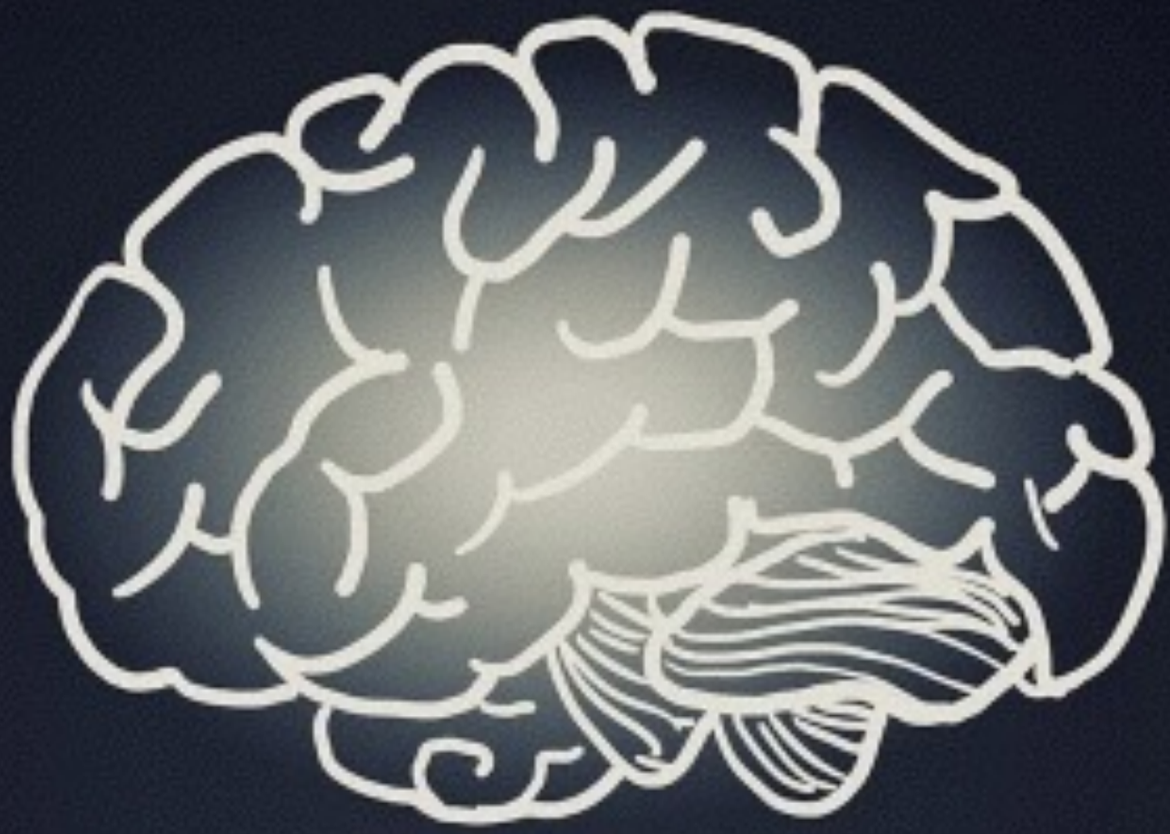

PRODUCT DESIGN PSYCHOLOGY

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Interior and Product Design Lecturer
Photographer

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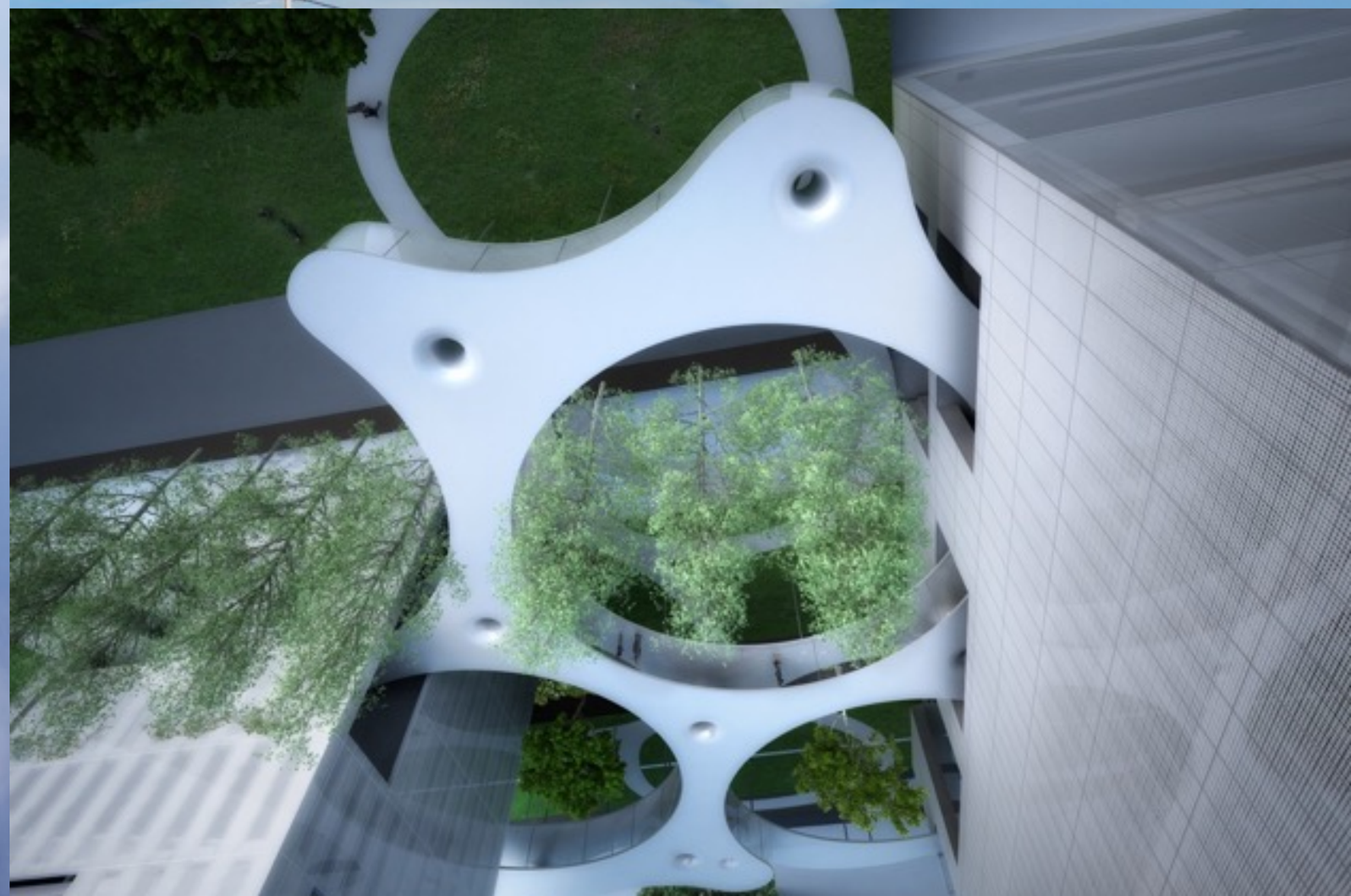
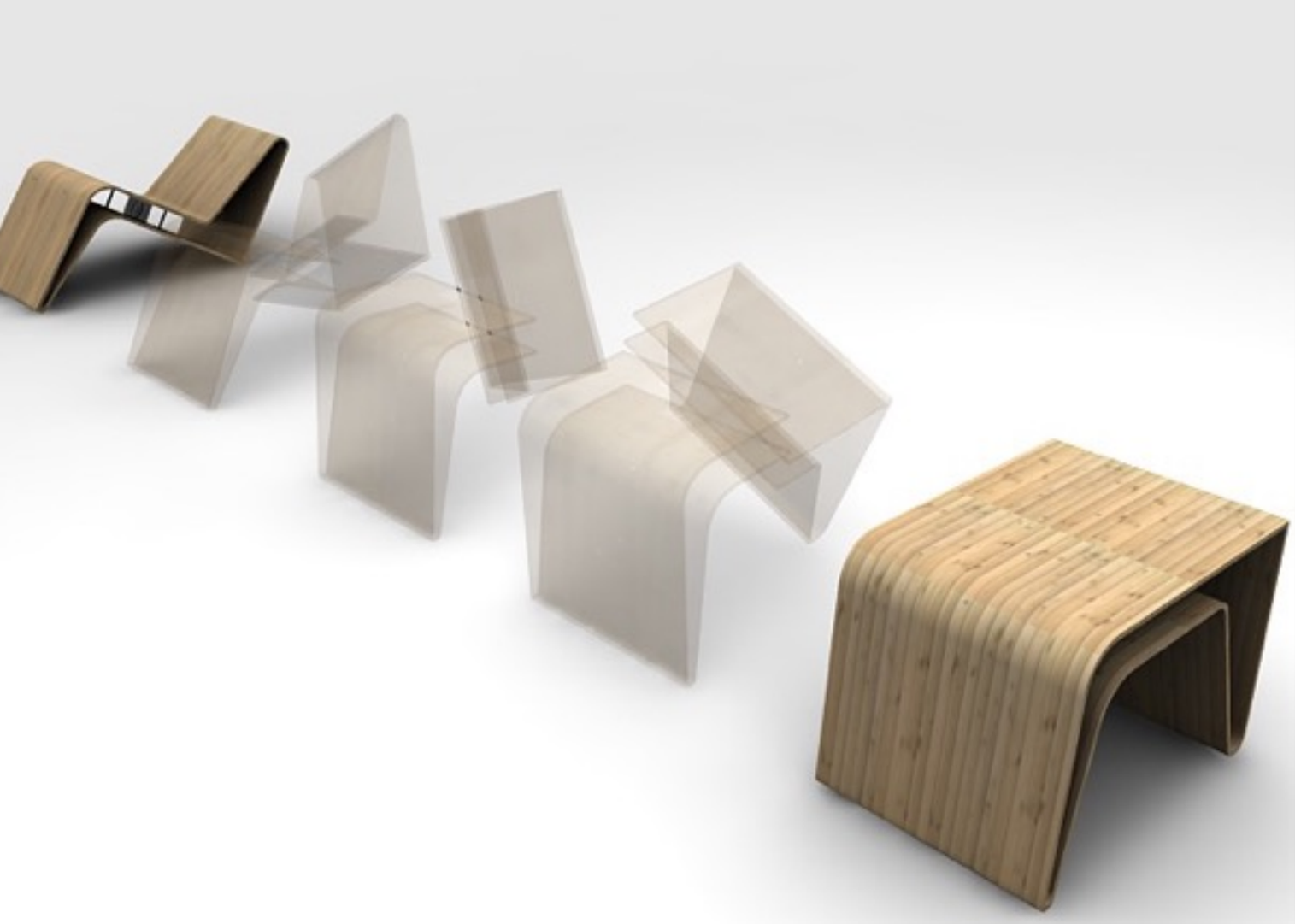




