

Seeing UX through the Lens of Evolution:

Unleash the superpowers
inside of users' mind!

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What is common between all of them?

Infectious disease

Airports

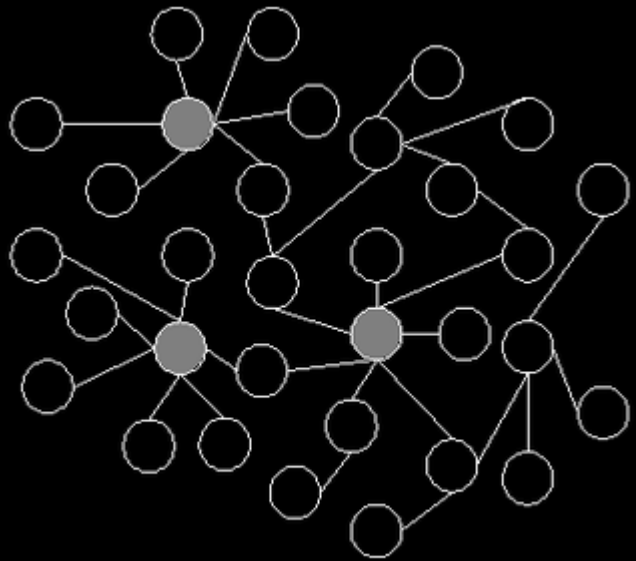
World Wide Web

Human Brain

Social Relationships

	Node	Link
Infectious disease	Infected Person	Infection
Airports	Airport	Airline route
World Wide Web	Web page	Hyperlink
Human Brain	Neuron	Connection
Social Relationships	Person	Relationship

The Lens of Complex Network Theory



There could be many lenses:

- The Lens of **Complex Network Theory**
- The Lens of **System Dynamics**
- The Lens of **Statistics**

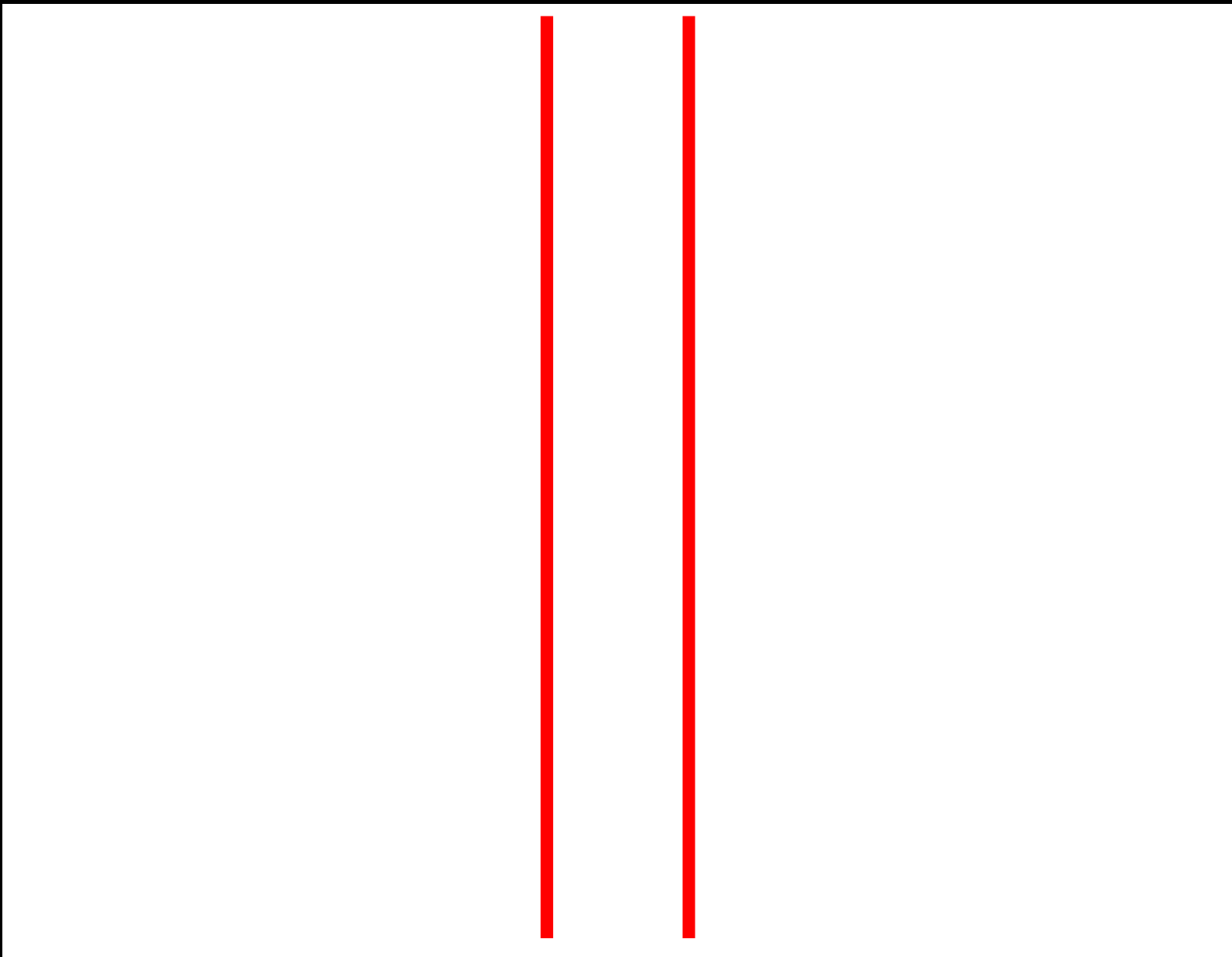
...

Each lens provides an **unique way of seeing
and thinking** to designers.

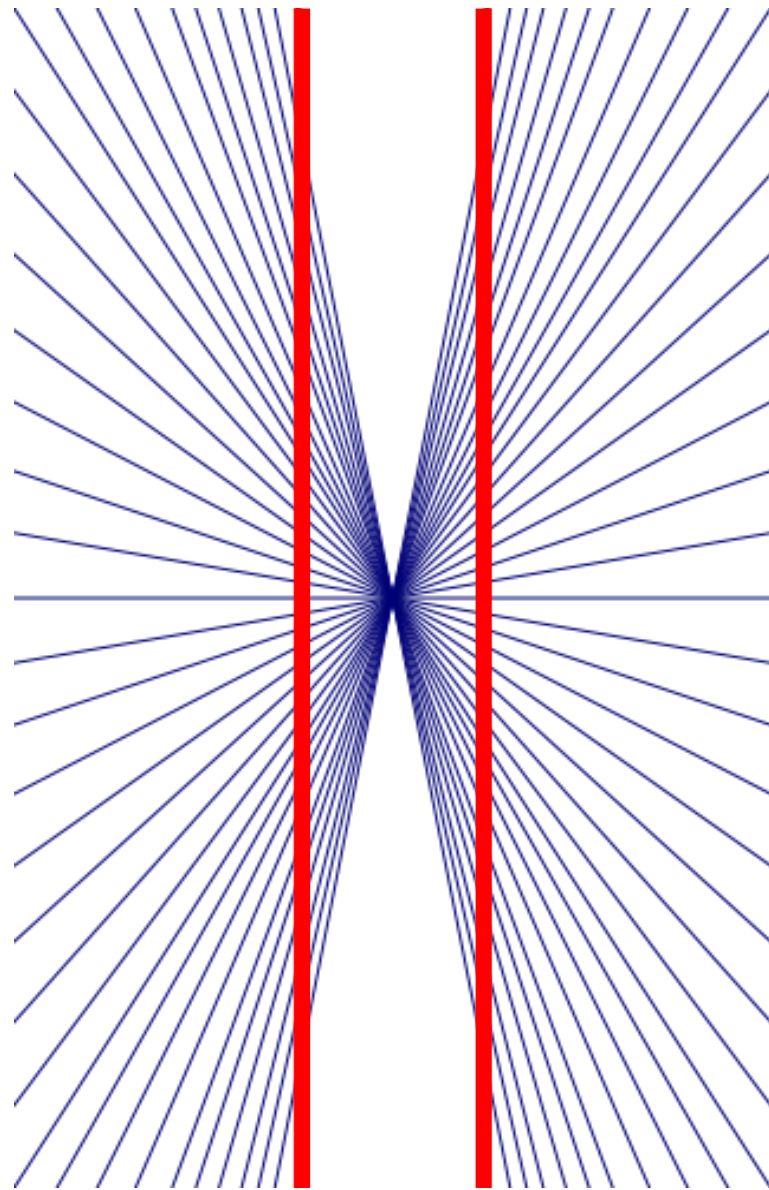
The more the better :-)

