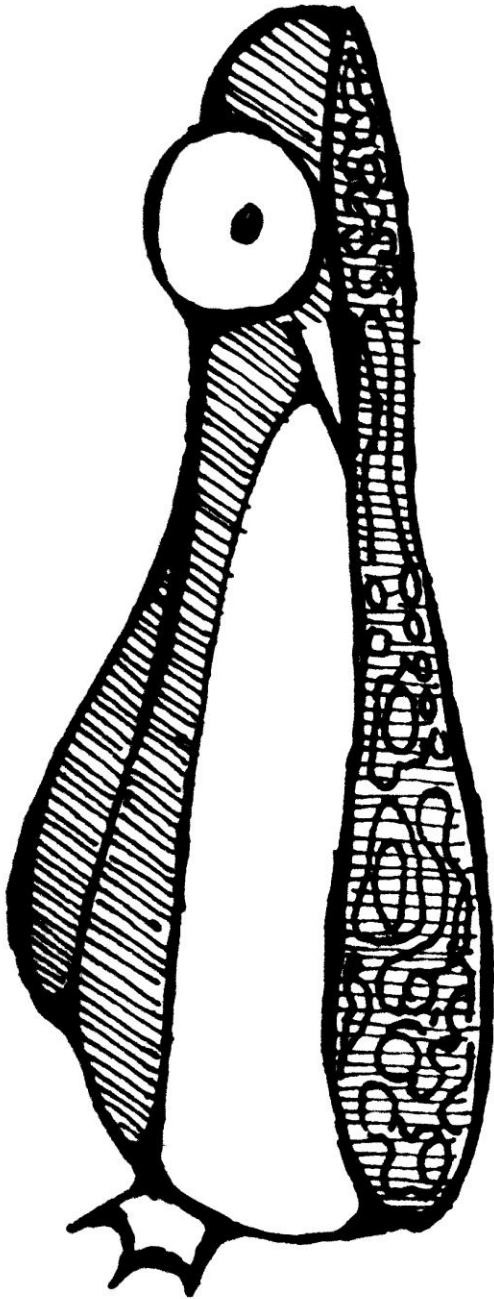
Is played
Earns prestige
Is demanding

Entertainment

Art

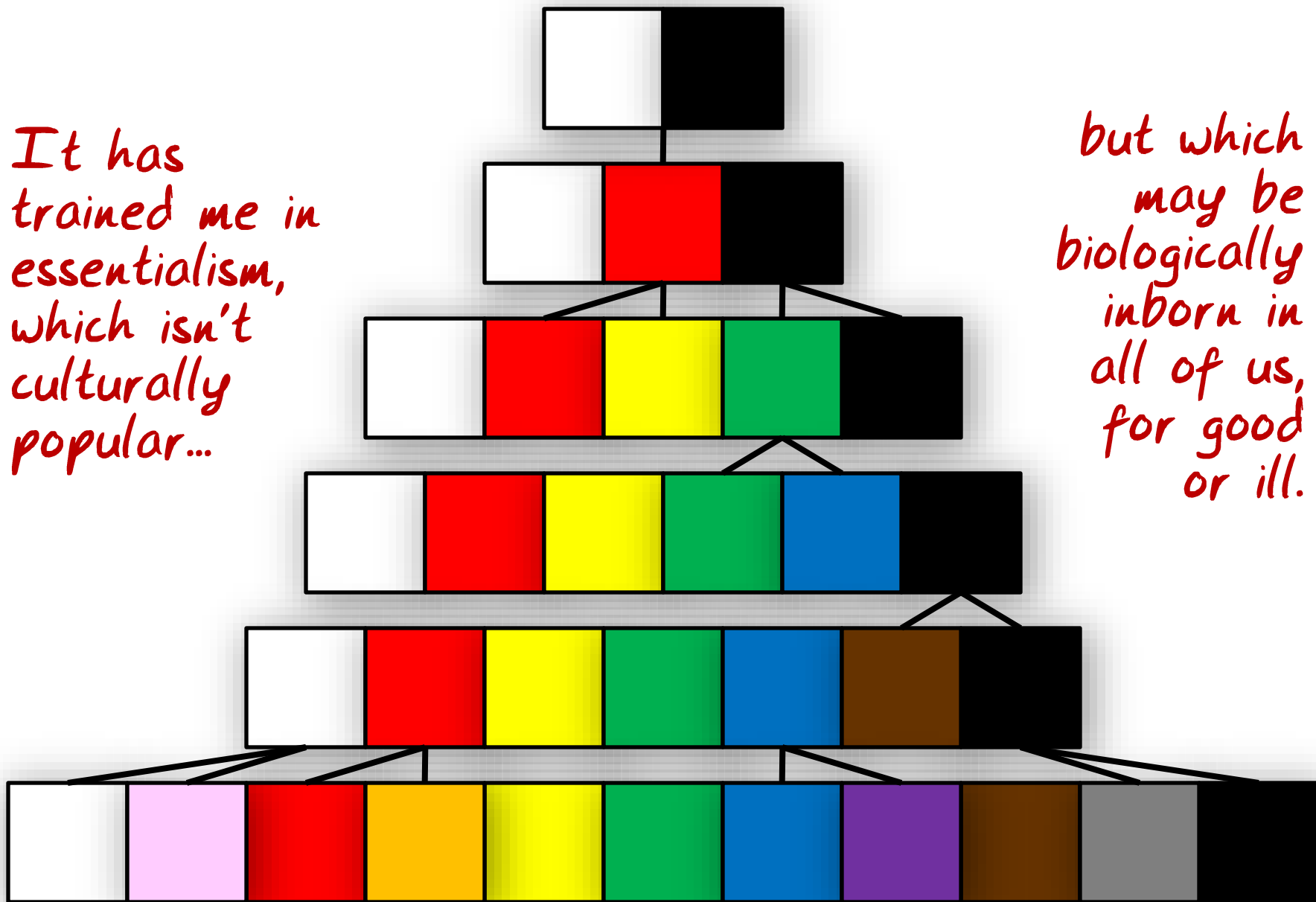


*I arrived at a systemic view
of games, but it might be that
games trained me to see
everything as systems.*



*It has
trained me in
essentialism,
which isn't
culturally
popular...*

*but which
may be
biologically
inborn in
all of us,
for good
or ill.*



Progression of colors added to languages, according to Berlin & Kay (1969)

The problem with games being treated as reality, or reality treated as games, is that there is the scary potential for the opposite of play: a permanent rat race.

The real world just doesn't offer up as easily the carefully designed pleasures, the thrilling challenges, and the powerful social bonding afforded by virtual environments. Reality doesn't motivate us as effectively. Reality isn't engineered to maximize our potential. Reality wasn't designed from the bottom up to make us happy.