what is psychology?

Psychology is the scientific study of the mind and behavior. Psychology is a multifaceted discipline and includes many sub-fields of study such areas as human development, sports, health, clinical, social behavior and cognitive processes.

what is psychology?

With its broad scope, psychology investigates an enormous range of phenomena: **learning and memory, sensation and perception, motivation and emotion, thinking and language, personality and social behavior, intelligence, child development, mental illness, and much more.**

can we apply psychology to design?

Since psychology studies **how the human brain works**, it gives us an insight about our **behaviours**, **feelings**, **emotions**, **attitudes** and **mindsets**.

can we apply psychology to design?

Design is “human centered” - meaning:
it is tailored around the human being

design is about how things look like from an external point of view

psychology is about how things look like from an internal point of view

what psychology and design have in common?

design and psychology share the same subject of study:

the human experience

every designer should know what are the psychological effects on the human brain (of the user)

Paul Davies says **“Psychology has a huge impact,” he argues. “Unlike artists, designers have to make something for effect; an artist can start a project without a brief, but a designer has to have a purpose and they have to do that for a particular audience.”**

every designer should know what are the psychological effects on the human brain (of the user)

in this way we can improve our design
to make it more interesting and appealing
more useful to the human experience

body and mind

In order to produce “good design” a designer should not only address the body of a human being (ergonomics) but also its mind (psychology)

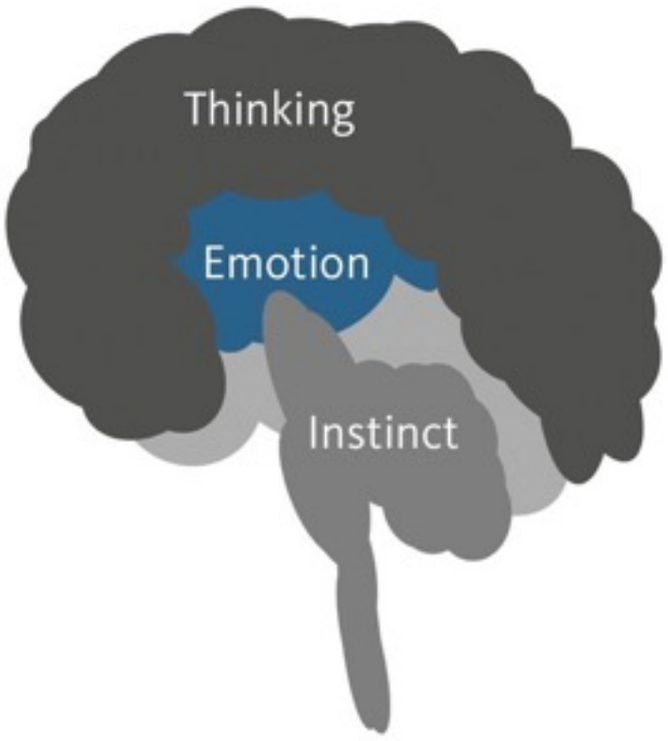
good design should fit both the body and the mind

What psychology can do for you

The value of psychology for designers lies in its ability to **predict** how a user will **interact** with a design. More often than not the most successful designers achieve this through a mixture of experience and gut feelings.

Understanding a few key psychology theories can help ensure your designs are intuitive and engaging.