I'll talk about what we can discover with
the lens of evolution:

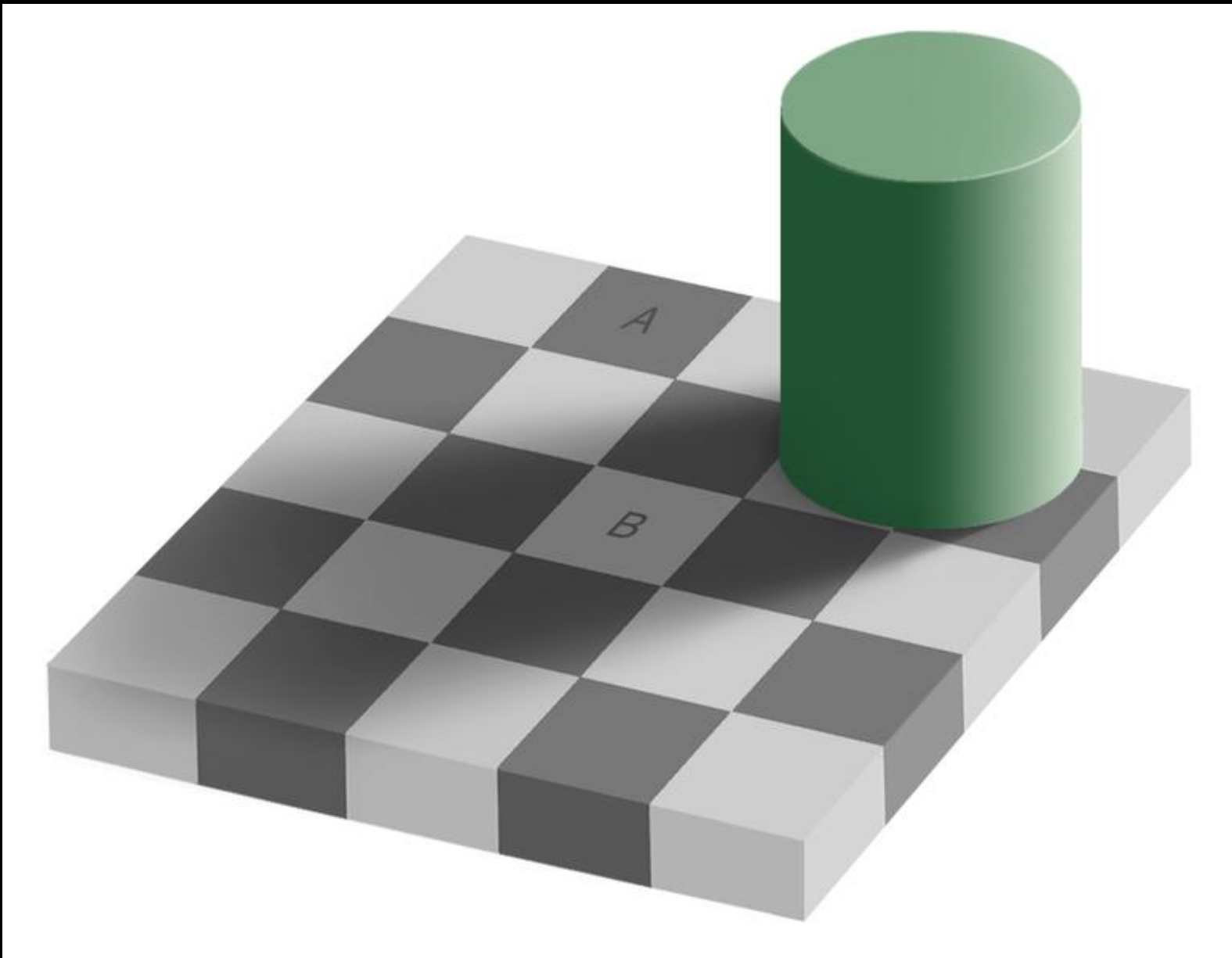
What evolution tells?
How should we utilize it?



Ewald Hering, "Hering illusion" (1861)
http://en.wikipedia.org/wiki/Hering_illusion