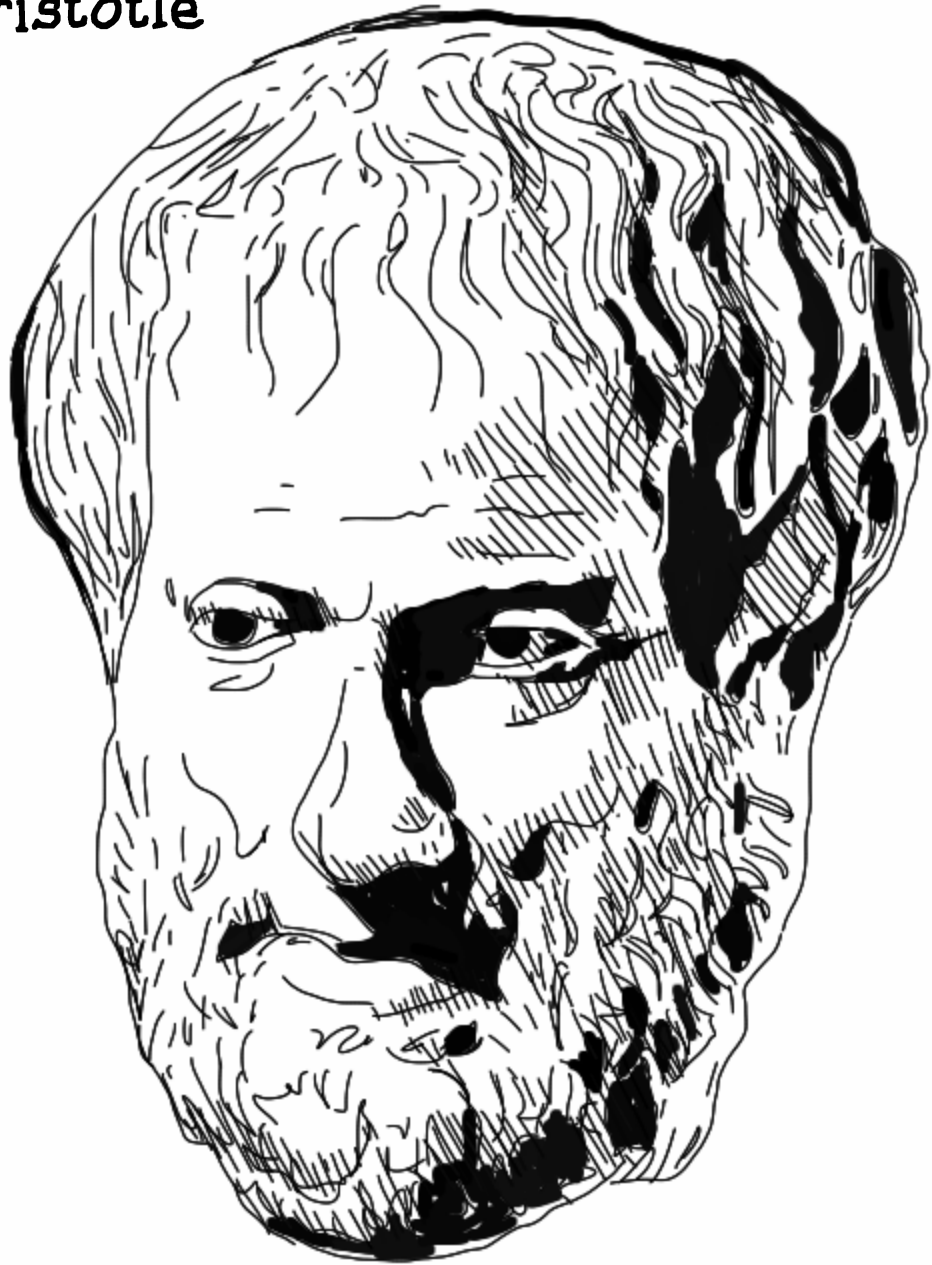


Should we treat life as a game?

Aristotle

Aristotle defined a hero
as someone who faces up
to tough luck.

Man, I've had
tough hamartia
lately. FML.



In a game you can walk
away.

But learn something.
Joyously.

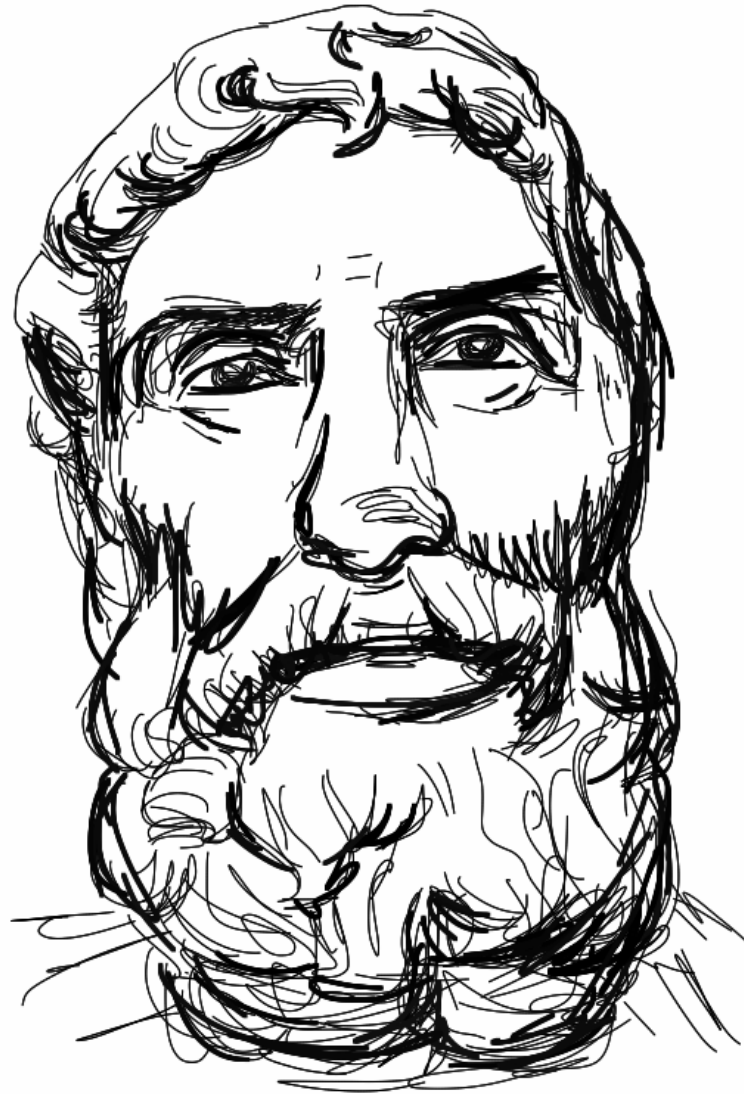
*this slide would not exist if not for Sebastian Deterding