What the basal ganglia does



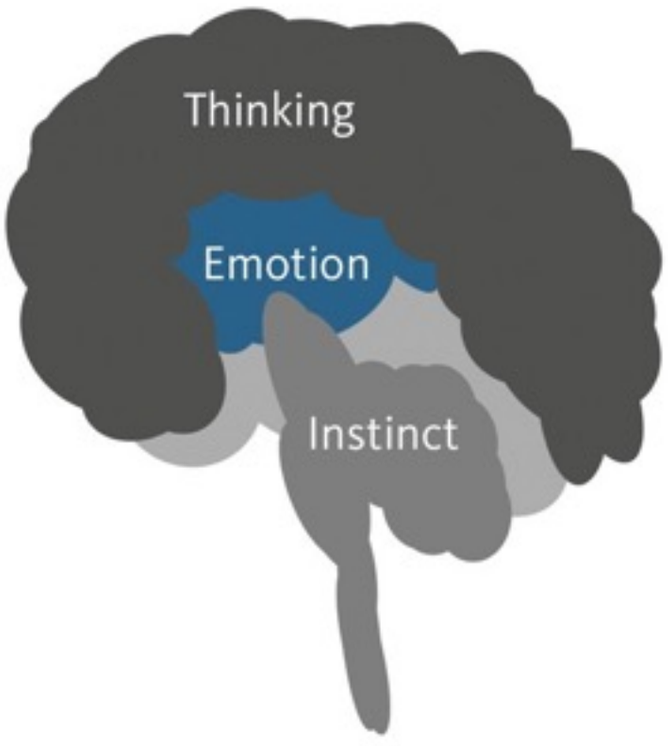
The human brain can be thought of as being split into three main parts that have evolved across all species, but are more pronounced.

The most basic part of the brain sits at the base of the brain, known as the basal ganglia.

Simple survival behaviours and quick decision-making are controlled from here. Unsure if you should fight that lion or run away? This is the part of the brain that makes that choice.

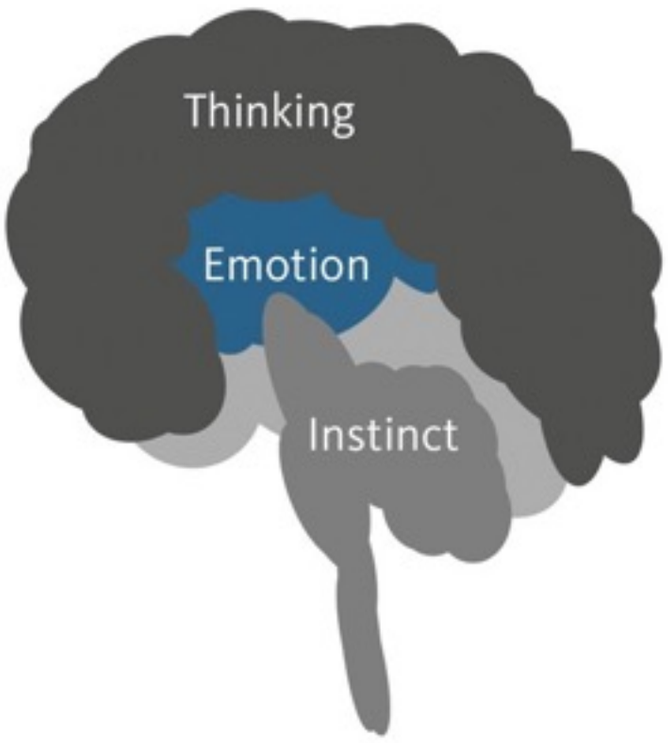
We designers can use this behaviour to evaluate our designs.

What the limbic system does



Sitting above the instinctual brain, we have the **emotion centre (neuroscientists call it the limbic system)**. The emotional part of the brain helps us **associate** behaviours and memories with positive and negative experiences.

An experiment was conducted by Russian physiologist Ivan Pavlov in 1902. He rang a bell before feeding meat to dogs to research and show how this part of the brain works. The experiment shows the dogs began to salivate when the bell alone was rung. **The dogs associated the positive feeling associated with eating to the sound of the bell without a need for the food to be present.**

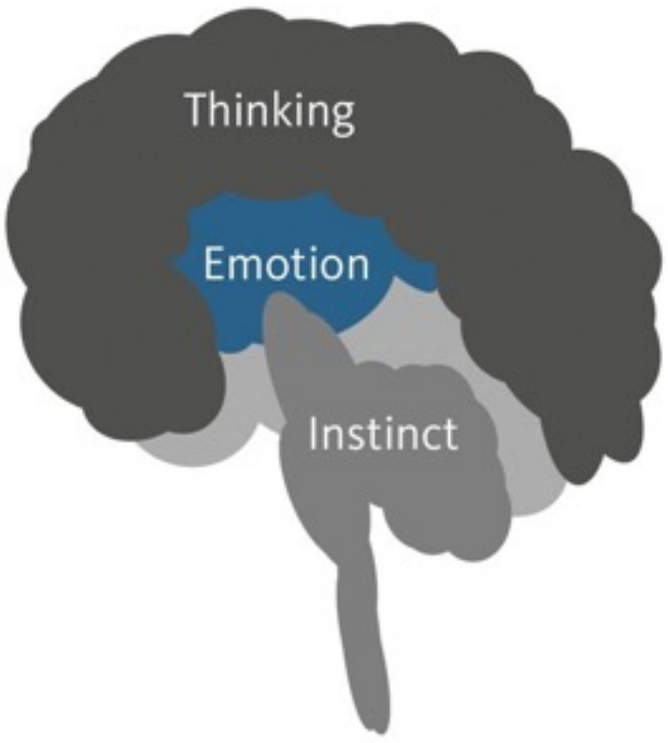


Emotion + memory is the key

Associating emotion with a memory is powerful.

This is where the experience part of what we as designers do comes into its own. A strong, emotionally effective design can have dramatic results.

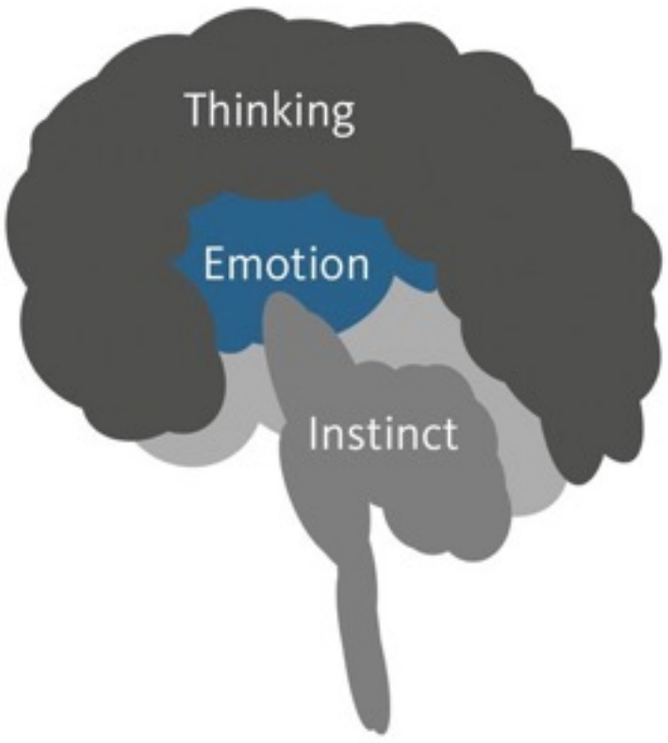
DO YOU REMEMBER OR HAVE ANY OBJECT THAT HAS AN EMOTIONAL VALUE? WHAT IS IT AND WHY?



Emotion + memory is the key

Associating our objects or app or furniture with a **positive experience** means users will be more able to recall our product, are more likely to use them again and more inclined to recommend us to a friend.

