

HCI: GESTALT PRINCIPLES

Dr Kami Vaniea

First, the news...

- <https://www.youtube.com/embed/videoseries?list=PLC0A3CAC7B3A0E288>

Gestalt Principles

- Proximity
- Similarity
- Continuity
- Closure
- Symmetry
- Figure/Ground
- Common Fate

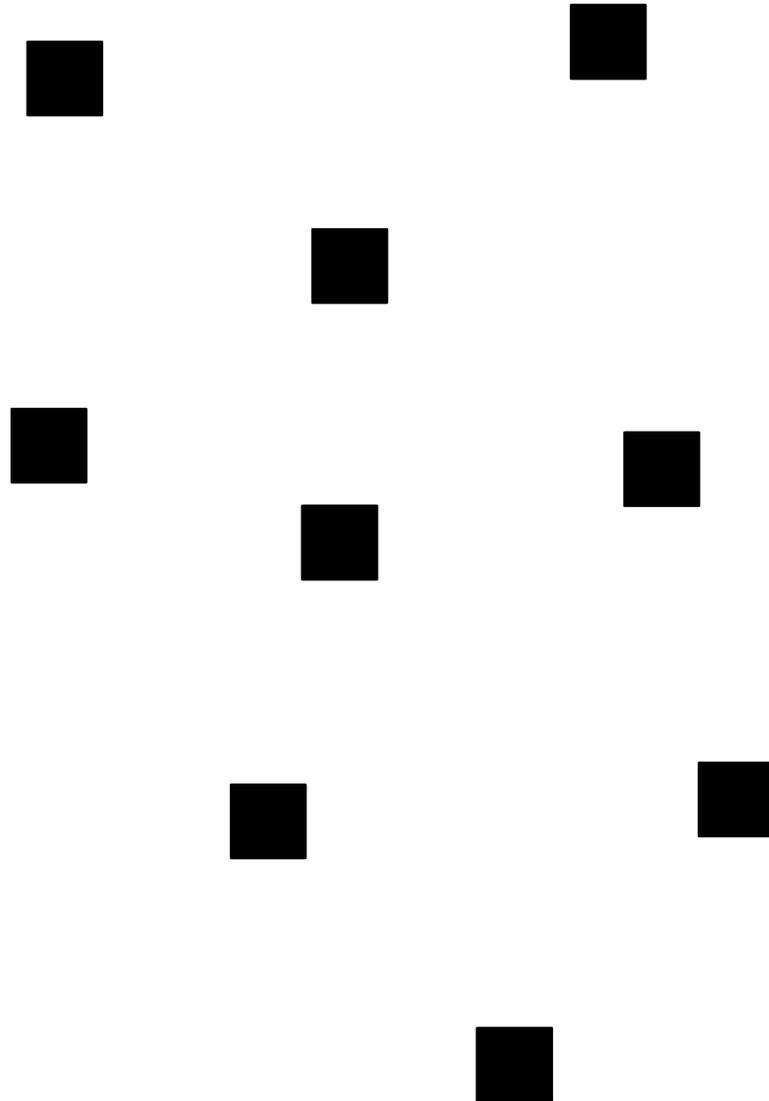
Gestalt is the German word for “shape” or “figure”

Proximity

- The relative distance between objects in a display affects our perception of whether and how objects are organized into sub-groups.

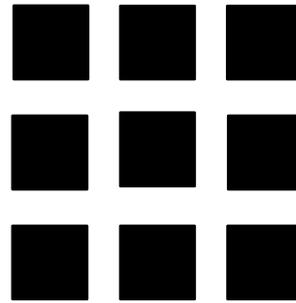
Proximity

Boxes should appear unrelated to each other



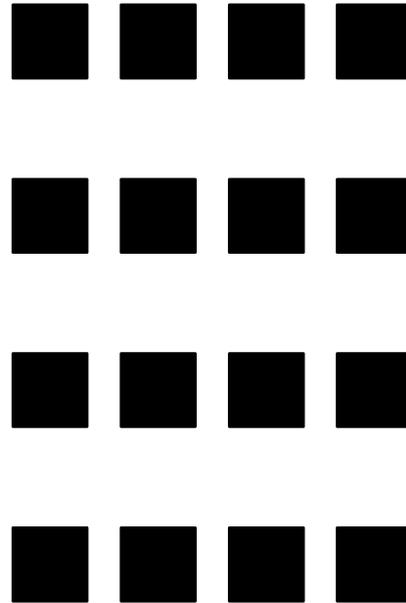
Proximity

Boxes should
now appear to
be a group



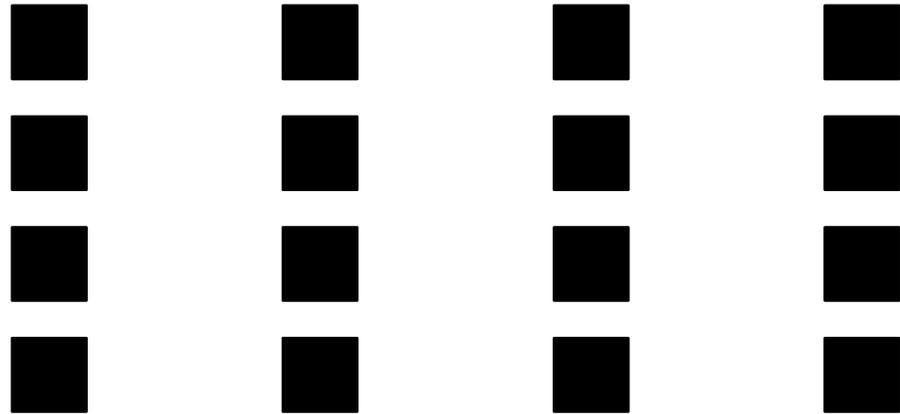
Proximity

Boxes should
now appear to
be grouped by
row



Proximity

Boxes should
now appear to
be grouped by
column



Proximity

- UI designers want to group similar things. This firewall policy

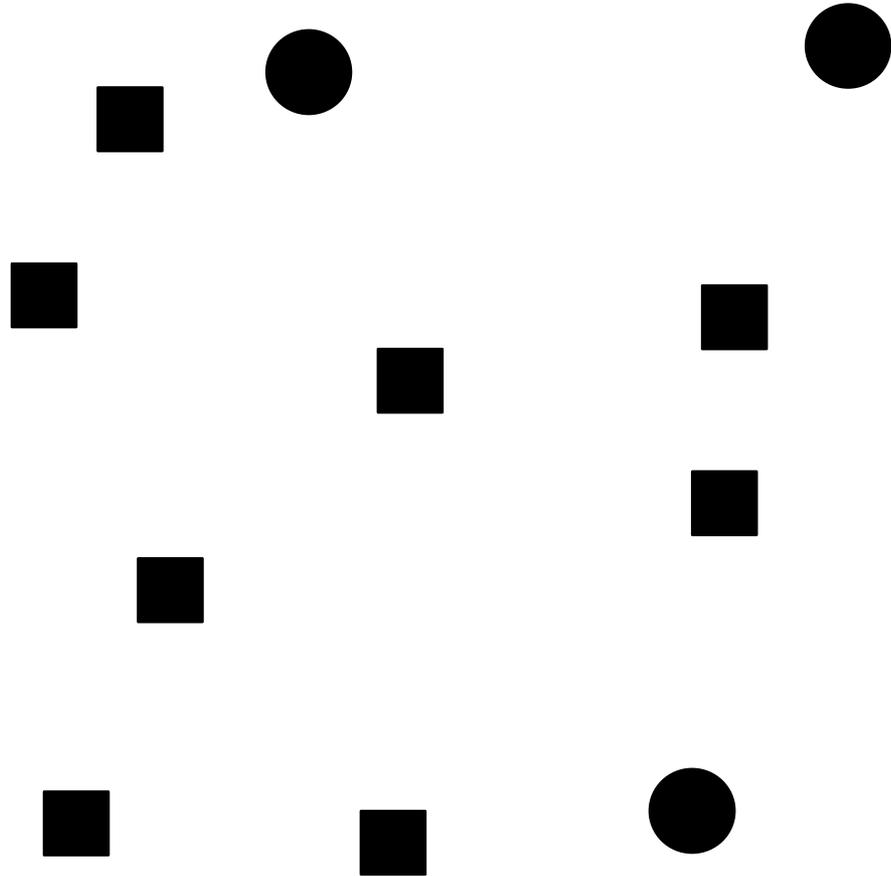
Inbound Rules					
Name	Group	Profile	Enabled	Action	
✓ Bonjour Service		Private	Yes	Allow	
✓ Bonjour Service		Private	Yes	Allow	
✓ Bonjour Service		Private	Yes	Allow	
✓ Bonjour Service		Private	Yes	Allow	
✓ Dropbox		All	Yes	Allow	
✓ FiddlerProxy		All	Yes	Allow	
✓ Firefox (C:\Program Files (x86)\Mozilla Fir...		Private	Yes	Allow	
✓ Firefox (C:\Program Files (x86)\Mozilla Fir...		Private	Yes	Allow	
✓ 'Firefox' (C:\Program Files (x86)\Mozilla F...		Private	Yes	Allow	
✓ 'Firefox' (C:\Program Files (x86)\Mozilla F...		Private	Yes	Allow	
✓ HP Socket Service		All	Yes	Allow	
✓ IntelUSBoverIP:1		All	Yes	Allow	
✓ iTunes		All	Yes	Allow	
✓ Microsoft Lync		Public	Yes	Allow	

Similarity

- Objects that look similar appear grouped.