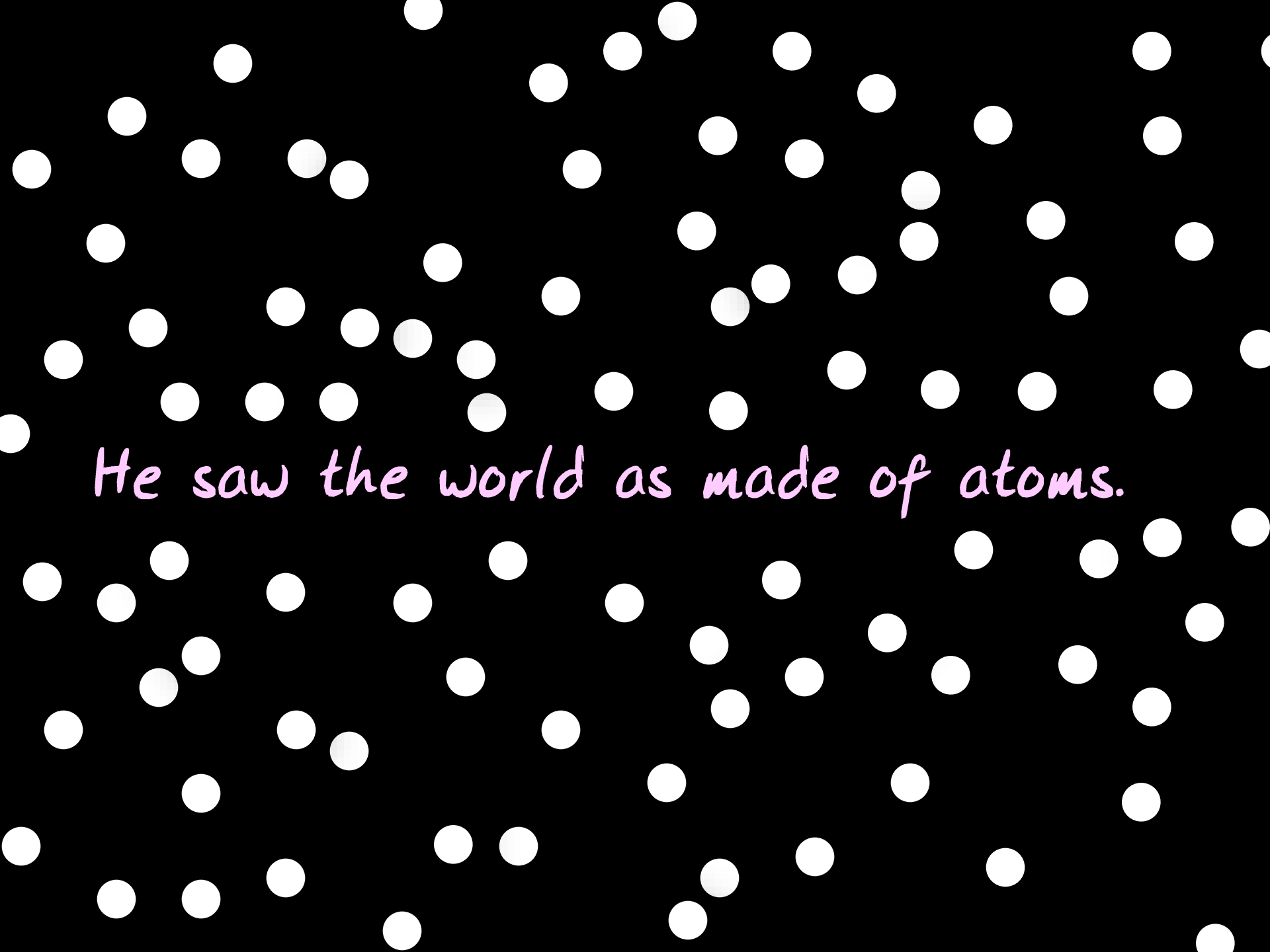
There's a science of happiness now, and they know what drives feeling happy in life.

- Gratitude
- Using your strengths
- Social connection
- Generosity
- Mindfulness: savoring your experiences
- Striving for goals
- Optimism
- Don't reduce the bad - increase the good

That list looks a lot like what we get from games at their best.