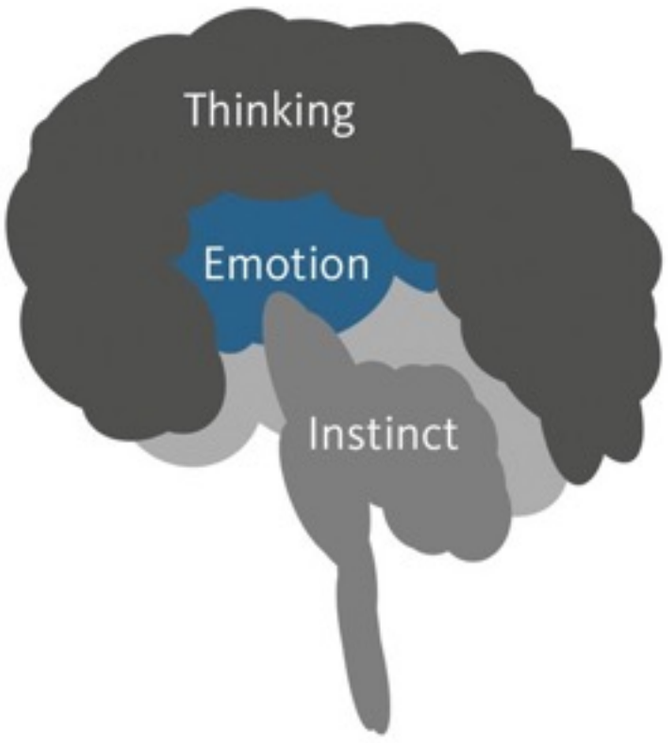
Of course, these can work in reverse. A negative experience can mean our product is forever associated with frustration and disappointment.



What the neocortex does

The third part of the brain, and the one most developed in humans, is the **neocortex** or thinking brain.

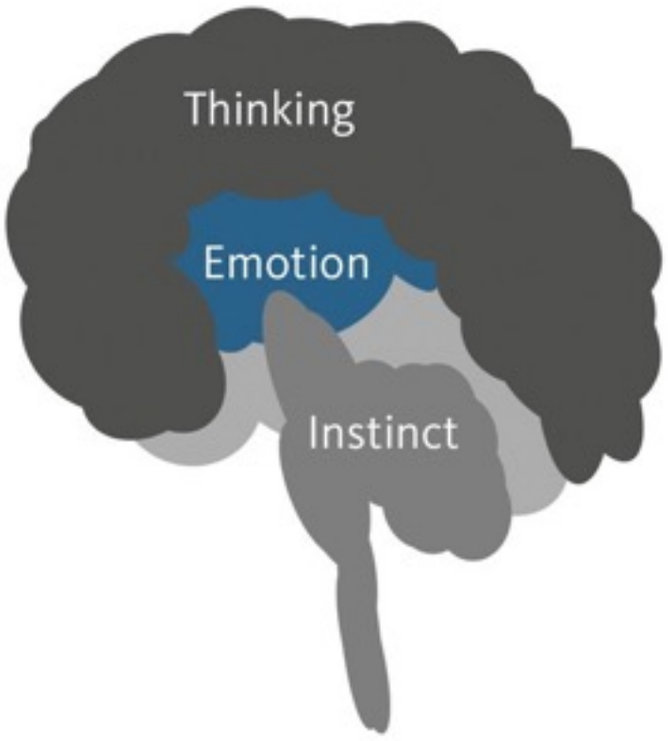
This is the part of the brain we are most comfortable designing for. Giving our users all the information we can, describing in detail what our products do, and long lists of product features all speak to the thinking, reasoning brain.



Cognitive load makes us tired

Thinking, known in the trade as cognition, is what makes us humans different. Gathering and analysing information before making a decision is a very human way of dealing with the world.

But cognition is costly. It takes large amounts of energy to think. The human brain, and specifically the neocortex, **uses 15–20 % of the total energy** we use.



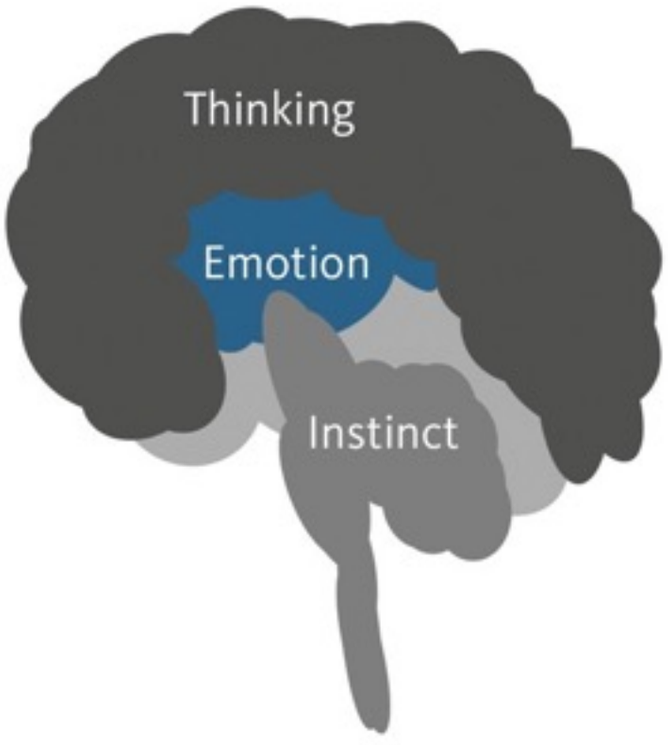
Cognitive load makes us tired

A product that has large amounts of information or requires focused thinking to use, increases cognitive load.

In other words, making our users think too much tires them and when we humans are tired we need to stop and rest.

Anything we as designers can do to prevent overloading and demanding too many decisions will help limit the cognitive load needed to use (and enjoy) our products.

We depend on mental models

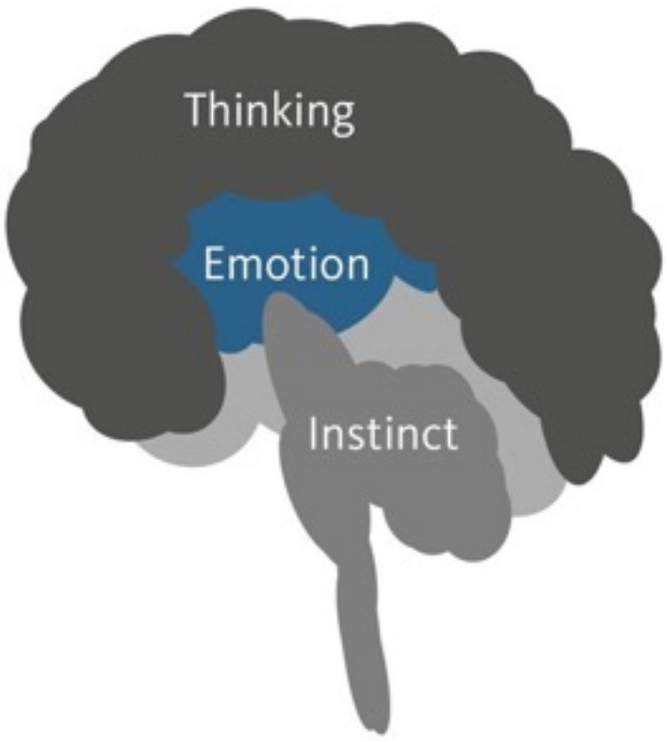


What is a mental model?

Imagine your brain as a computer.
Your brain is the hardware,
your mental model is the OS - operative system.

A mental model is based on your personal, unique experience of the world. No two people will ever have exactly the same mental model.