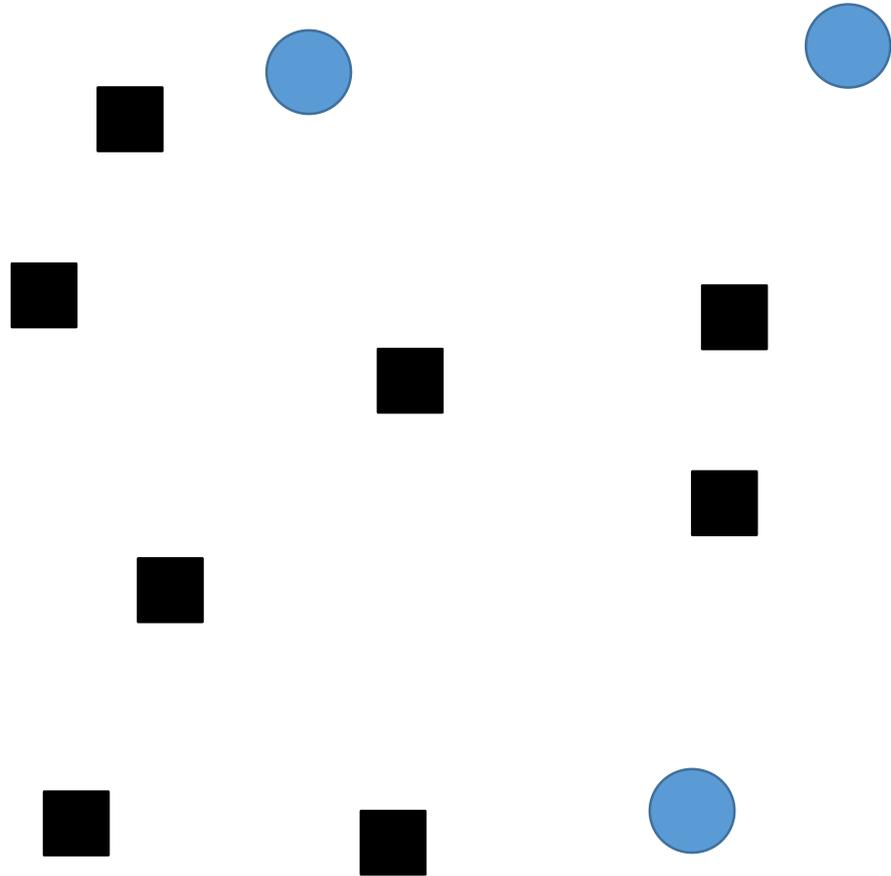
Similarity

Your brain naturally tries to put circles in one group and boxes in another



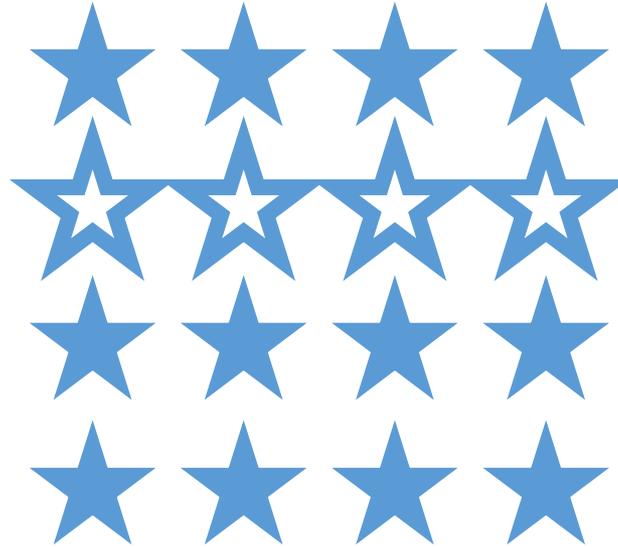
Similarity

Circles should
look very
grouped now



Similarity

Same story
with the stars,
they different
looking ones
should appear
grouped



Similarity

Text boxes all look similar which is good.

Proximity a bit far on top box

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Plants Vs Zombies 2 would like to:



Know the list of people in your circles, your age range, and language



Includes people in circles that are not public on your profile

Proximity:
Buttons are close to each other so appear grouped

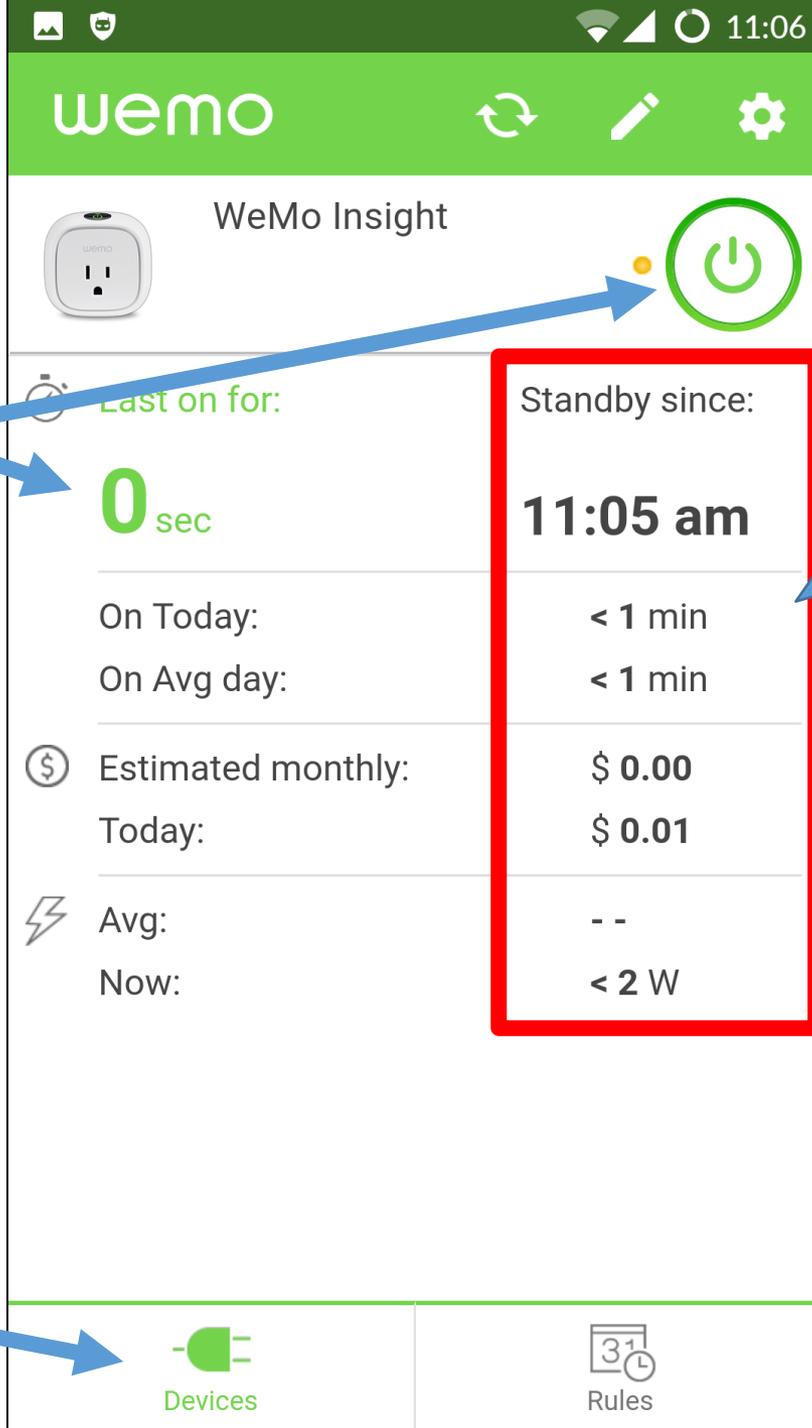
Similarity:
Buttons have same font and color so appear grouped



Share your game activity and view and manage your game activity

DENY

ALLOW



Similarity: Same color indicating that both are related to on/off state.