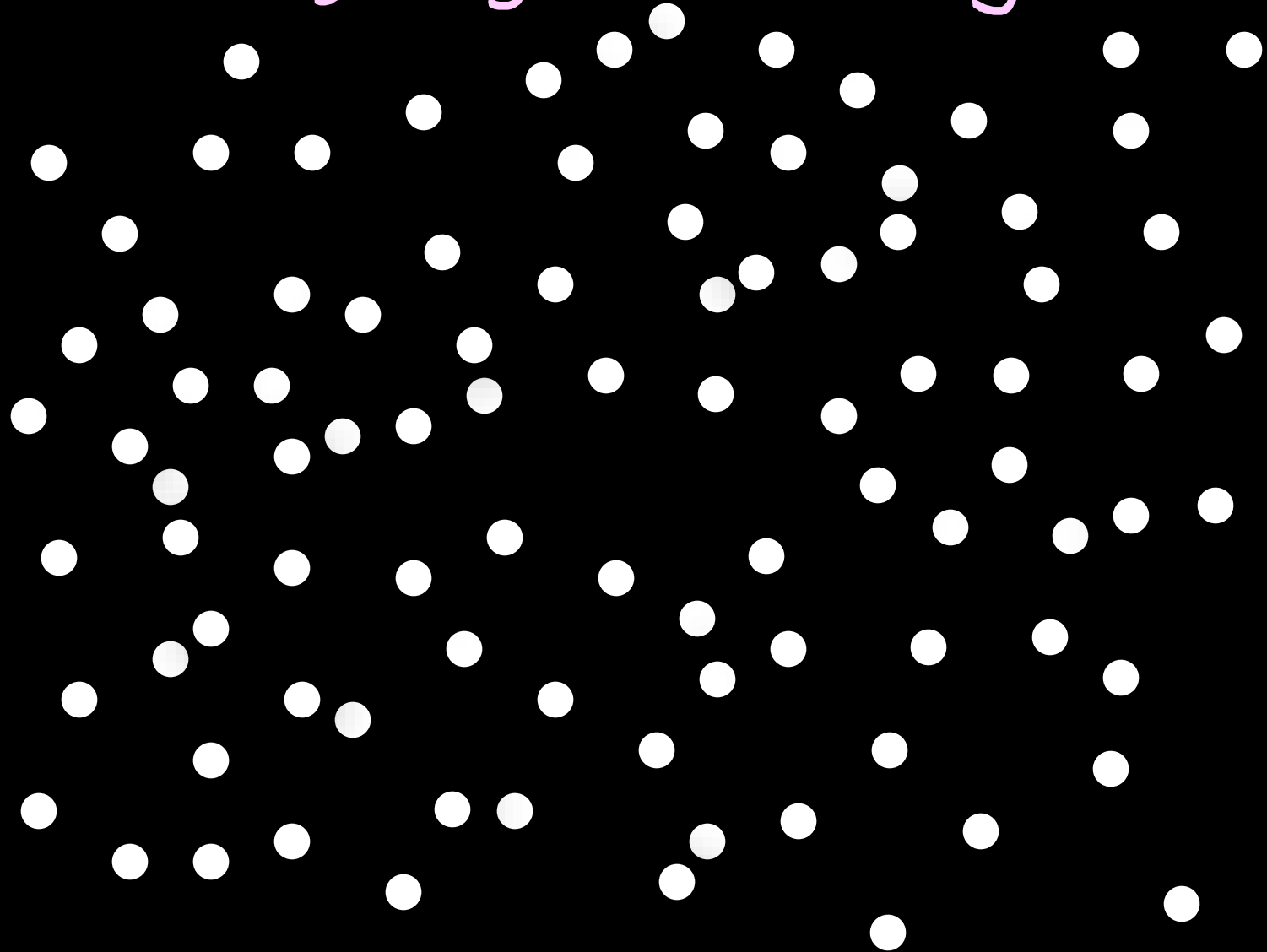
In the end, I am reminded of a different Greek philosopher: Epicurus.