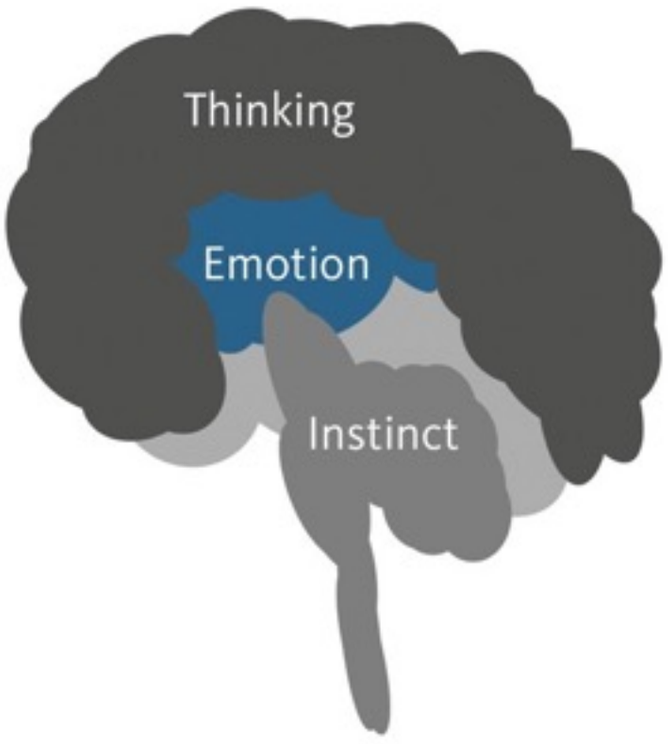
Where are you from? How old are you? You childhood education? Your job? Your major experiences? What happened to you? Who are your friends?



We depend on mental models

A mental model is like a pair of coloured glasses. Whatever you see, feel and understand of the external world is filtered through these glasses.

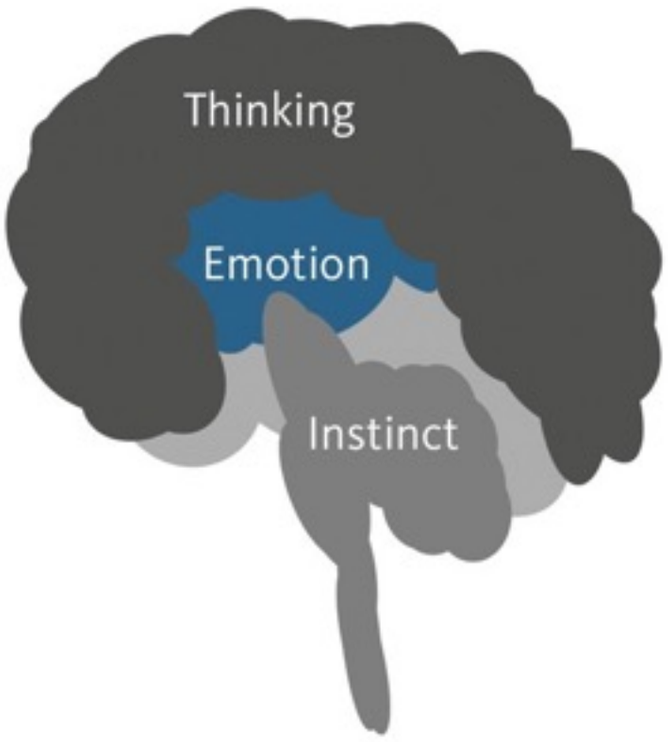
If your glasses are blue, you'll see the whole world (your reality) in blue.



Mental Model Exercise

"See you soon"

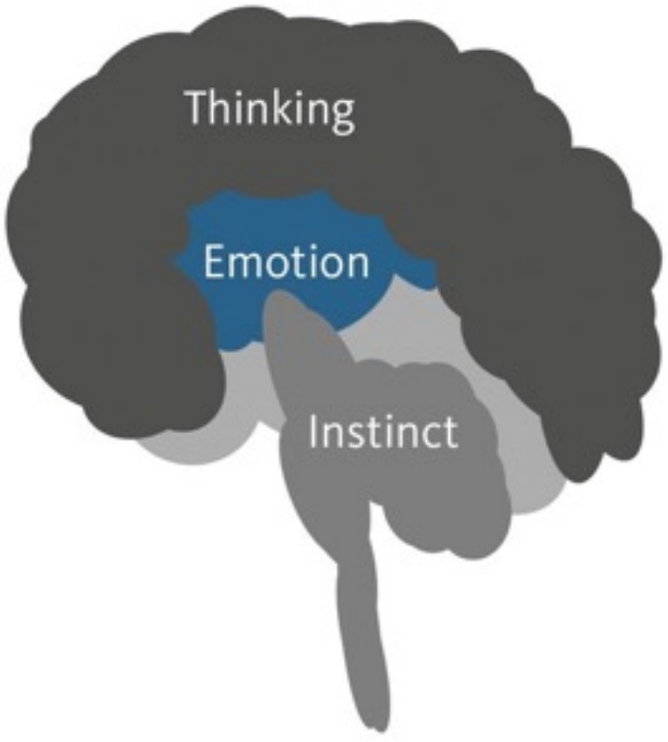
What does this expression means to you?



We depend on mental models

A successful product will match the users' mental model of how it works. If our user has a different mental model to the product you designed, it won't work well for them; it won't feel intuitive.

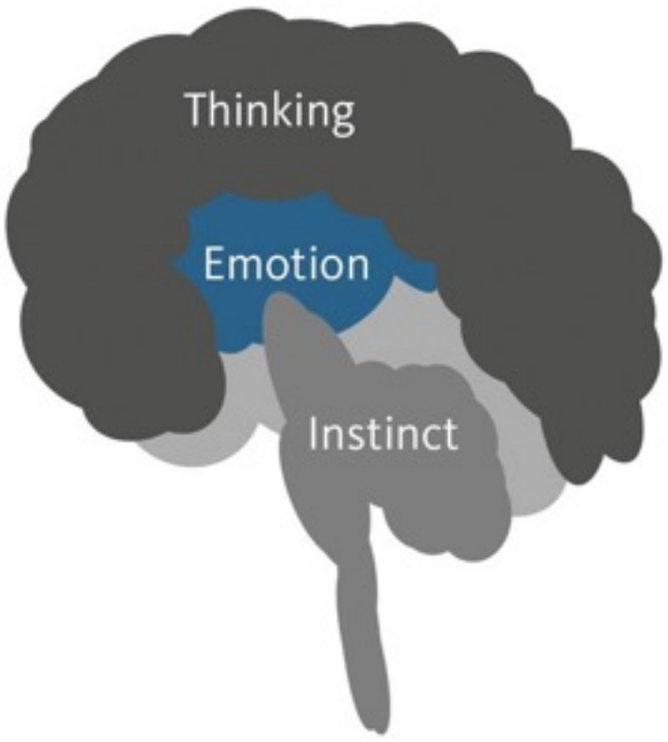
If you use certain symbols on your products and the user doesn't understand them, this is an example of mismatch in mental models.