Proximity: Output is grouped so looks similar

Similarity: Same color is confusing here since it has nothing to do with on/off state

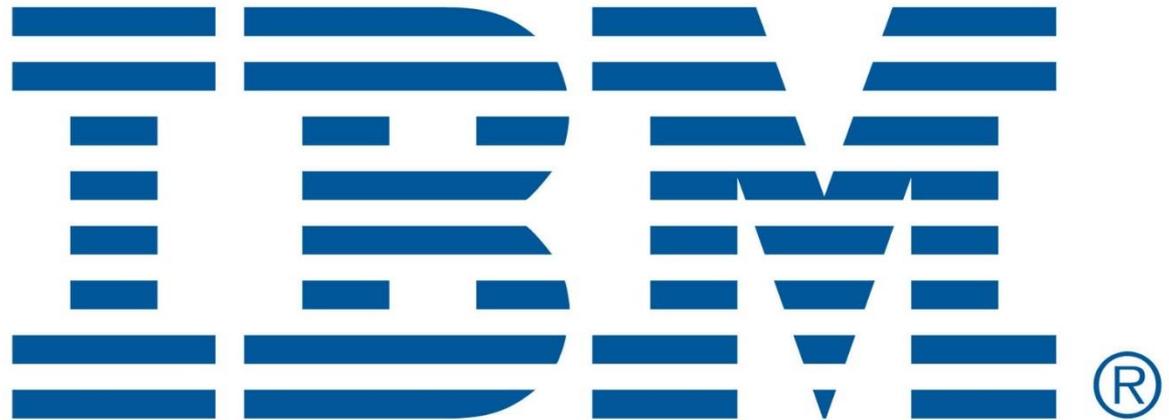
Continuity

- We resolve ambiguity by adding in missing data in such a way that we perceive whole objects. We are biased towards perceiving continuous forms rather than disconnected pieces.

Continuity

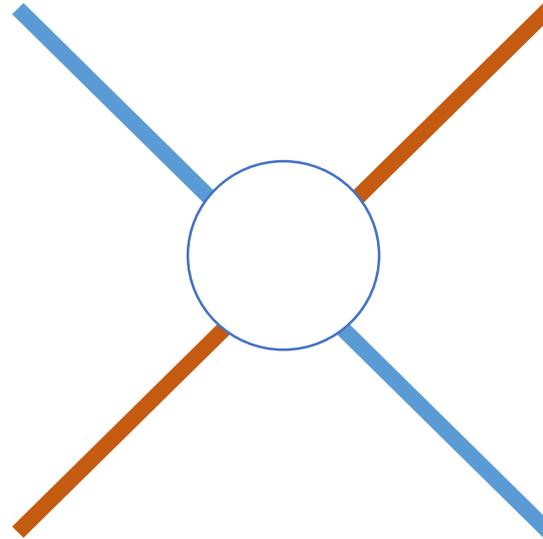
Is this 40 lines?

Or is it the
letters IBM?



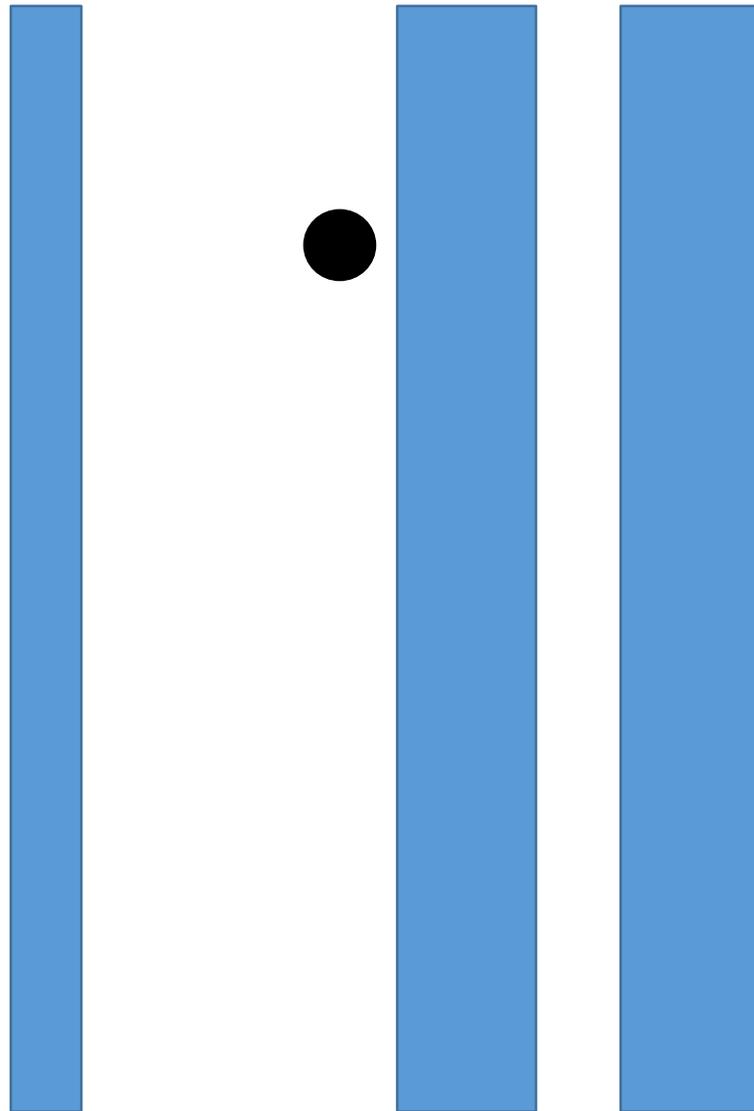
Continuity

Your brain fills in the gaps to create whole structures.



Continuity

The ball
vanishes
behind the
lines but you
still perceive it
as a single
object.



Continuity



Partial occlusion of the paths by the character or icons is not a problem for the person



22

Round42



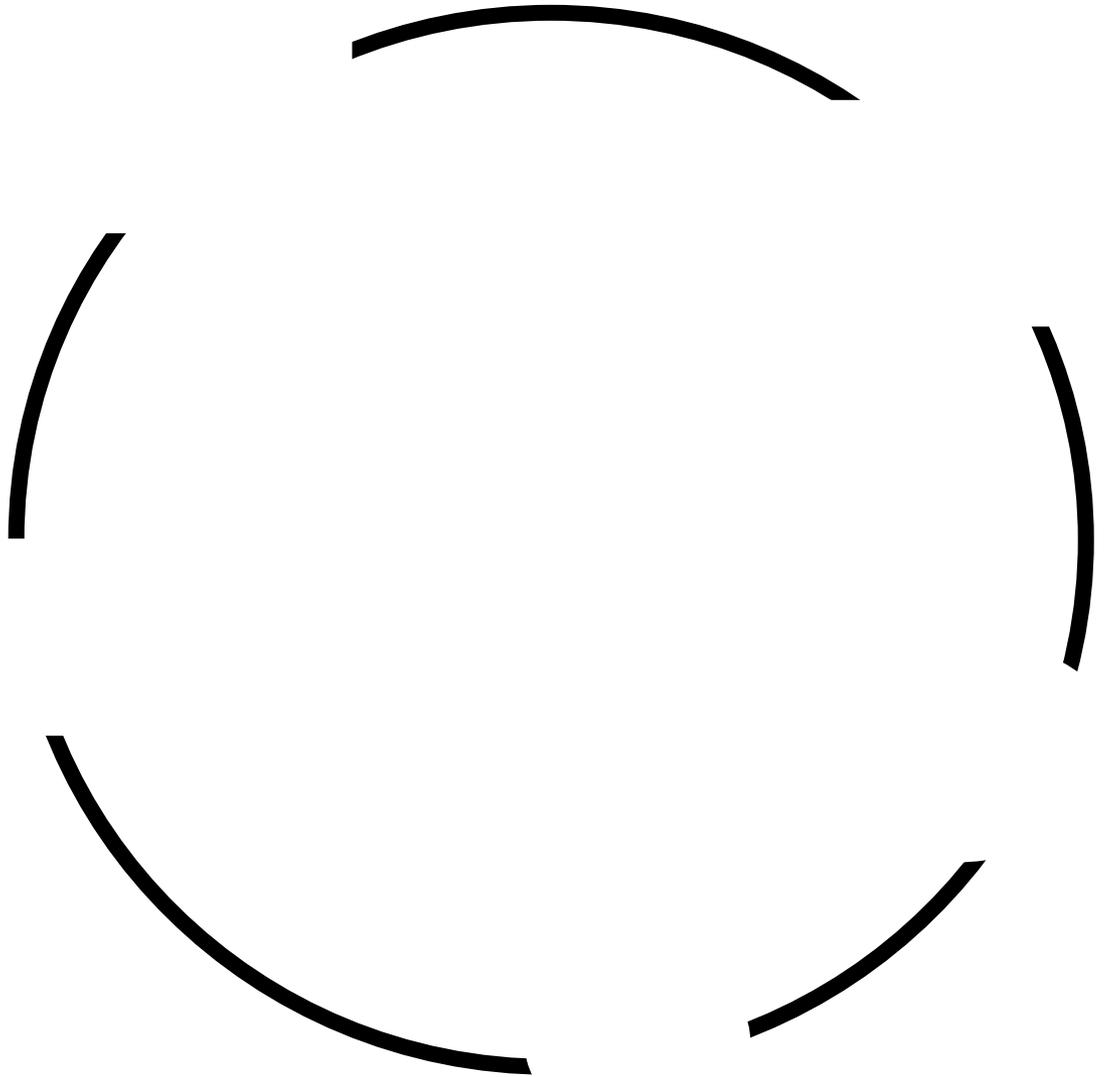
Closure

- We automatically try and close open figures so they are seen as whole objects rather than bits of line.

Closure

What shape is this?