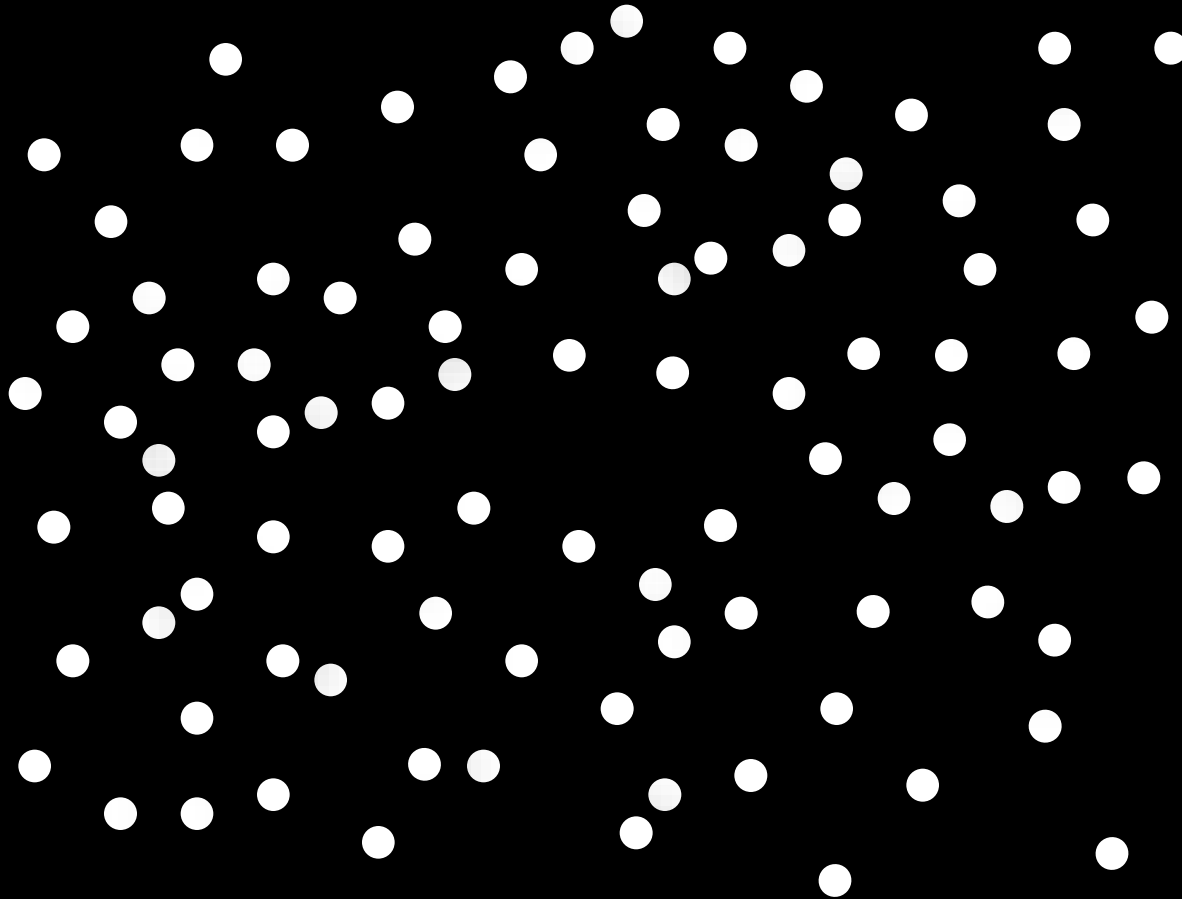


He saw the world as made of atoms.

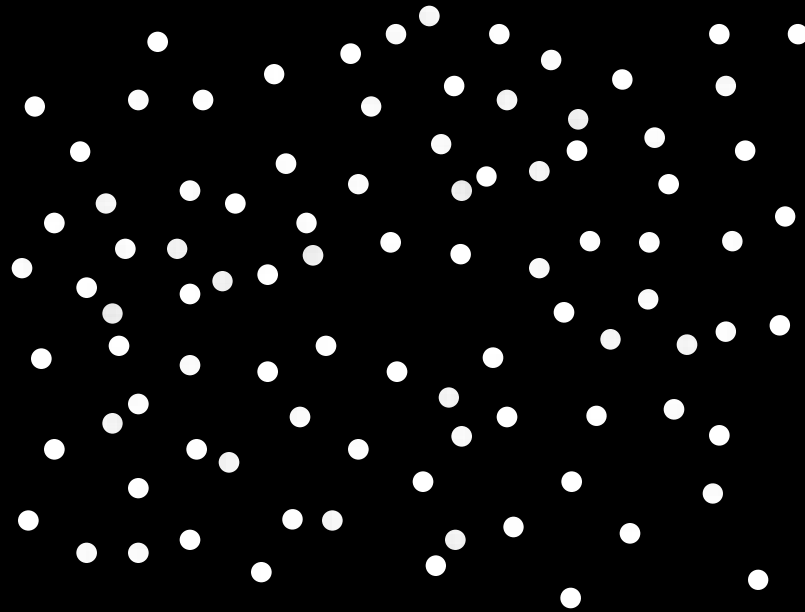
Everything that exists, just



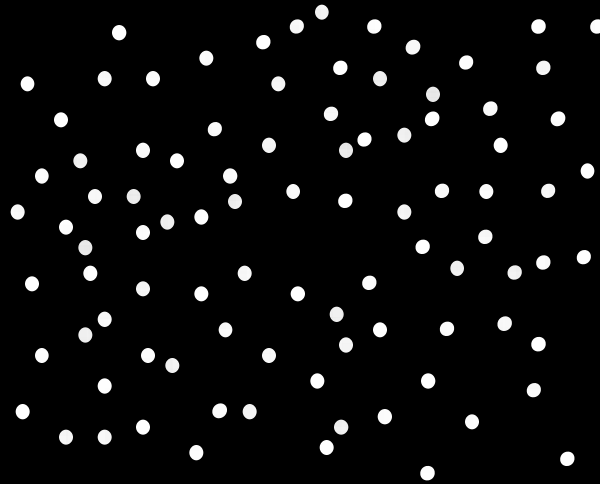
the chance arrangement



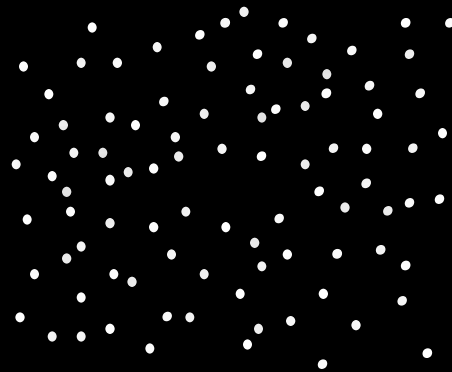
of particles



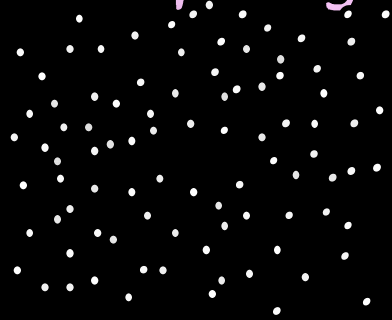
coming together



for a time,



then parting.