Our brains are built for social interaction

The neocortex, is more developed in humans than any other animal. Robin Dunbar linked large brains with organisms that have large, often complex social groups. **We use our brains to read and analyse social situations. Humans are built for social interaction.**

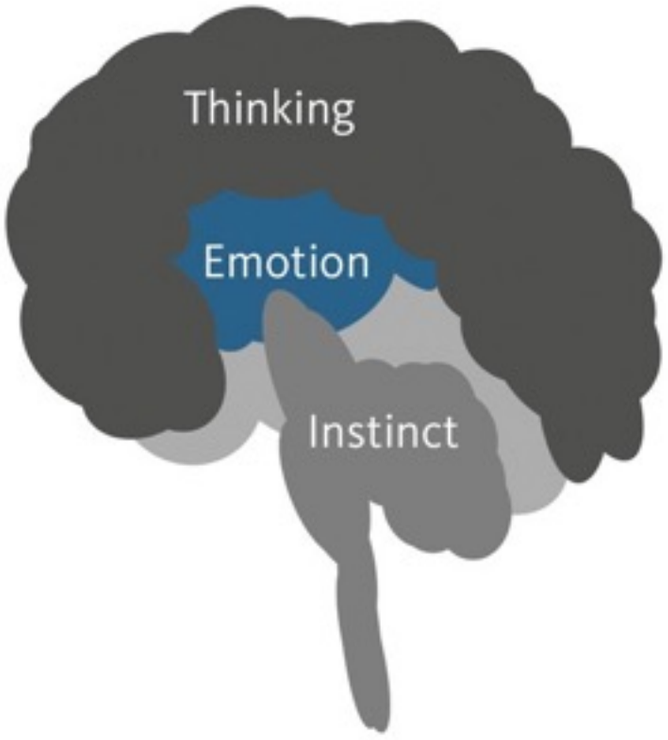
He suggested the optimal size of the social groups we can operate in based on our brain size. Dunbar's number for humans is around 148, **meaning we don't have the mental capacity to manage more personal relationships than this**.



Our brains are built for social interaction

Given our mental limitations, we should be designing our products and apps to match this behaviour. Our products should behave like we do.

BY THE WAY: HOW MANY FRIENDS YOU HAVE ON FACEBOOK? MORE THAN 148?



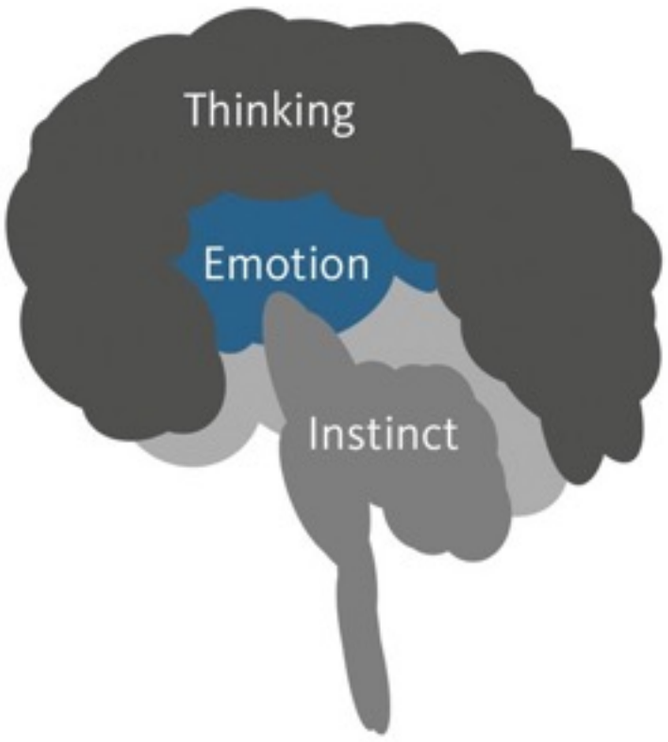
Empathy is the basis of social models

We develop mental models of the behaviour of others from an early age.

The **theory of mind**, is the scientific basis for empathy. Basically we are aware of others – how they feel, what they know, what they want.

Empathy is a very important part of the design process – the capacity to put yourself in someone else shoes.

Why is empathy so important to designers?



Empathy is the basis of social models

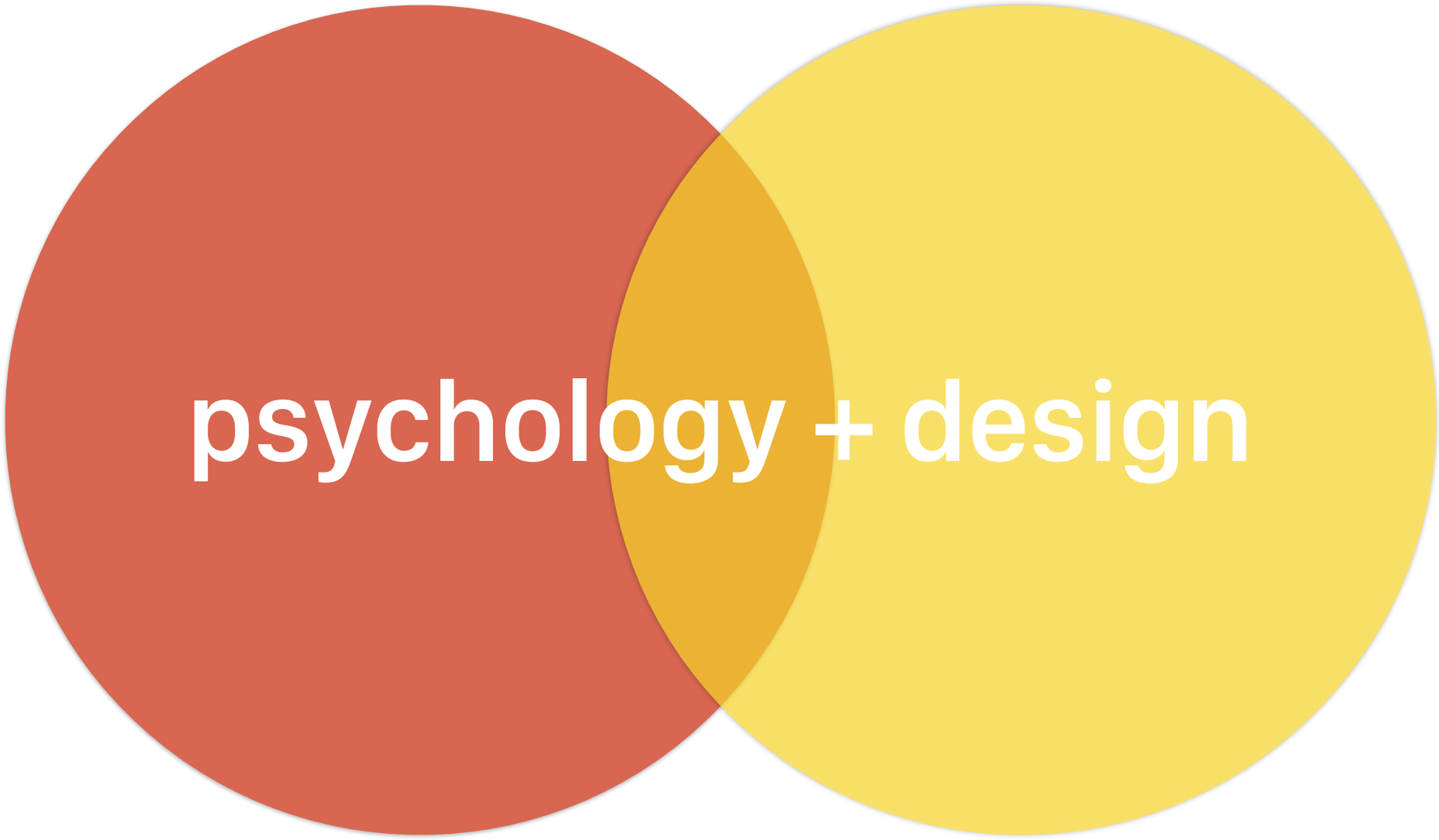
Designers should always be aware that you are not designing something for your own good or pleasure.

Product Design is always at the service or the human experience and should always take into consideration the needs and expectations of other people.