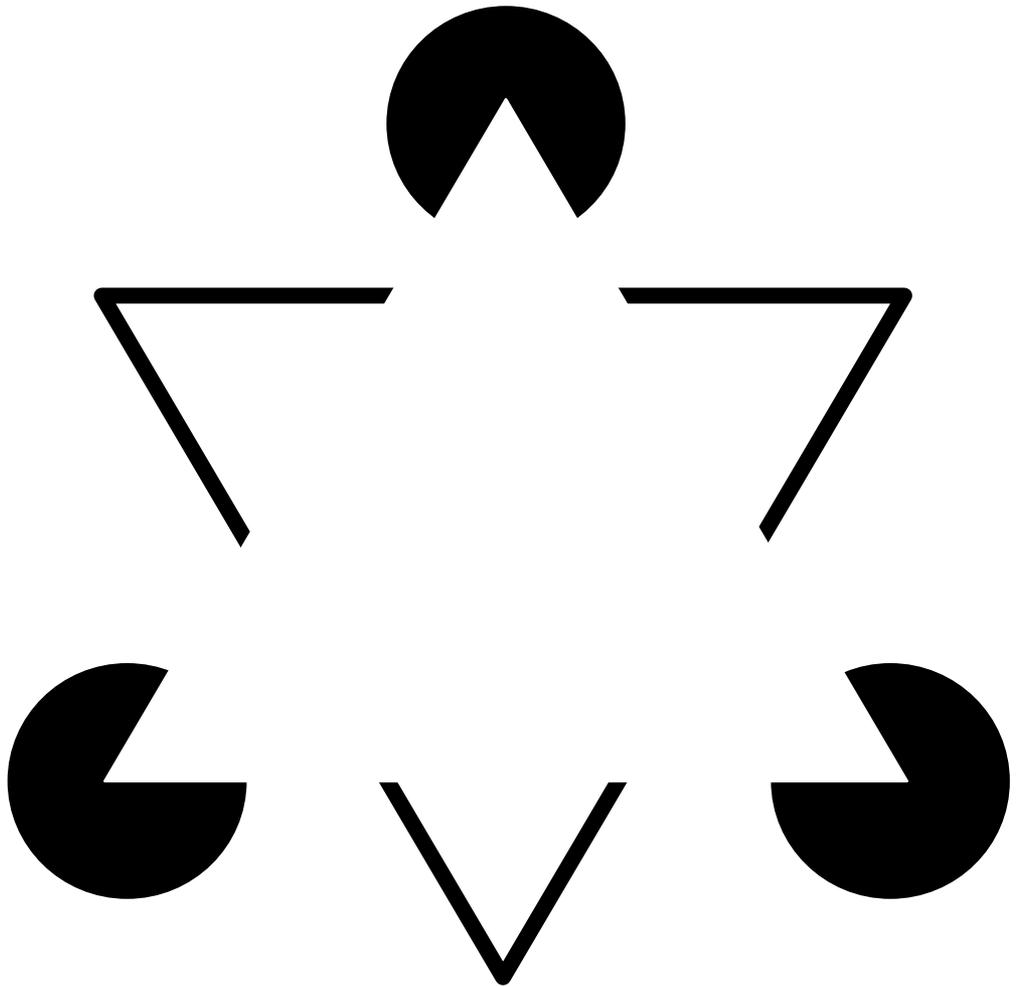
Try and make your brain see 5 lines.



Closure

What shapes do you see?

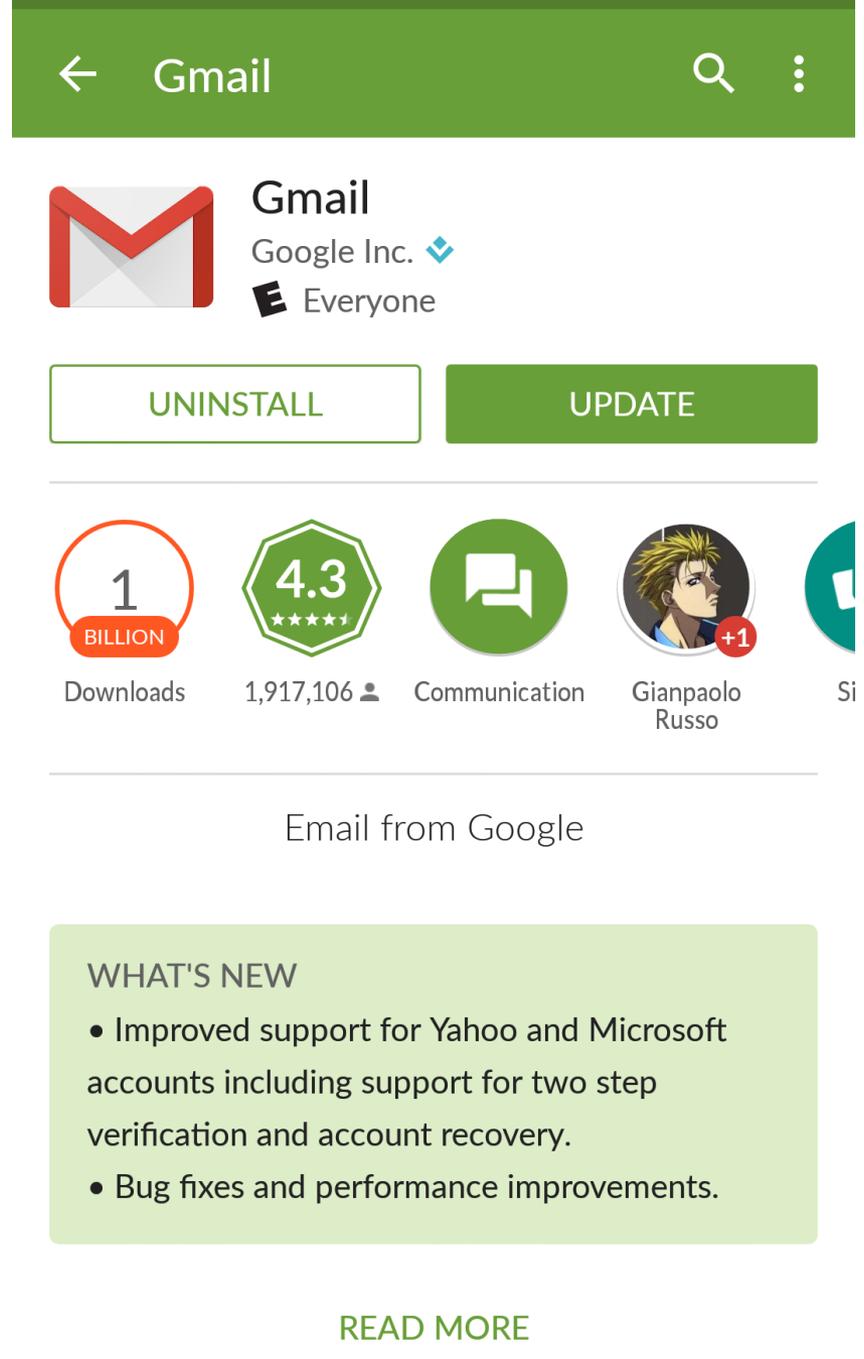
One of the shapes doesn't even have any ink representing it.





Downloads

Despite the occlusion
the above icon still
looks like a circle

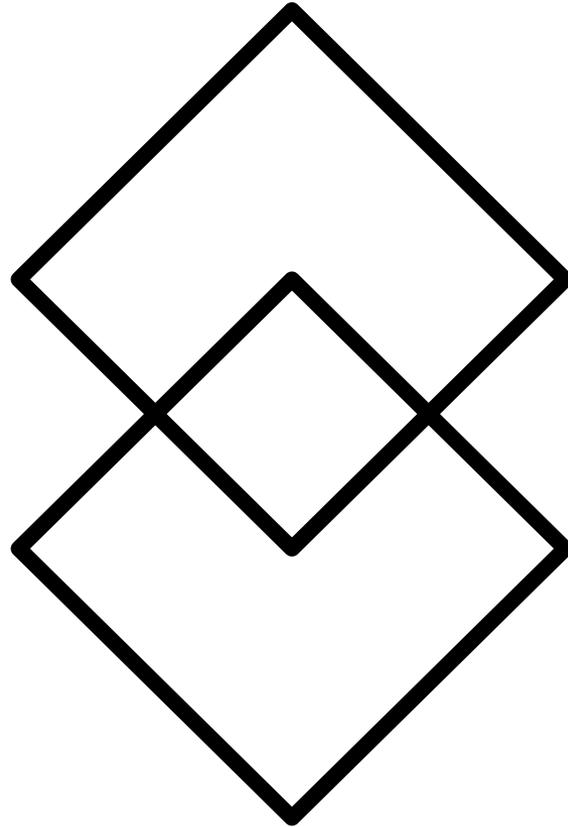


Symmetry

- We tend to parse complex images in a way that reduces complexity. Even if there are multiple interpretations, our brain tries to pick the simplest one.