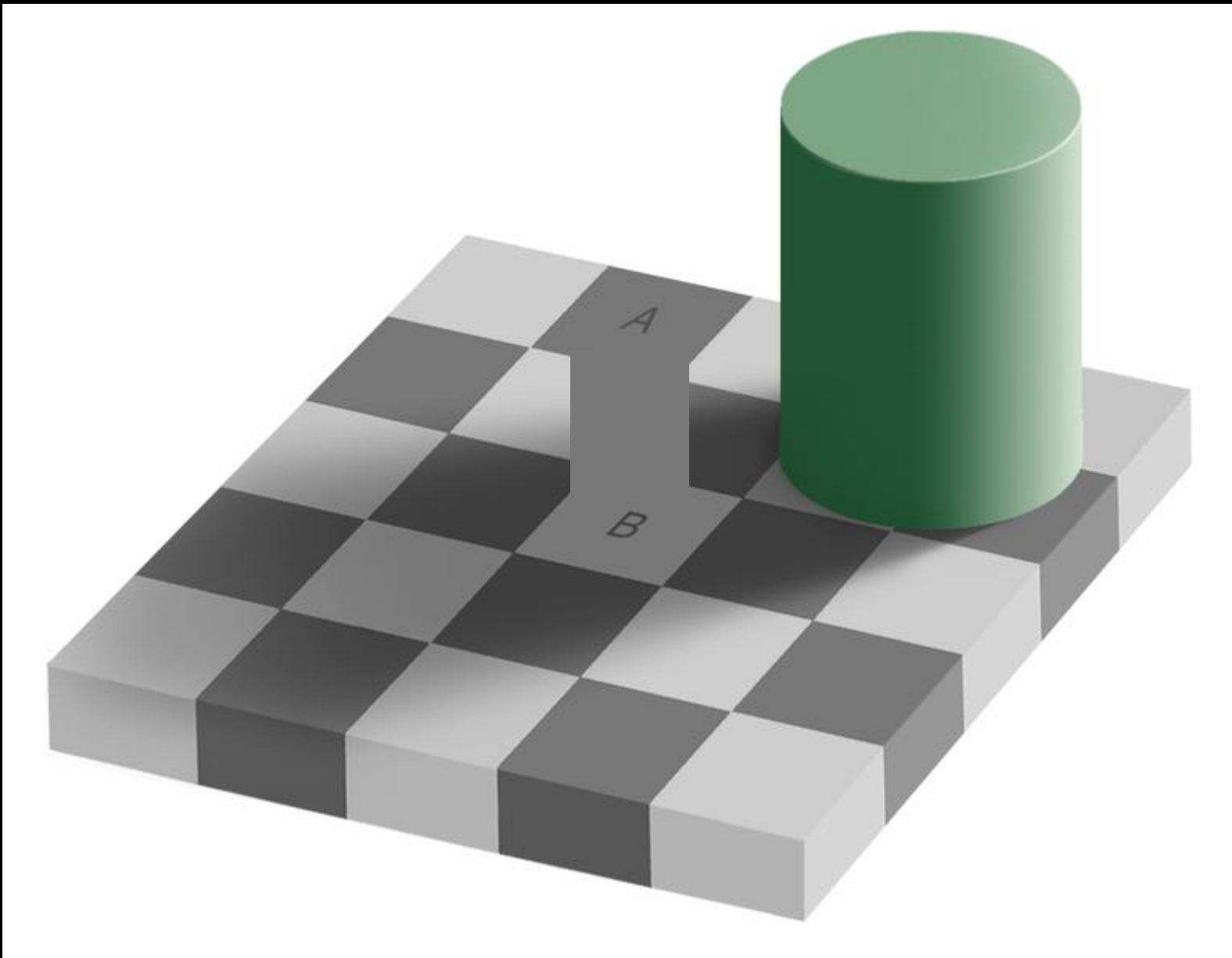


Ewald Hering, "Hering illusion" (1861)
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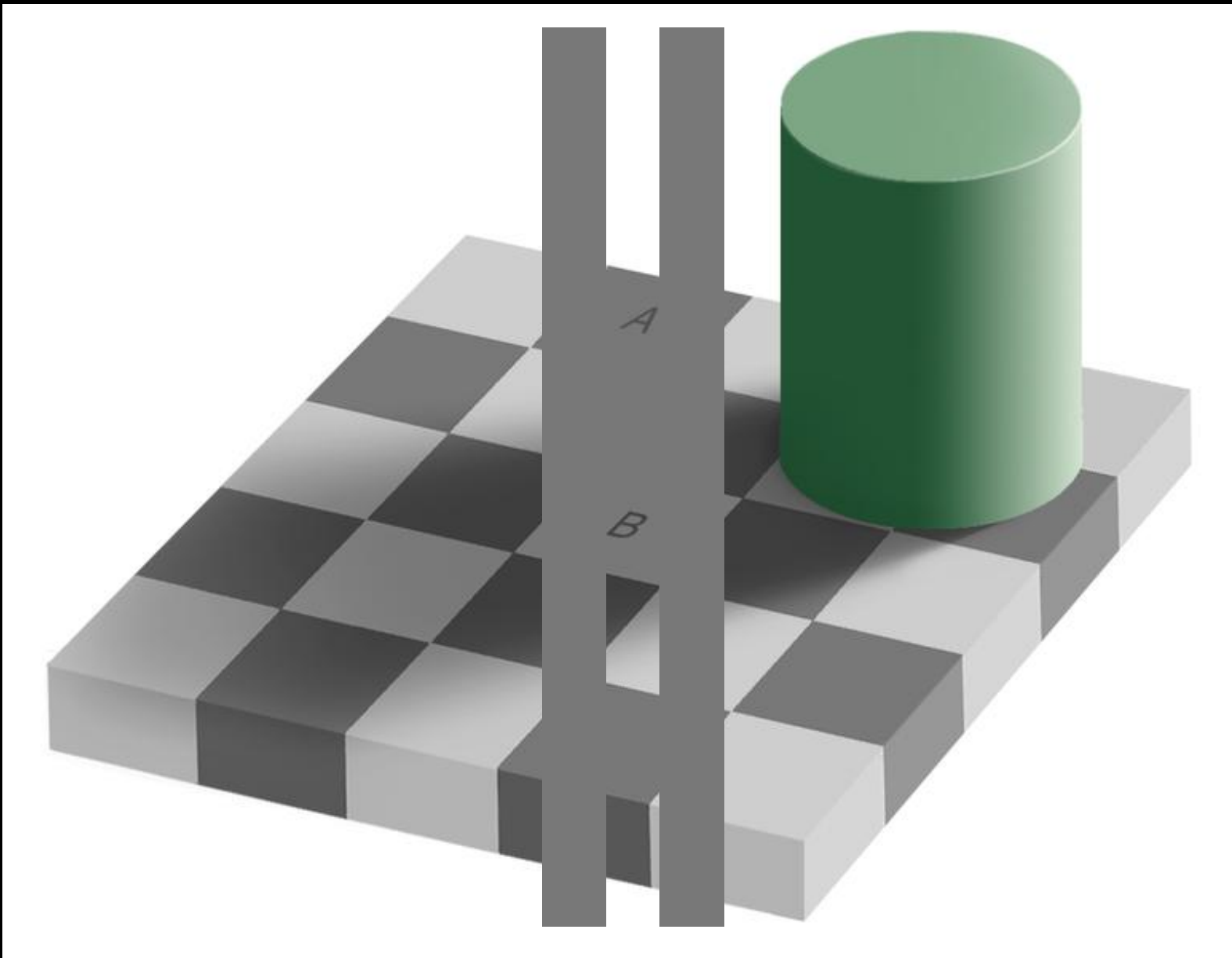
Edward H. Adelson, "Checkers Shadow Illusion" (1995)

http://web.mit.edu/persci/people/adelson/checkershadow_illusion.html



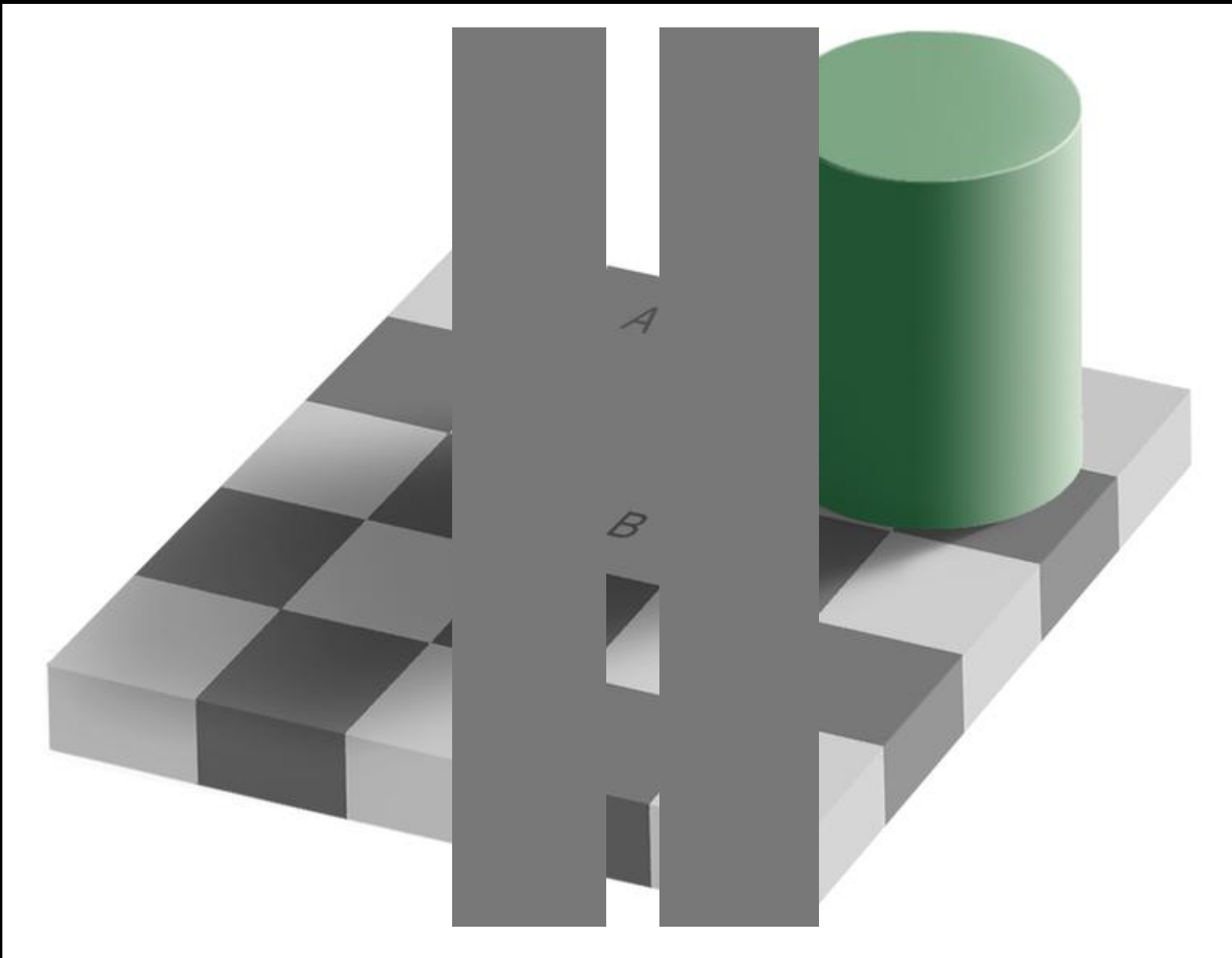
Edward H. Adelson, "Checkers Shadow Illusion" (1995)