Ted Talk : Simon Sinek

How great leaders inspire action

How to design products that talk to the brain


psychology + design


MasterCard

one of the most common example of psychology applied to design is advertising

on every website, every street, every TV channel and every newspaper or magazine, we are surrounded by Advertising

In 2011, Patagonia drew attention when it ran a full-page ad in The New York Times on Black Friday, declaring "Don't Buy This Jacket." The ad calls on consumers to rethink consumerist behaviors and instead make purchases only when necessary and with sustainability in mind. The brand's move toward transparency helped consumers see Patagonia as an environmentally responsible choice, given the consumer actually needs a jacket.


Coca-Cola
Coca-Cola
Coca-Cola

Audi
Vorsprung durch Technik

THE ALL NEW AUDI A3

Everything you need, nothing you don't.

Official fuel consumption figures for the all new Audi A3 range in mpg (l/100km) from: Urban 40.4 (7.0) - 61.4 (4.6), Extra Urban 58.9 (4.8) - 85.6 (3.3), Combined 50.4 (5.6) - 74.3 (3.8) CO_2 emissions 130 - 99 g/km.

This campaign from Audi arguably uses **cognitive dissonance** to draw your attention. Making the script more difficult to read engages the brain more effectively, and therefore allows you to process the message more easily.

Use Red to Catch Attention

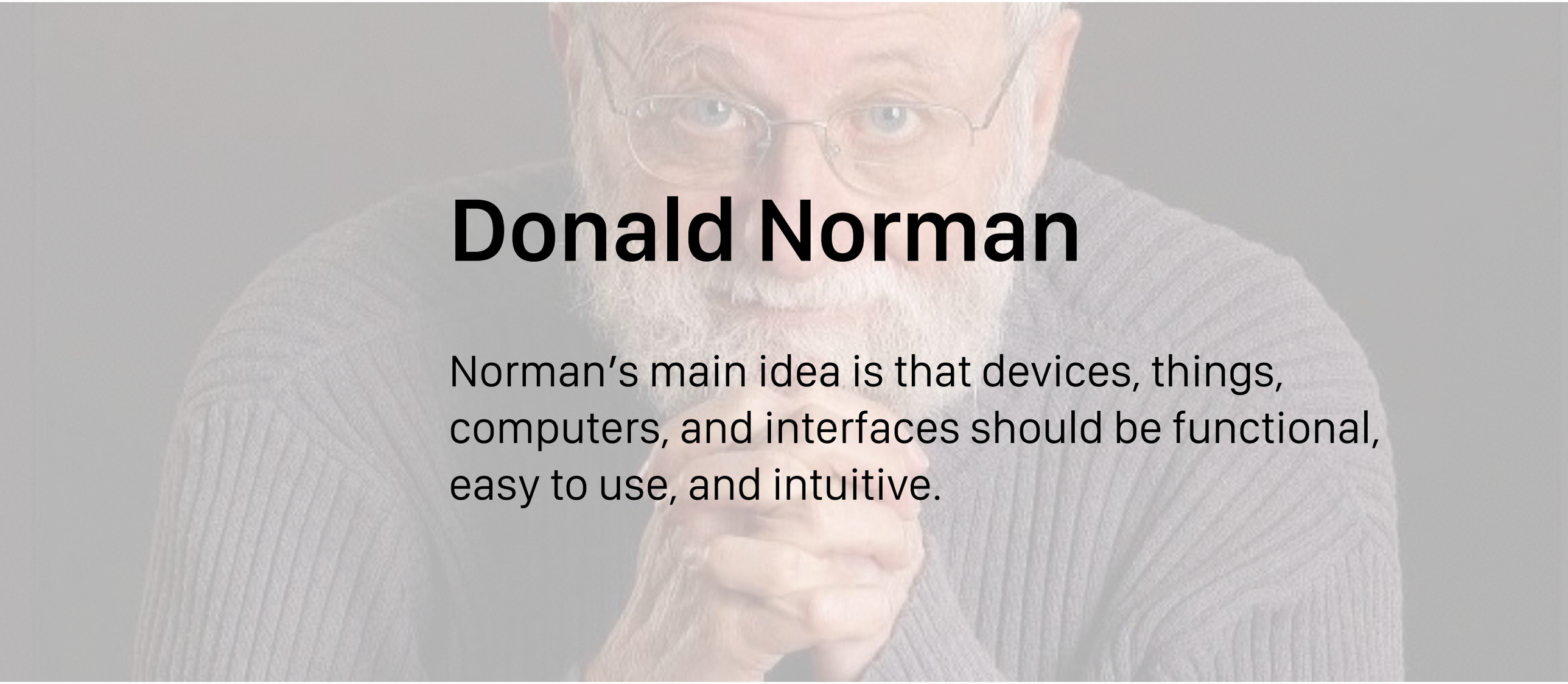
Most mammals can only see 2 colors. Humans can see 3. We've evolved to see reds, blues and greens dichromats can see.

Once our ancestors could see the bare skin beneath their hair, they could also see the red blood pumping through it. We would become red when excited or angry, and this association has stuck. Because of this evolutionary change we find the color red the most enticing, shocking, and exciting color.

persuasion

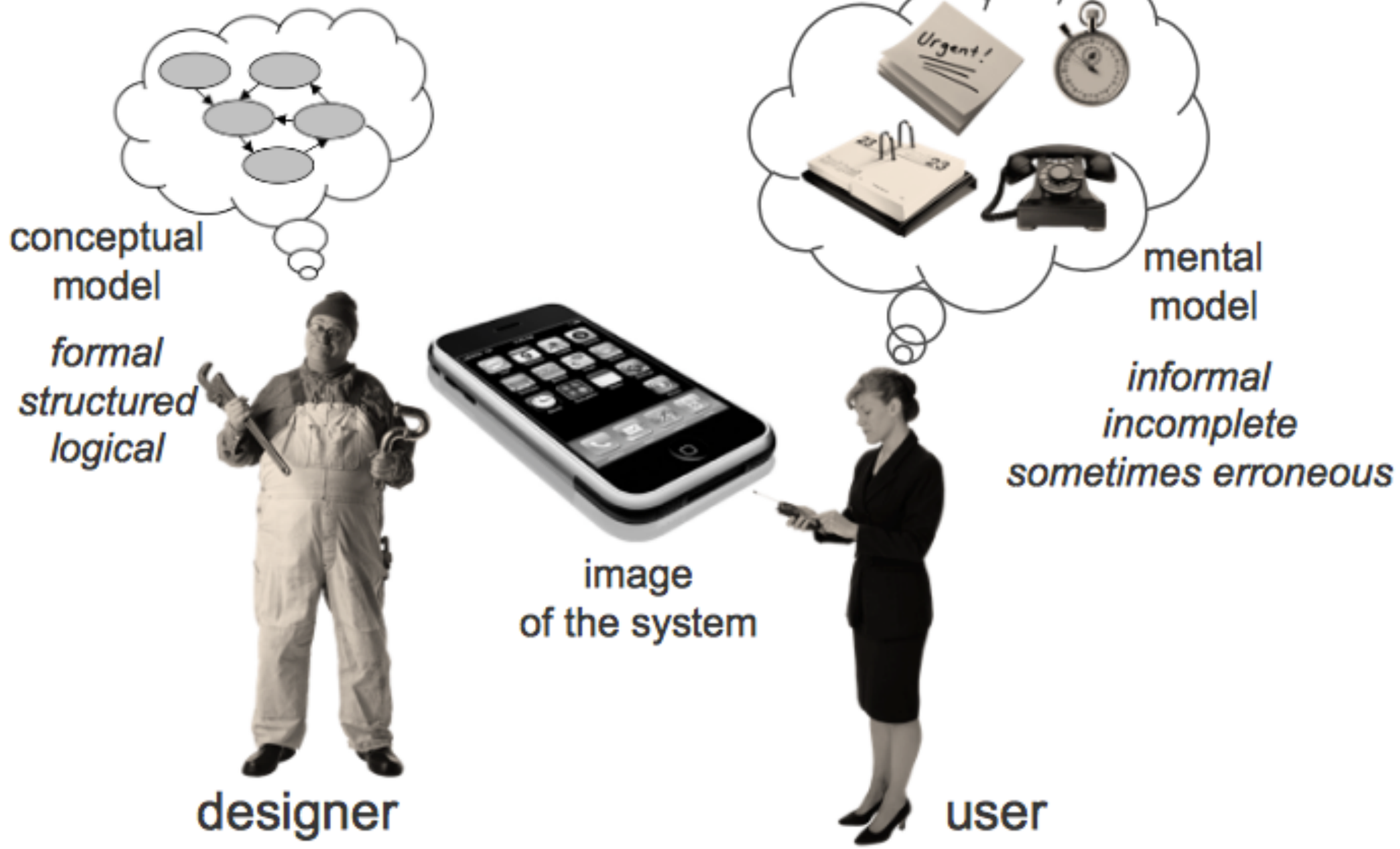
“People think that their decisions and choices are most of the time made **consciously** and rational, relating to their wishes, interests and motivations,” explains Andrews. “Fact is, that most of our decisions in daily life are made on an **unconscious** level, which means we are quite vulnerable to persuasion attempts which effect our unconsciousness.”