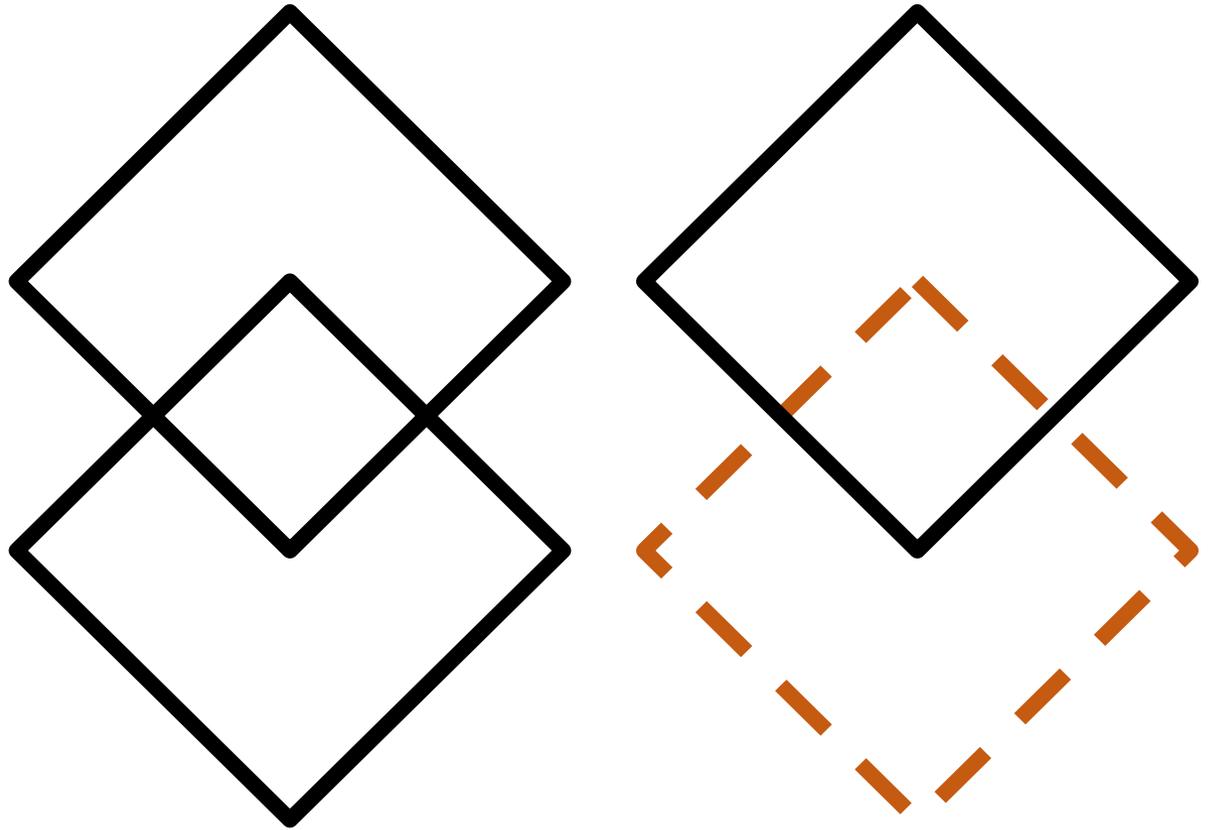
Symmetry

What does this shape look like to you?



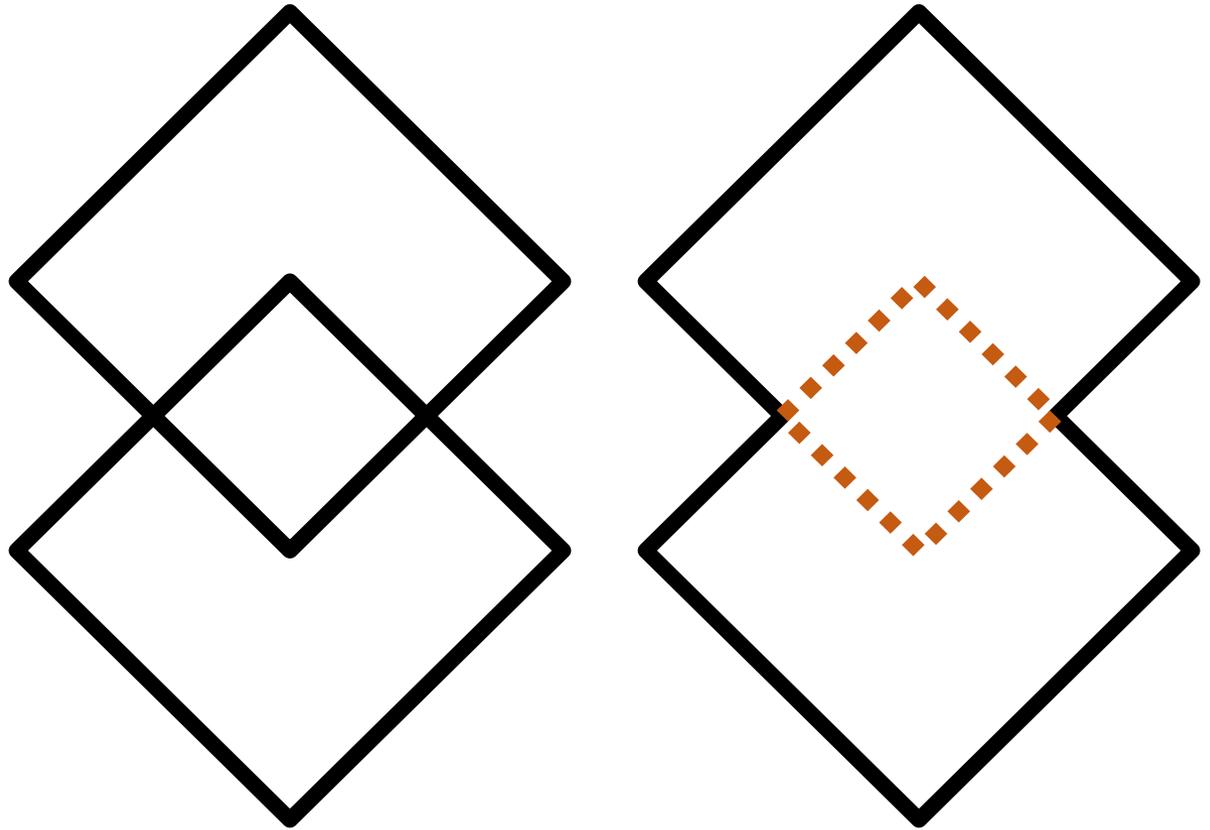
Symmetry

Most people probably saw two rectangles overlapping.