http://web.mit.edu/persci/people/adelson/checkershadow_illusion.html



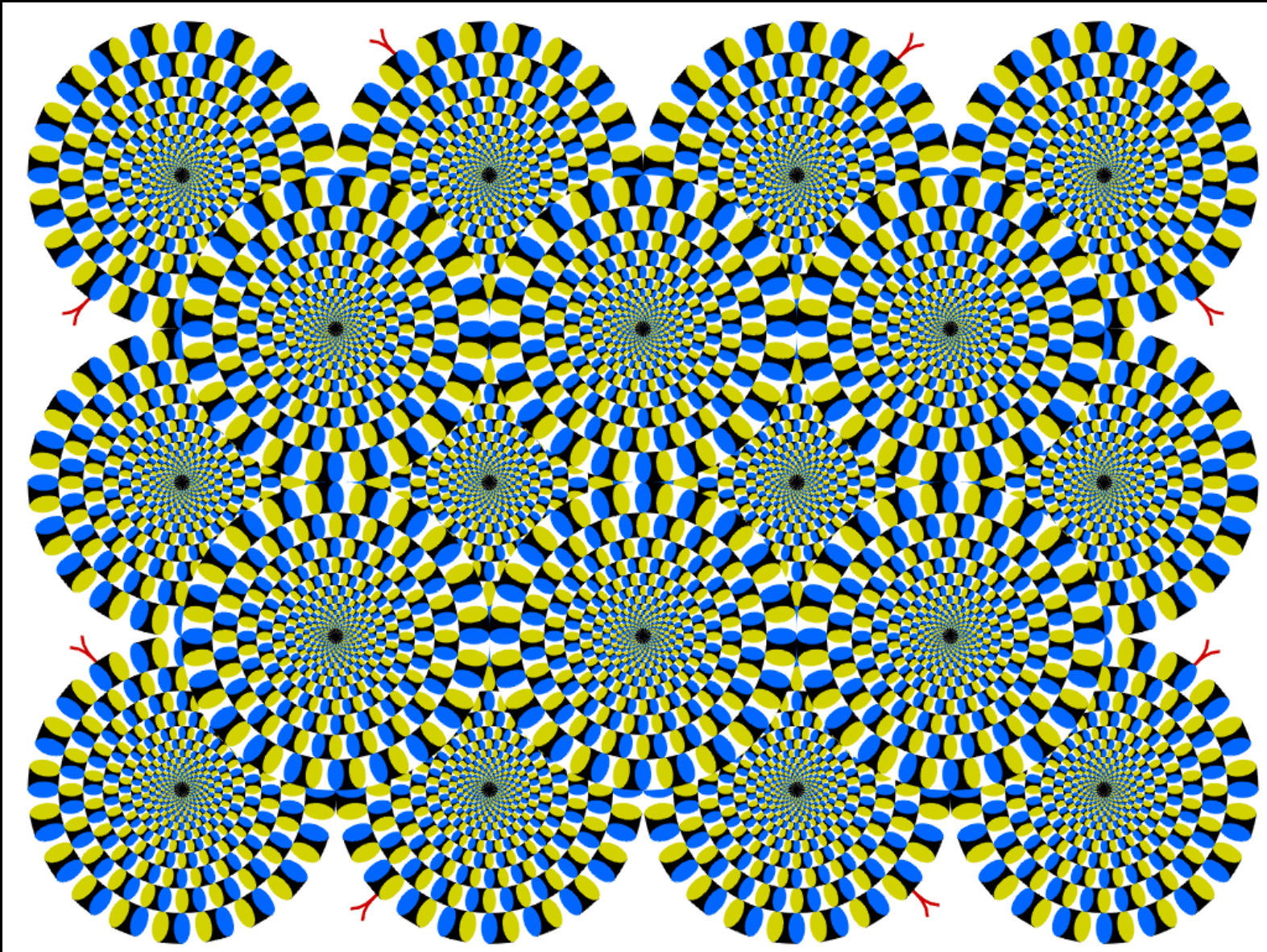
Edward H. Adelson, "Checkers Shadow Illusion" (1995)

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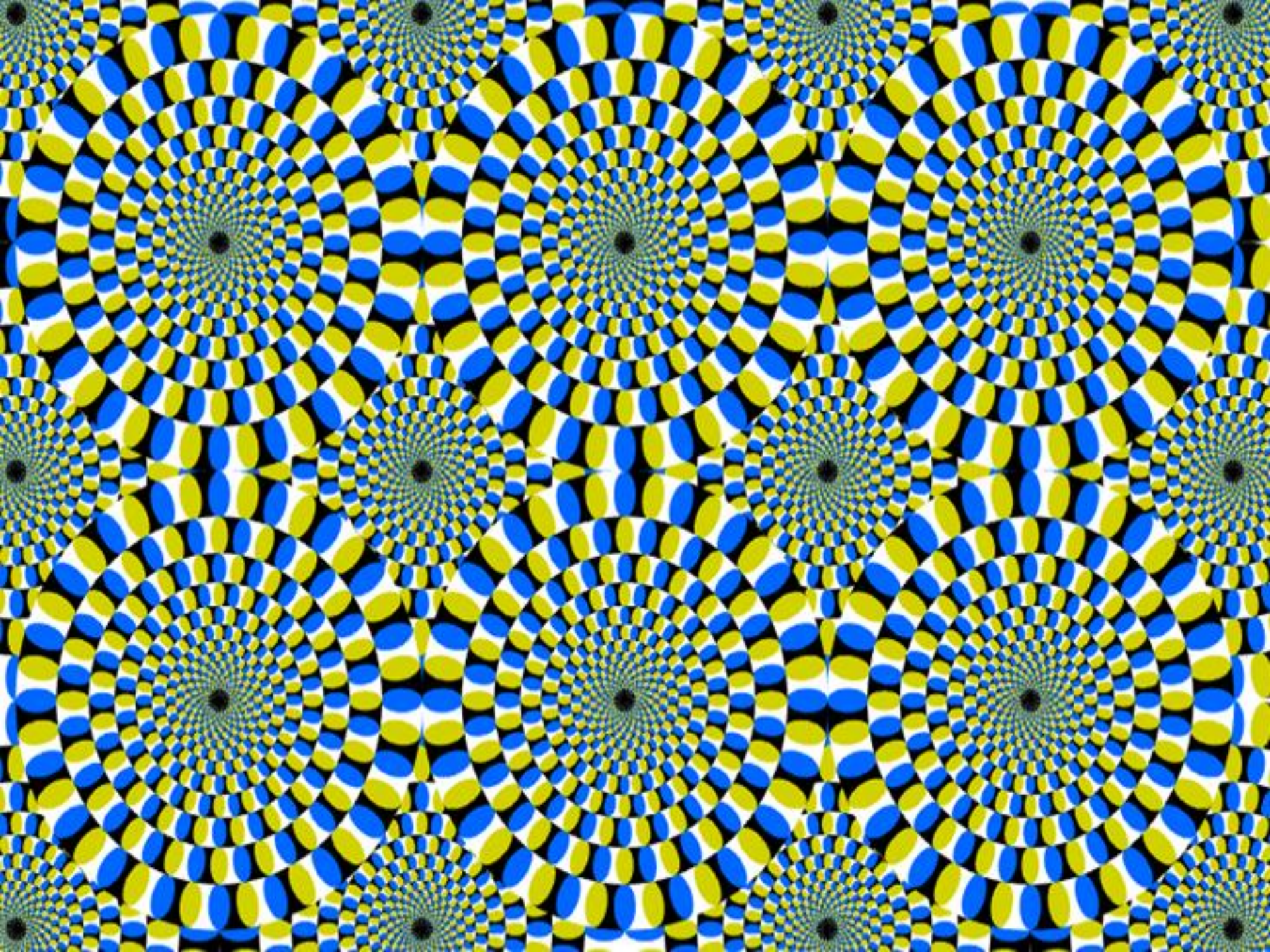