Which means everything passes.

And



everything



also comes together.



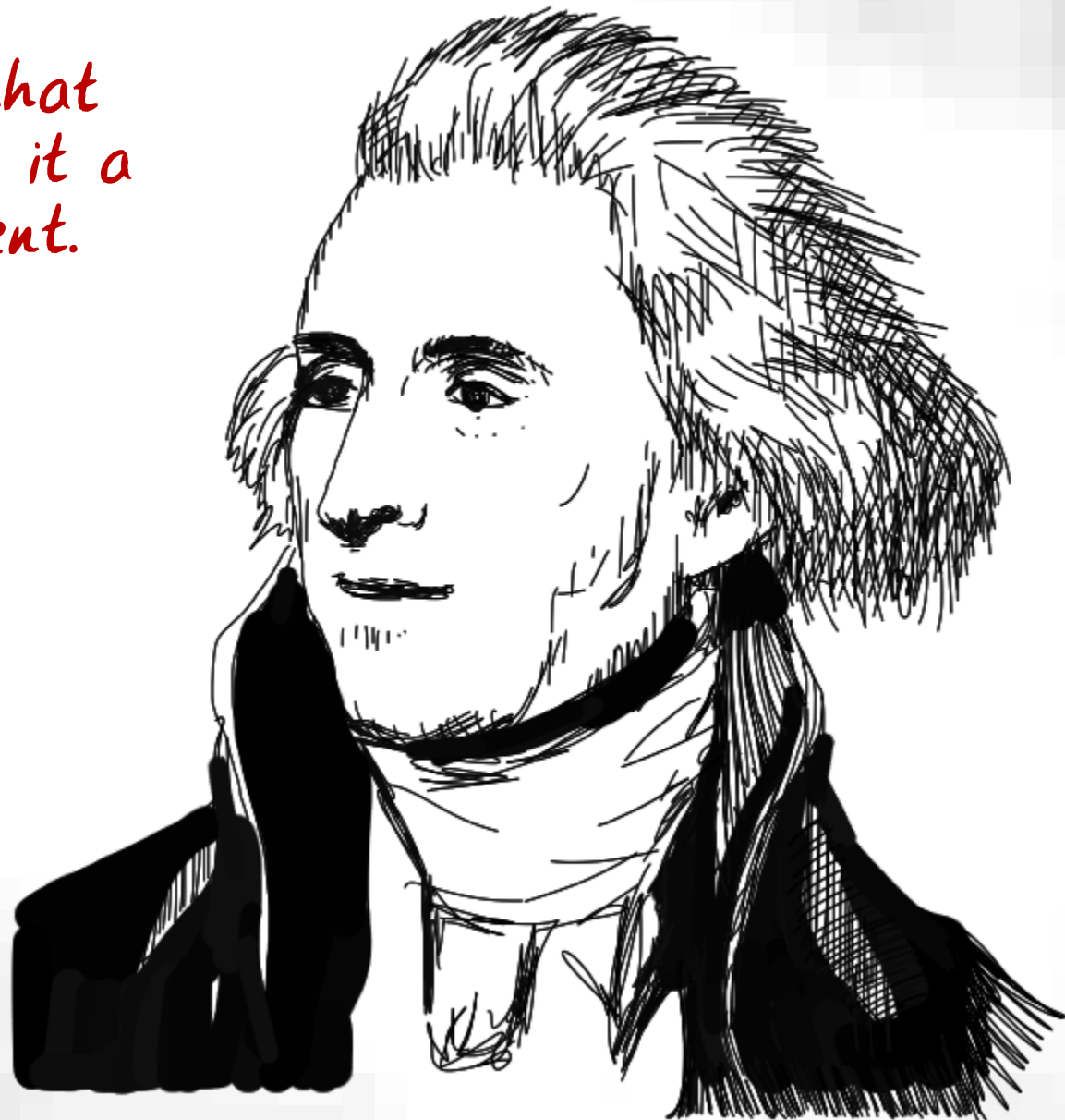


This led to a life
philosophy: you're going to
be oblivious dust, so you
should enjoy your conscious
time.

*This idea had some powerful
adherents-*

powerful enough that
they tried to make it a
basis of government.