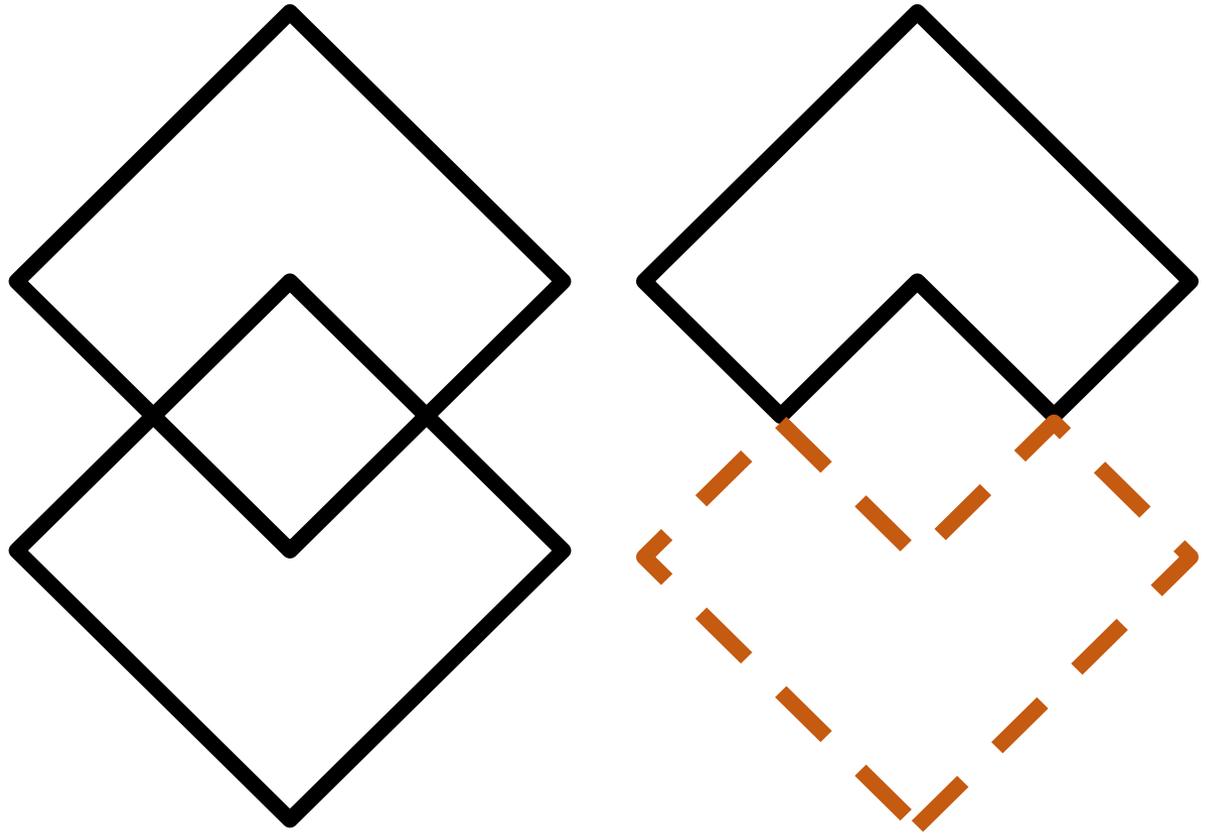
Symmetry

It could be a
small rectangle
overlapping a
more complex
shape



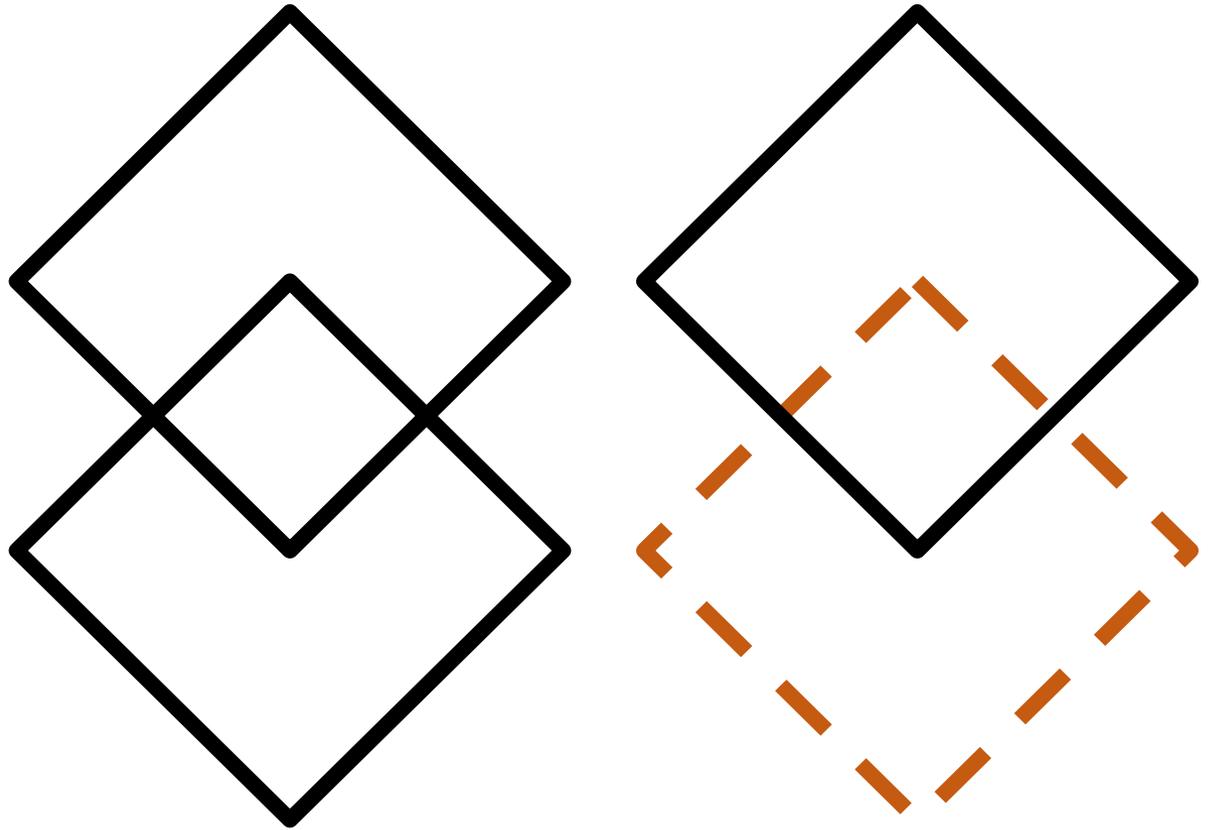
Symmetry

It could be two
L shaped angles



Symmetry

Our brains like simplicity, so we are most likely to pick two overlapping rectangles



Both of these appear as circles despite both of them being made up of two separate colors



22

Round42



Figure/Ground

- Our brains try and separate images into a foreground and a background.

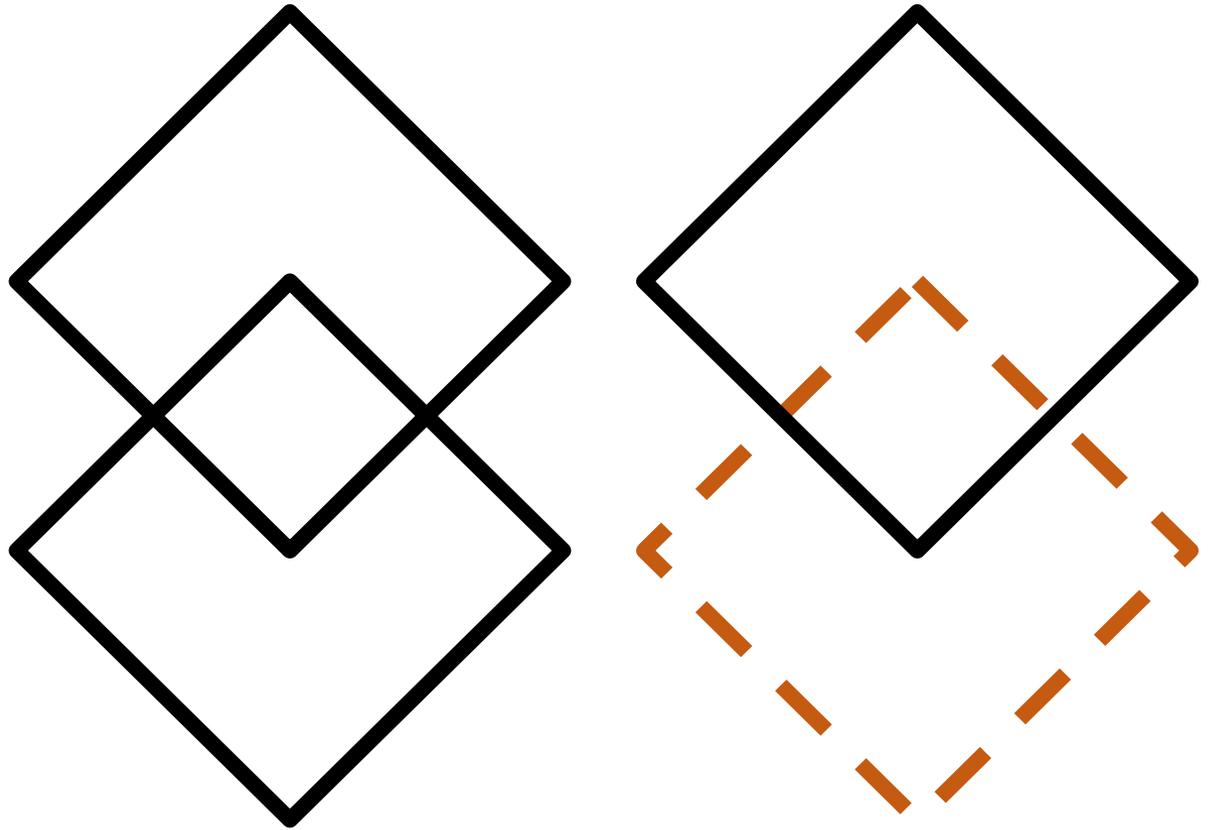
Figure/Ground

M. C. Escher is one of the more famous artists to use this principle



Figure/Ground

This image is also an example of figure/ground, your brain naturally picks one as the foreground and one as the background