Edward H. Adelson, "Checkers Shadow Illusion" (1995)

http://web.mit.edu/persci/people/adelson/checkersshadow_illusion.html



Akiyoshi Kitaoka, "Rotating Snakes" (2003)
<http://www.psy.ritsumeai.ac.jp/~akitaoka/rotsnakes12e.html>



There are thousands of these.

There is something weird in your eyes.

...and in your users' eyes.

Not only eyes, but also ears.



H. McGurk, J. MacDonald, "Hearing lips and seeing voices," *Nature*, Vol 264(5588), pp. 746–748(1976)
<http://www.youtube.com/watch?v=aFPtc8BVdJk>

What about **thinking and reasoning**?
Are they somewhat broken, too?

If there is a "D" on one side of the card, then there is a "3" on the other side.

Each of the following cards has a letter on one side and a number on the other. Indicate only the card(s) you definitely need to turn over to see if the rule has been violated.

D

E

3

4

If there is a "D" on one side of the card, then there is a "3" on the other side.

Each of the following cards has a letter on one side and a number on the other. Indicate only the card(s) you definitely need to turn over to see if the rule has been violated.



D



E



3



4

It's a simple propositional logic:

$$D \rightarrow 3$$

The only logical falsity:

$$D \& \text{not } 3$$

You are not the only one. Only about 10% of the participants select the right cards.

These are **illusions, errors** and/or **biases**.
Our minds are somewhat **broken**.

“I knew it! That explains why my users are so stupid!”

Depressed?



You don't have to.

The conclusion above could be changed radically with the lens of evolution:

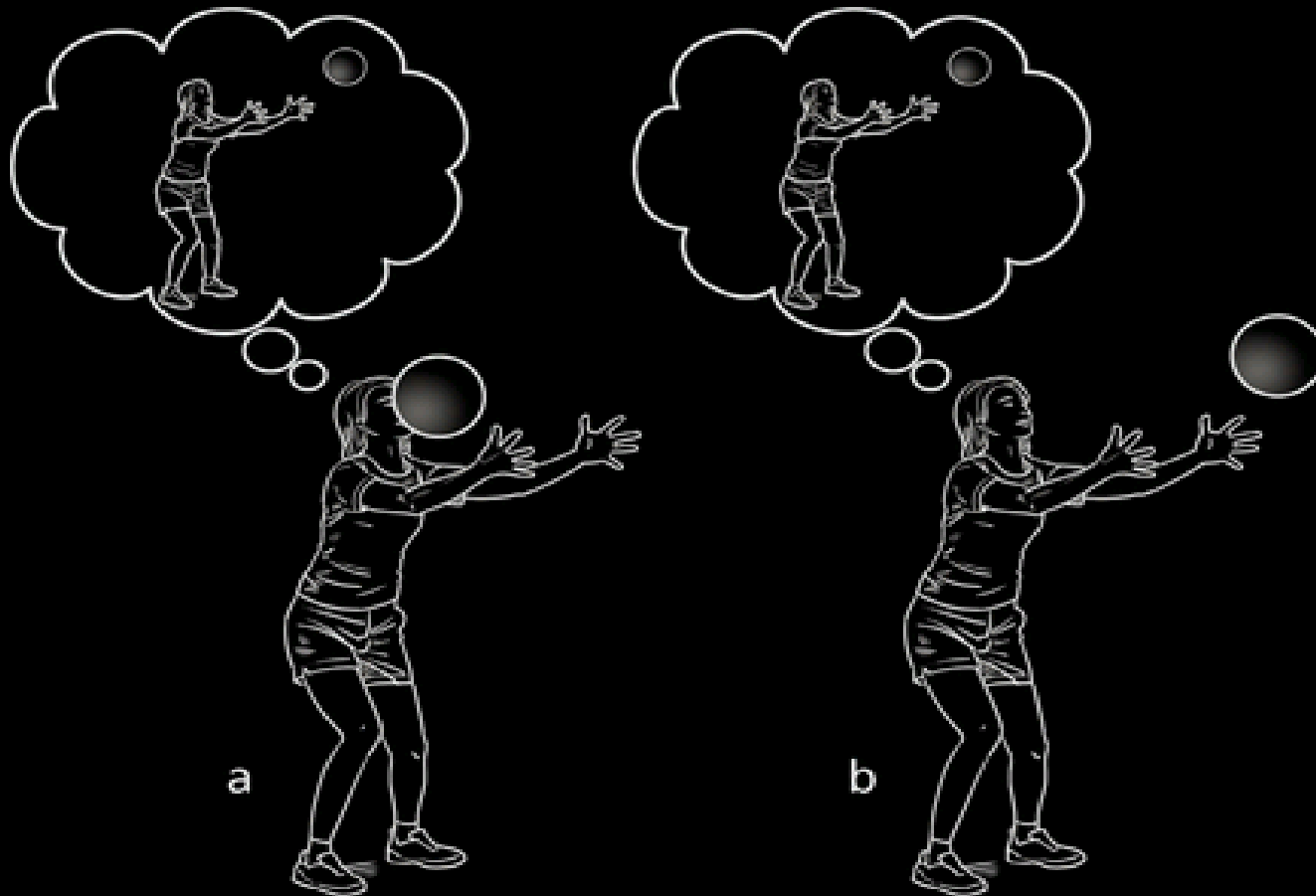
These are not illusions, bias and/or errors but **superpowers.**



#1

We can see the future.