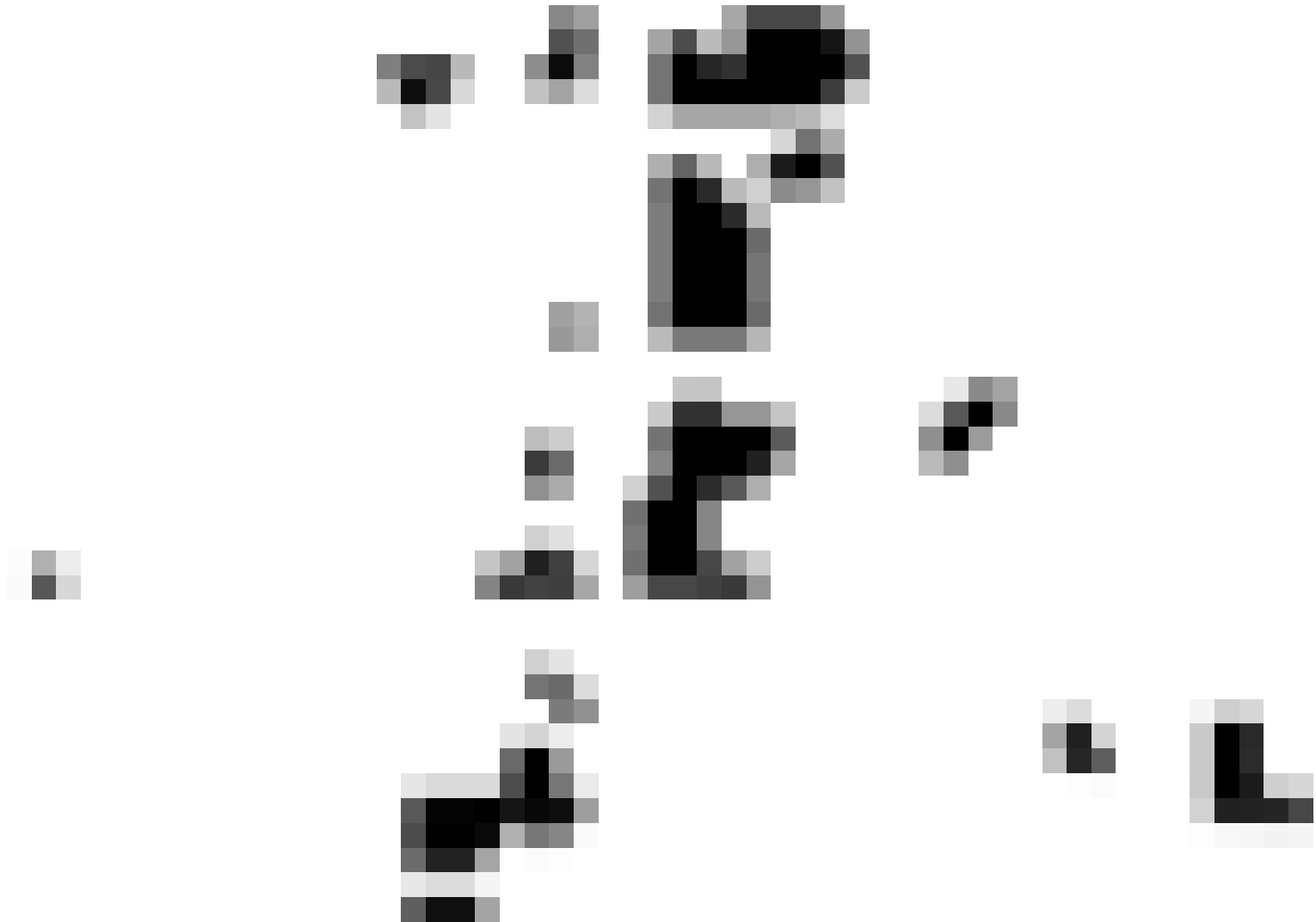
*powerful enough that
they tried to make it a
basis of government.*



Thomas Jefferson



To me, a theory of fun says that games are in many ways not just deliberate practice machines,



not just a swirl of systems,

But a space between the dust from which we came





and the dust we shall be

in which we can engage in the grand pursuit.

life, ~~liberty~~ liberty, & the pursuit of happiness

in which we can engage in the grand pursuit.

life, liberty, & the pursuit of happiness

Ahem.
Done yet?

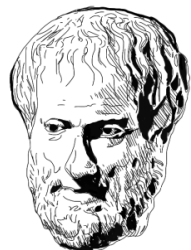
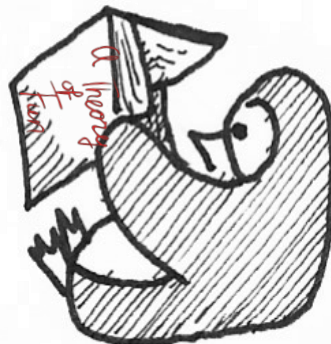


in which we can engage in the grand pursuit.

life, liberty, & the pursuit of happiness

CHARGE!





And-
YOU.