Figure/Ground

Bigger image
looks like
background,
and smaller
image looks like
foreground





Kami Vaniea

@kaniea

TWEETS
1,144

FOLLOWING
223

FOLLOWERS
308

Who to follow · Refresh · View all



Edinburgh University @... x

Follow



Converge Challenge @Con... x

Follow



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202K Tweets



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TWEETS
1,144

Who to



Fin
Imp

Connect oth

Trends

#GBBOFinal
202K Tweets



WIRED @WIRED · 1m

This is how you grow a perfect pumpkin: bit.ly/2eHhgXn

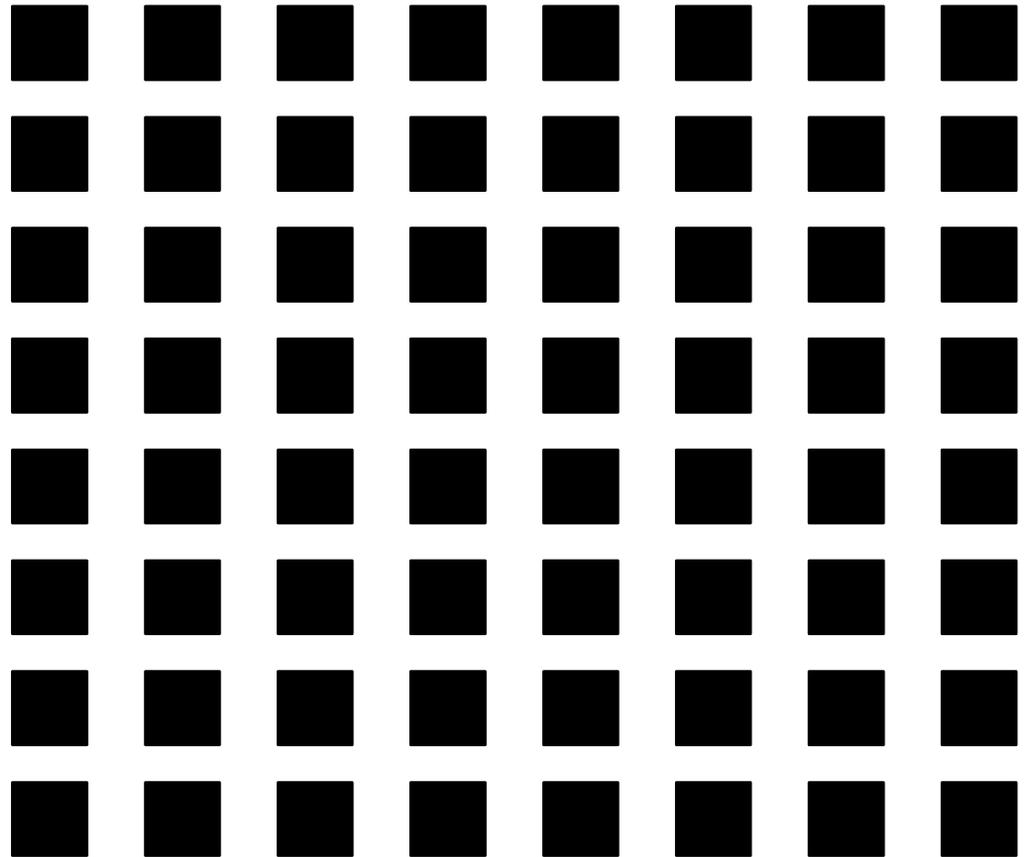


Common Fate

- Similar to proximity and similarity, but concerning moving objects. Things that move with similar patterns are seen as grouped.

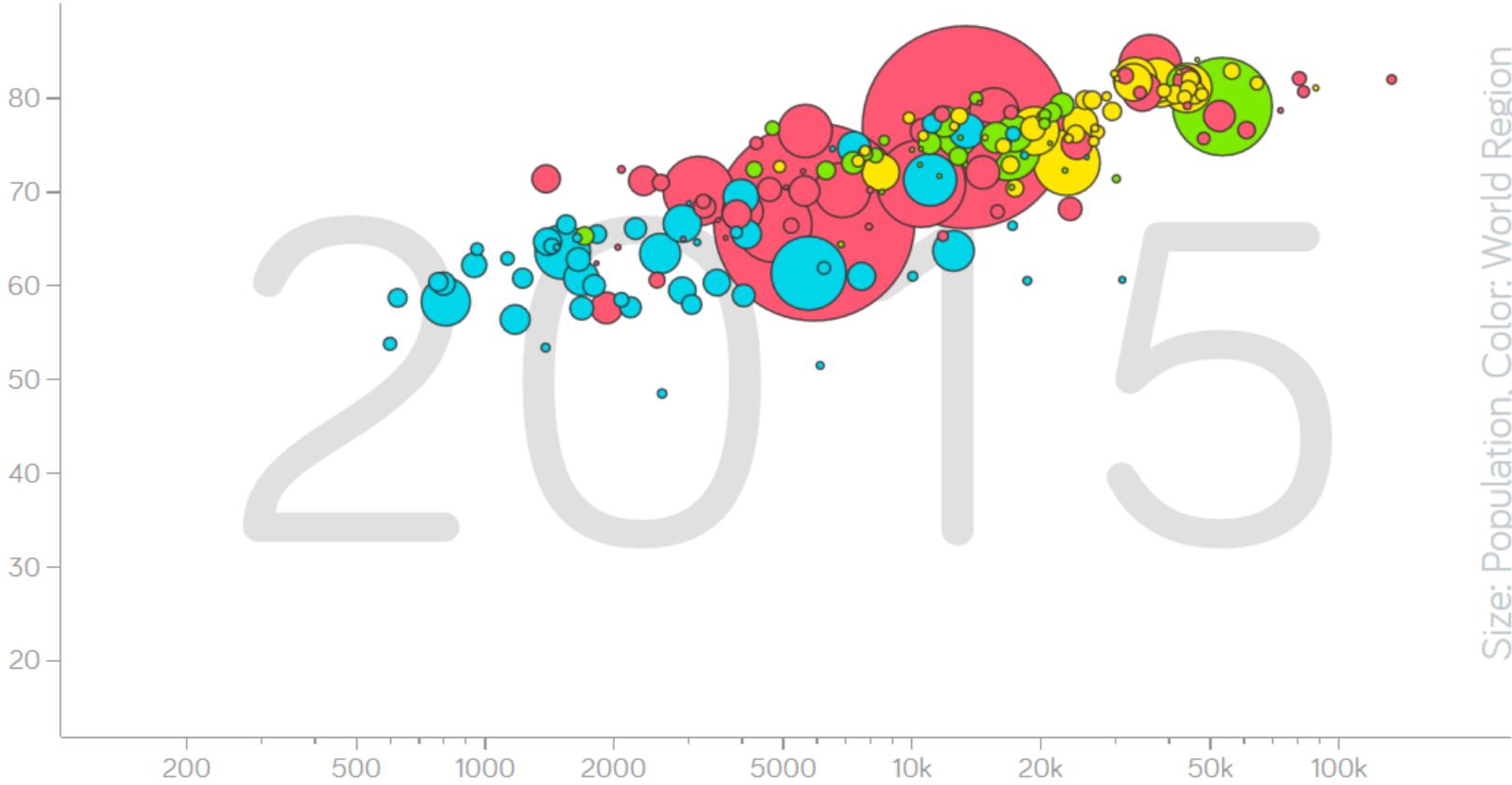
Common Fate

Boxes that
move together
naturally seem
grouped



Principles often happen together

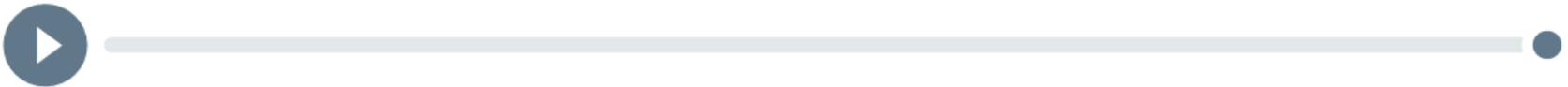
Life expectancy, years



Size: Population, Color: World Region

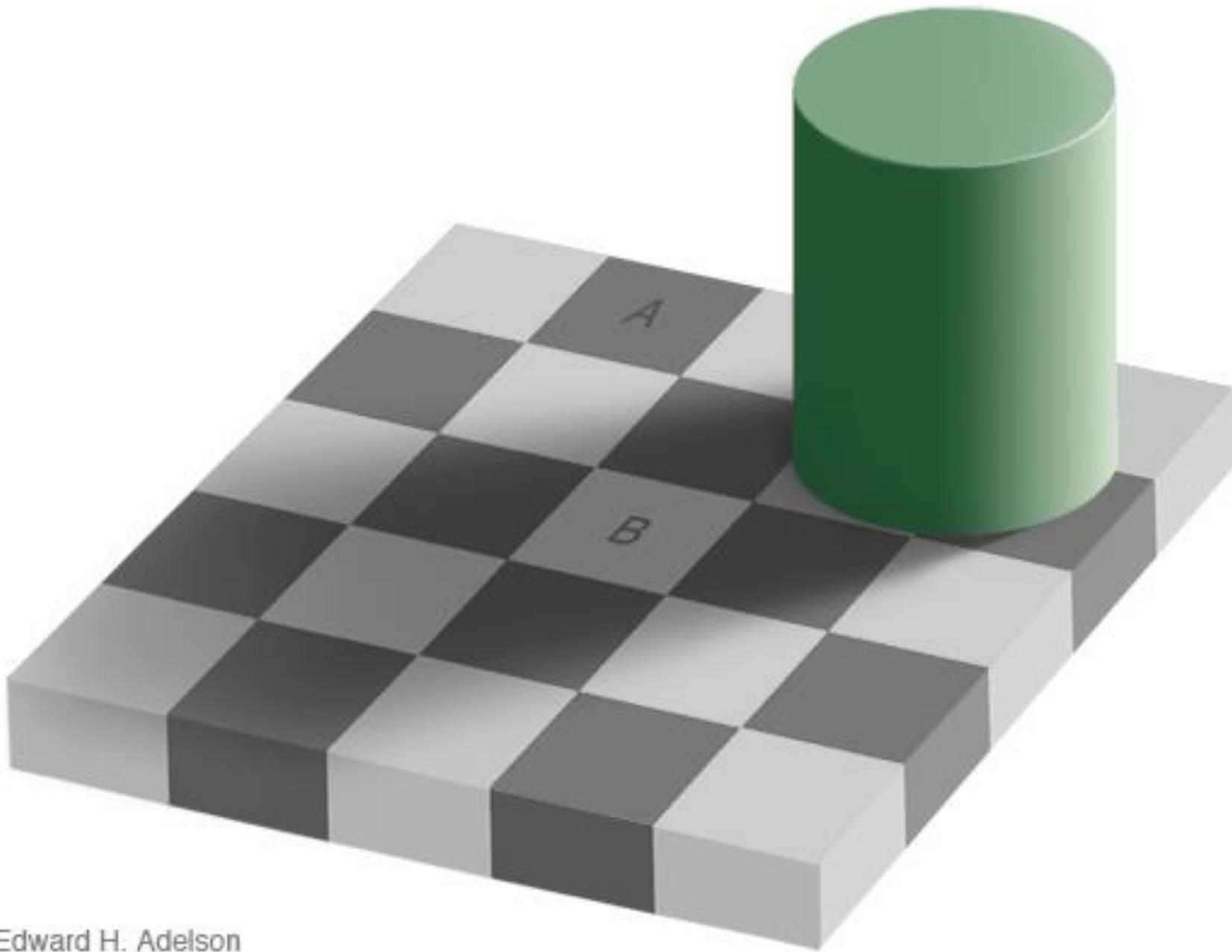
Income per person, \$/year (GDP/capita)