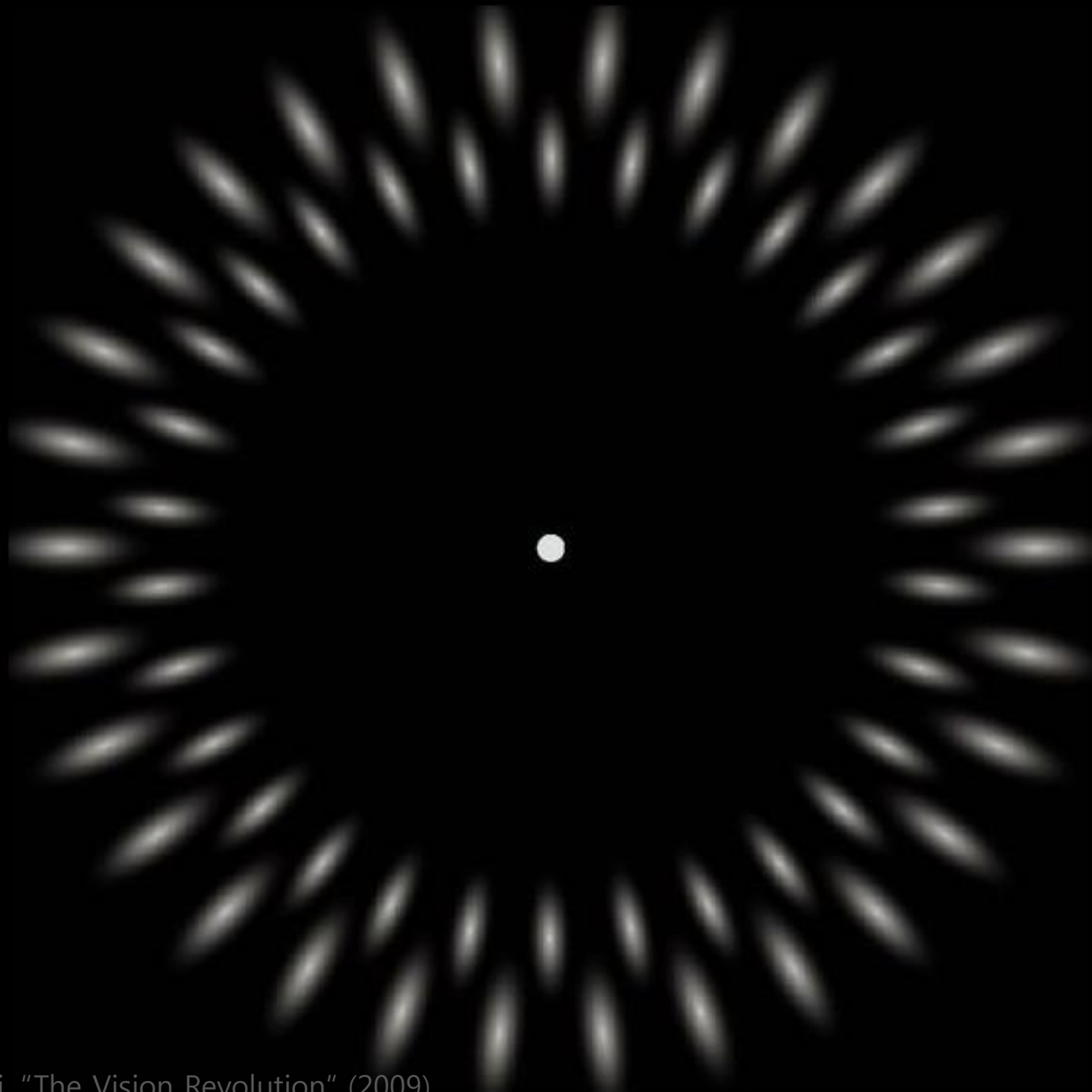
We need to see future anyway.



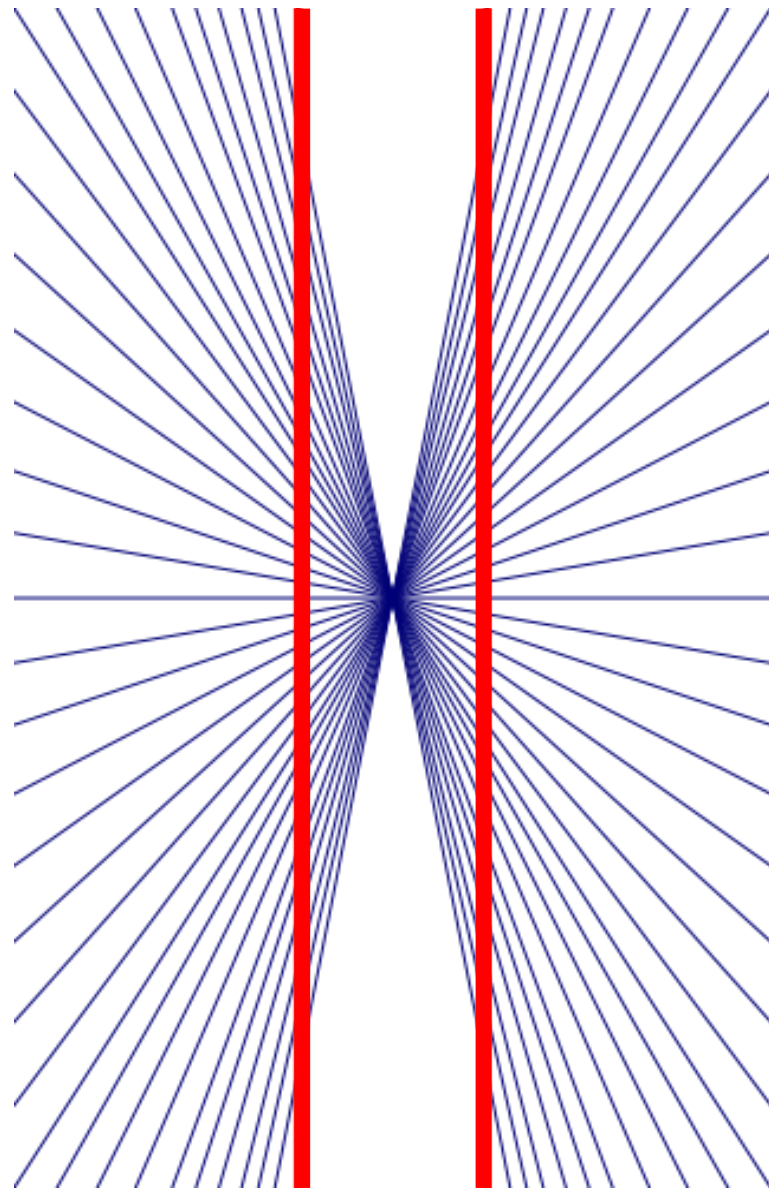
But how?



Mark Changizi, "The Vision Revolution" (2009)



Mark Changizi, "The Vision Revolution" (2009)



Ewald Hering, "Hering illusion" (1861)
http://en.wikipedia.org/wiki/Hering_illusion

Most visual illusions occur because of **artificial, unnatural inputs**. So, don't blame your eyes.

#2

We unconsciously use visual cues to improve speech recognition.



H. McGurk, J. MacDonald, "Hearing lips and seeing voices," *Nature*, Vol 264(5588), pp. 746–748(1976)
<http://www.youtube.com/watch?v=aFPtc8BVdJk>

McGurk effect occurs because of artificial,
unnatural inputs.

#3

We automatically select appropriate mode of computation for a given situation.

If there is a "D" on one side of the card, then there is a "3" on the other side.

Each of the following cards has a letter on one side and a number on the other. Indicate only the card(s) you definitely need to turn over to see if the rule has been violated.

D

E

3

4

"If you borrow my car, then you have to fill up the tank with gas."

Indicate only the card(s) you definitely need to turn over to see if the rule has been violated.

Borrowed

Didn't
borrowed

Filled up
the tank

Didn't
filled up
the tank

Our mind doesn't work well with abstract propositional logic:

$$P \rightarrow Q$$

Logical falsity:

$$P \ \& \ \text{not } Q$$

But it works well with cheater detecting situation:

If you **take the benefit**, then you have to **pay the cost**.