DATA DOUBTS



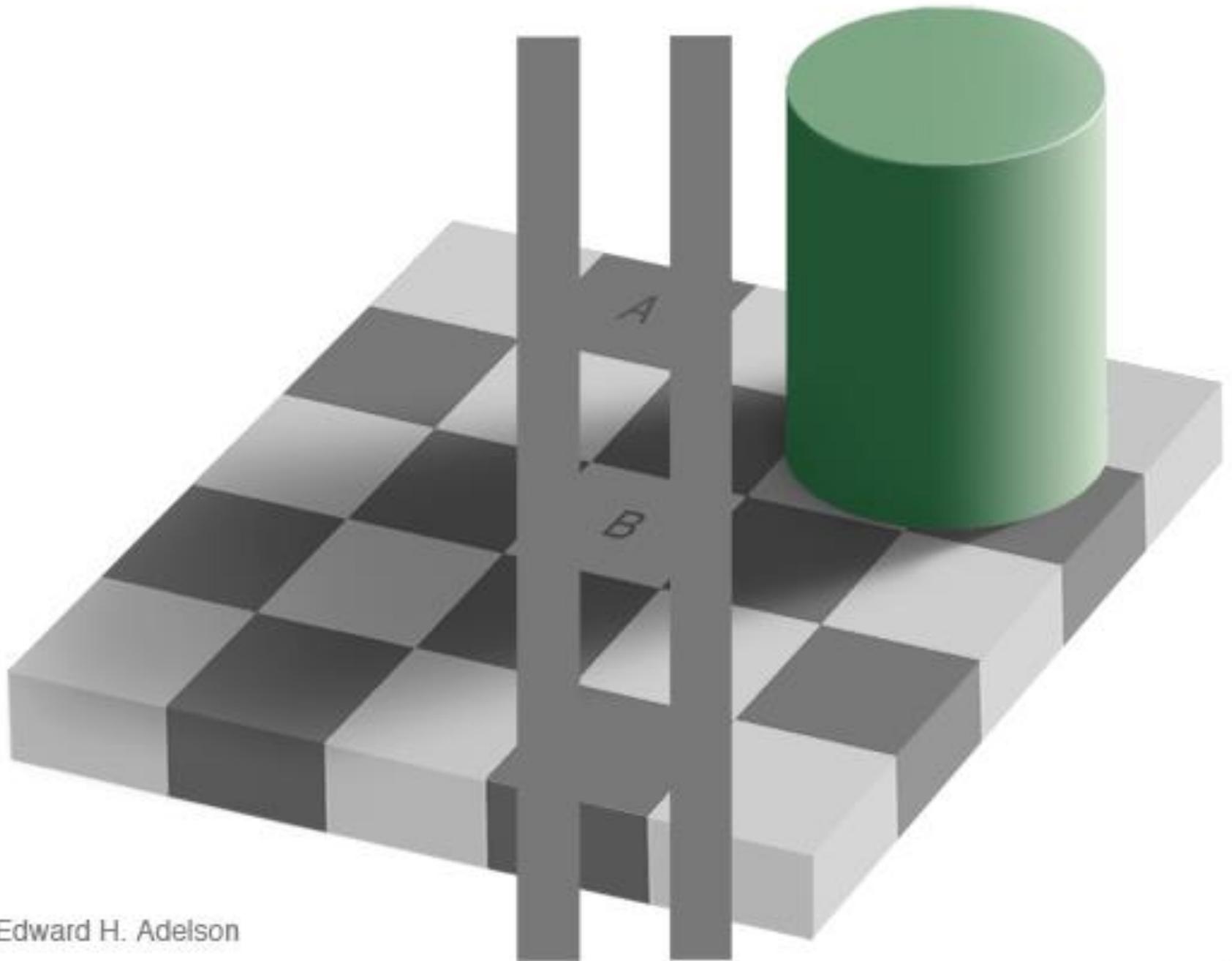
https://www.gapminder.org/tools/#_chart-type=bubbles

Just for fun



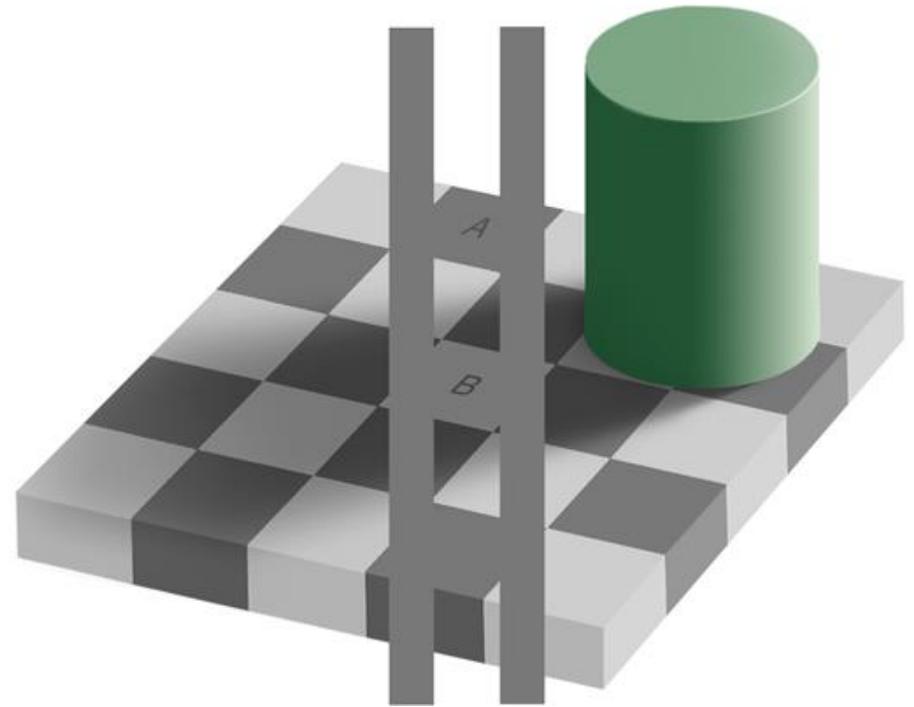
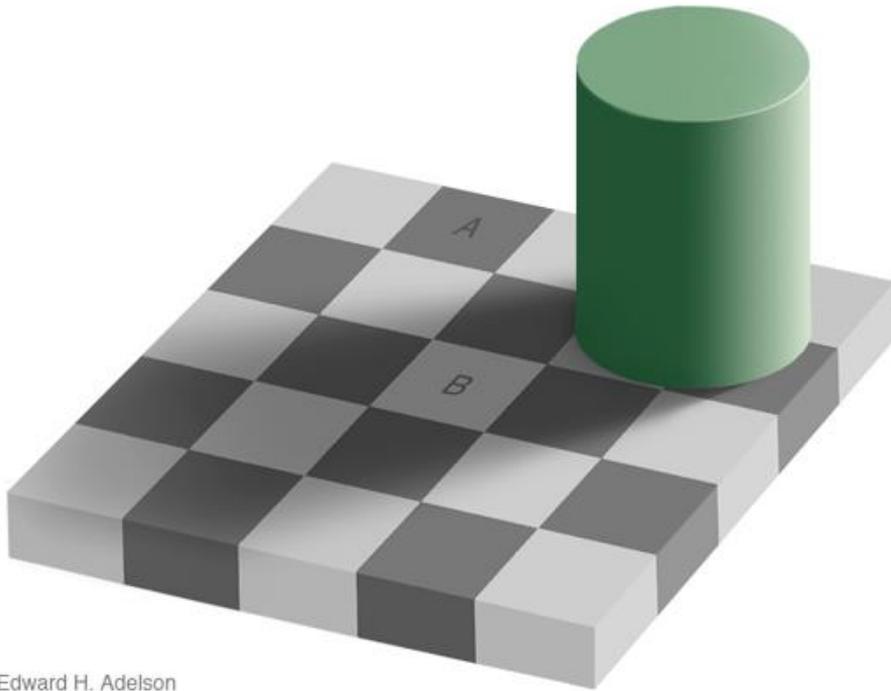
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http://web.mit.edu/persci/people/adelson/checkershadow_illusion.html



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Questions?