Logical falsity:
Benefit taken and cost not paid.

Difficulty with a propositional logic disappears
when we dealing with **natural, appropriate
situation.**

General conclusion:

- There are fine tuned special abilities in our mind.
(Massive Modularity Hypothesis)
- They are activated only with appropriate inputs.
(Domain Specificity Hypothesis)

Briefly?

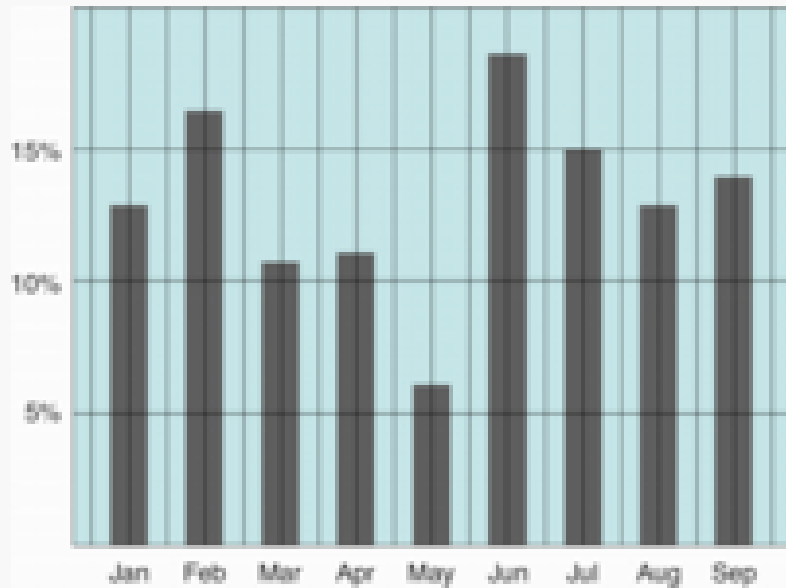
The mind is designed to deal with complexity
of the world.

What does it tell about design?

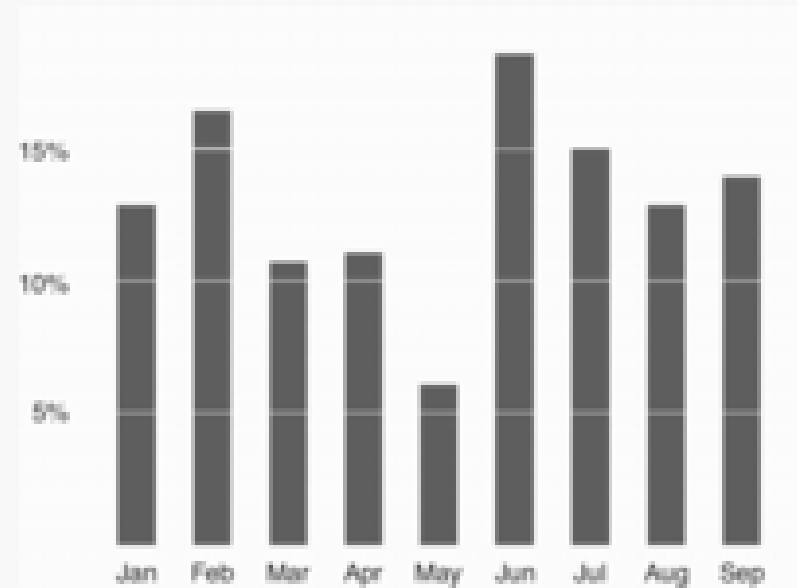
- **Users are not stupid** but interfaces(and designers) are. Designers are forcing users to do inhumane things.
- With careful design, we can utilize these abilities to **make users super-smart**.
- Conventional **UI Guidelines** could be largely improved.

Some applications?

According to Edward Tufte, information visualization guru, we should **minimize non-data-ink.**

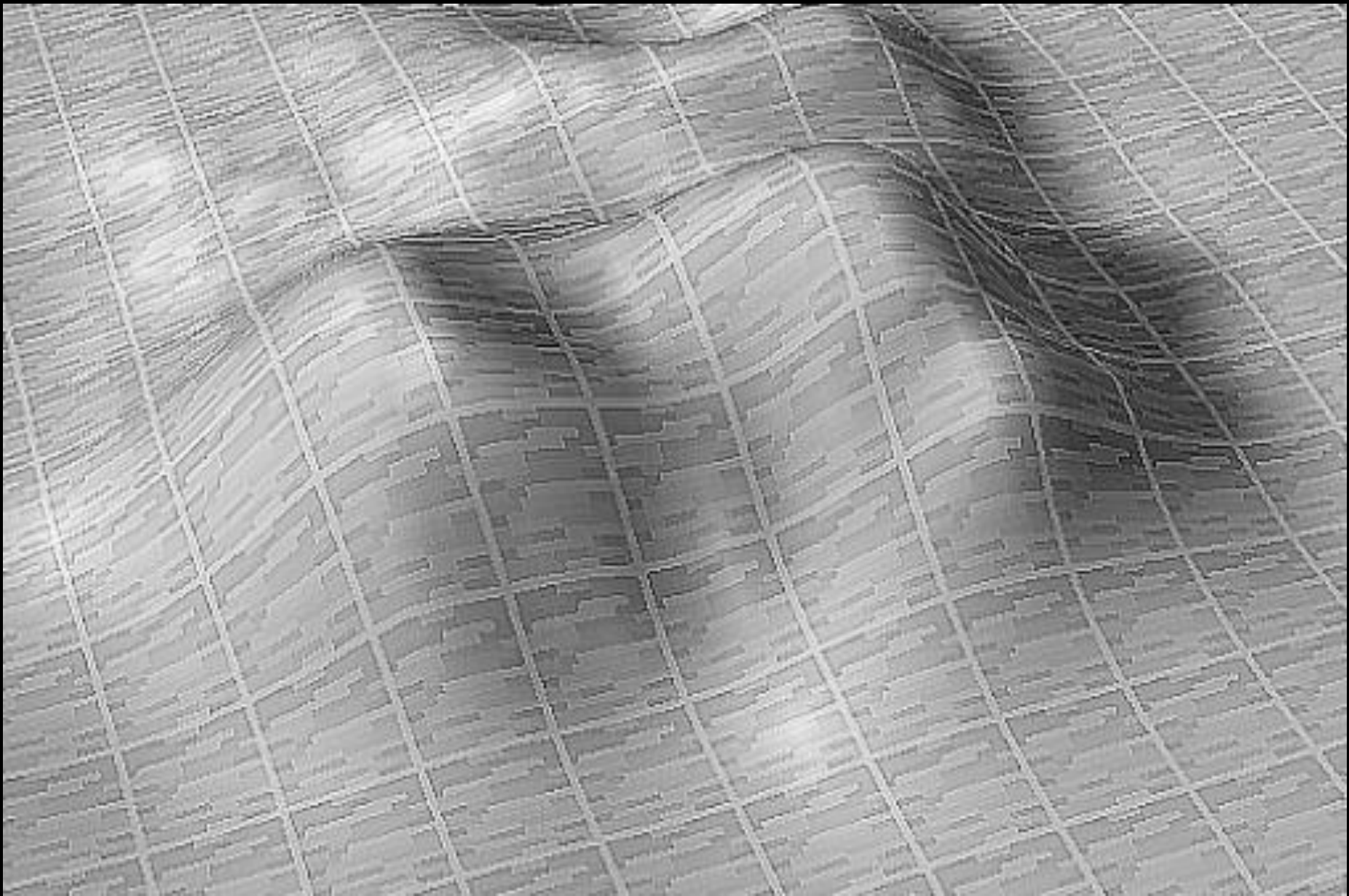


The Data-Ink Ratio Example: 1.

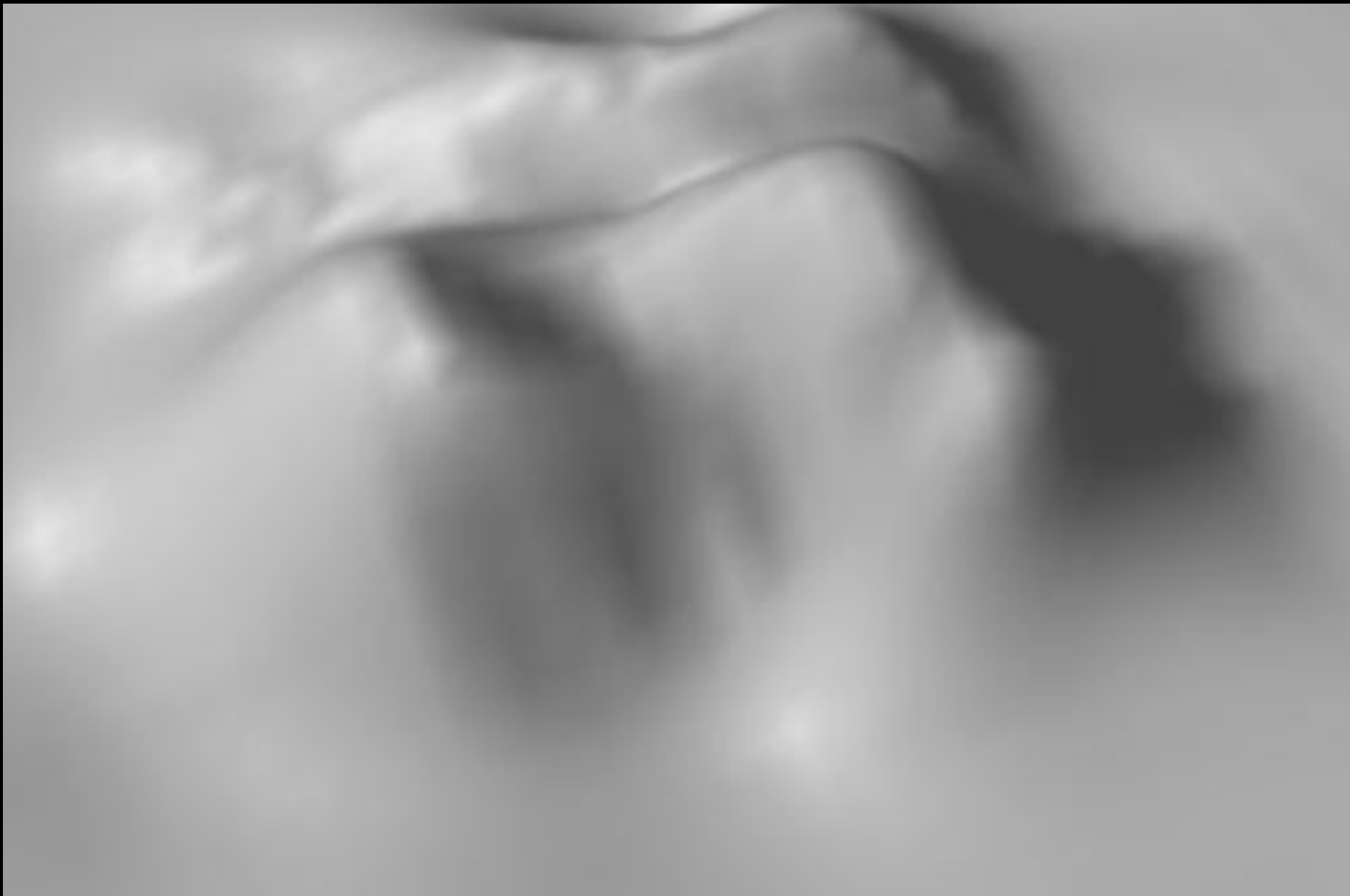


The Data-Ink Ratio Example: 6.

But sometimes, non-data-ink is data-ink.



Colin Ware, "Information Visualization – Perception for Design" (2004)
http://en.wikipedia.org/wiki/Hering_illusion

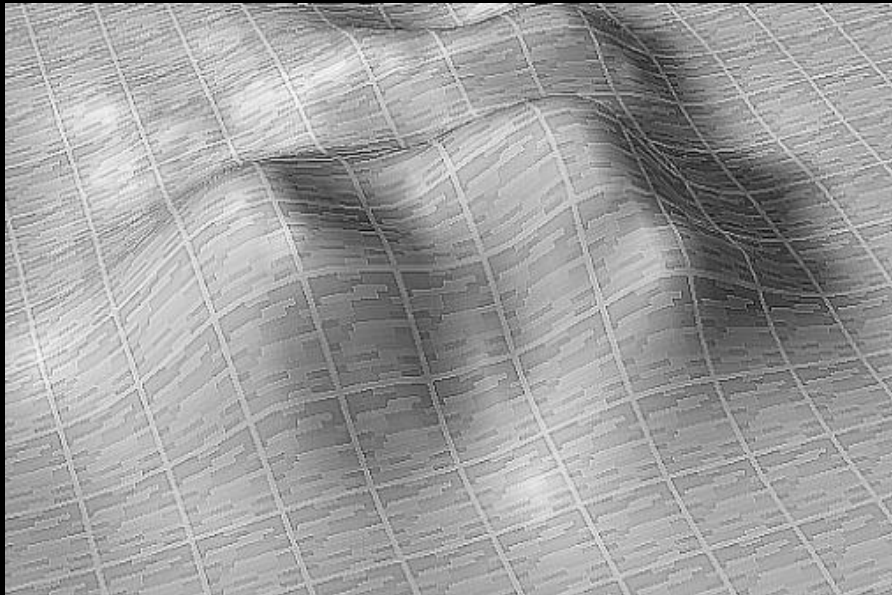


Colin Ware, "Information Visualization – Perception for Design" (2004)
http://en.wikipedia.org/wiki/Hering_illusion

A surface is **substantial**; a plane is not.

A surface is **textured**; a plane is not.

A surface is **never perfectly transparent**; a plane is.



Or we can save lives with visual illusion.



Optical Speed Bar - Alternatives to Speed Cameras Prove Effective (2007)
<http://www.wired.com/autopia/2007/07/alternatives-to/>

“Optical speed bars are spaced to give the impression that a car is traveling at a faster speed than it actually is.

Results from the study show that **drivers slowed 4 to 12 percent** when encountering the bars.”

I think these are only beginning.

With profound understanding of human mind,
we can design “things that makes us **super-**
smart.” ;-)

There are whole new superpowers waiting to
be exploited in our mind.

There are stunning discoveries waiting to be applied and tested.

“So what? We are designers, not scientists.”

Whenever we **design** something
we are making **hypotheses**.

Whenever we **release services/products**
we are performing **experiments** to support or
disprove hypotheses.

E.g. A/B Test is a controlled experiment.

Wouldn't it be great if we have some place to discuss these things?

- Discussing how to apply evolutionary thinking to product/service design?
- Sharing of ideas, knowledge, discoveries you have found and/or studied recently.
- Forming study groups with people who have similar interest.

Please let me invite you:

<http://groups.google.com/group/aepdg>
(Applied EP Discussion Group)

There's nothing there yet and I don't know what can we do.

But who knows?

It could be a start of something.

Thank you!

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<http://alankang.tistory.com>

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