social psychologists Marc Andrews and Matthijs van Leeuwen and Rick Baaren



Donald Norman

Norman’s main idea is that devices, things, computers, and interfaces should be functional, easy to use, and intuitive.


conceptual
model
formal
structured
logical
Urgent!
mental
model
informal
incomplete
sometimes erroneous
image
of the system
designer
user

Gulf of Evaluation and Gulf of Execution

These terms were introduced in Donald Norman (1986) and popularised by his book **The Psychology of Everyday Things**

Gulf of Evaluation

user’s intentions
(I want to do something with this object)

gulf of evaluation

product’s properties and features
(I am enabling the user to do do what he wants)


REC

Every product enables (or not) the user to get what he/she wants

If I want to record a video, I **expect** to press a button with a red circle symbol.

Is the product doing that? Or I need other steps that do not match my **mental model**?

How the user expects this to work?

Understanding that every user has a **mental model**, therefore he/she expects things to work in a certain way - if you product needs the user to learn **new ways of interaction**, is not going to be successful

Gulf of Execution

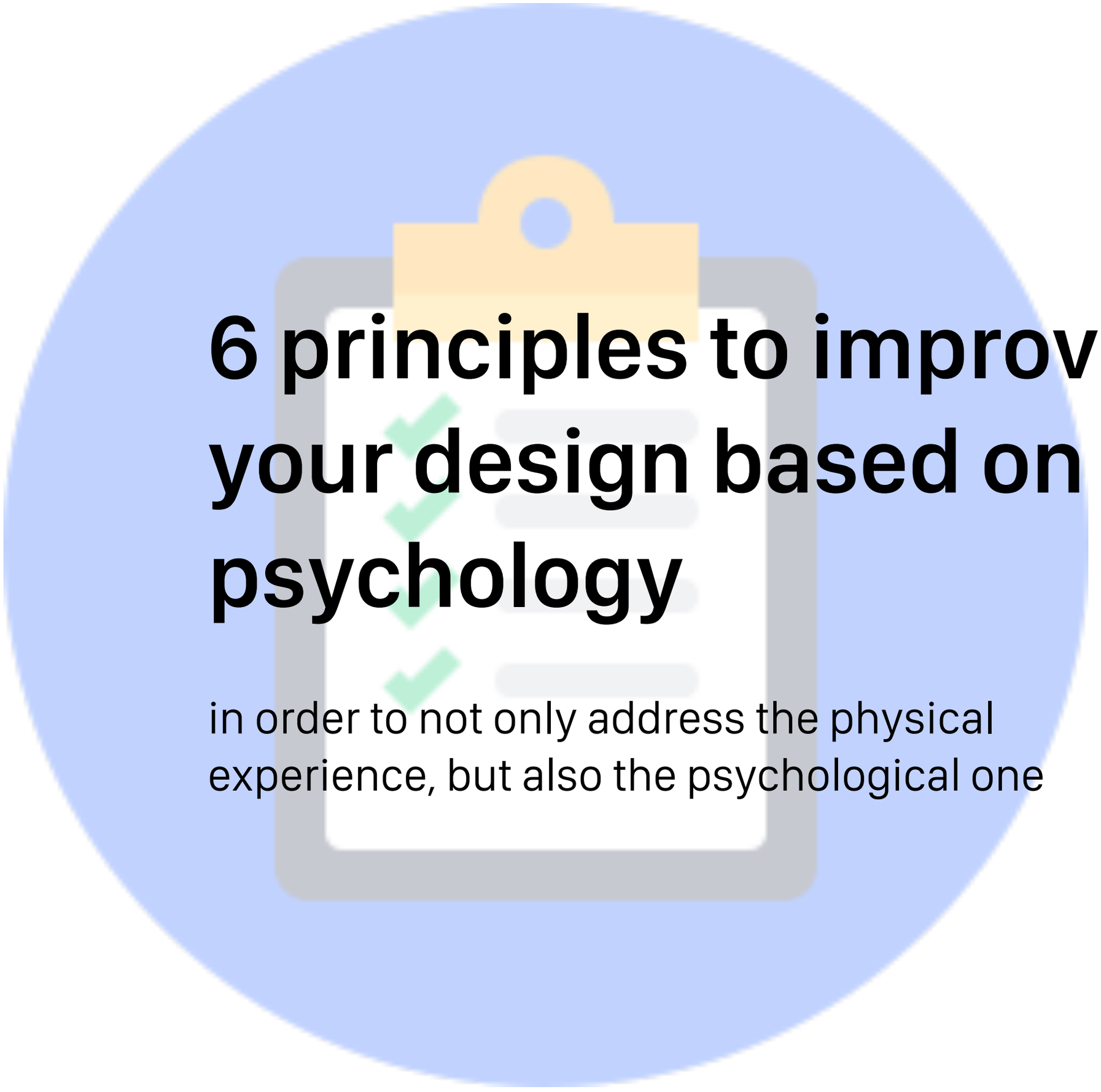
user’s goal
(I want to move to the next step)

gulf of execution

product’s properties and features
(I am giving the user a sign or a clear input about what to do next or how to use me)

when was the last time you felt frustrated about using an object/product?

what do you think was the cause of this frustration?



6 principles to improve your design based on psychology

in order to not only address the physical experience, but also the psychological one

1

Visibility

Can I see it?

Users need to know what all available options are, and know straight away how to access them.

Communicate to the user what is what, using colours, shapes, icons, grids etc etc


INNOTIMES
12
1
2
3
4
5
6
7
8
9
10
11

Visibility

Can I see it?

Any example of good / bad visibility?

Feedback

What is going to happen now?

Every action needs a reaction. **There needs to be some indication, like a sound, a moving dial, a spinning rainbow wheel, that the user’s action caused something.**


JKL
MNO
PRS
TUV
WXY
Z

Feedback

What is going to happen now?

Any example of good / bad feedback?

Affordance

How do I use it?

Affordance is the relationship between what something looks like and how it’s used.

For designers, it means that as soon as someone sees something, they have to know how to use it. For example, a mug has high affordance: it’s easy to figure out intuitively how to use it.


meh.

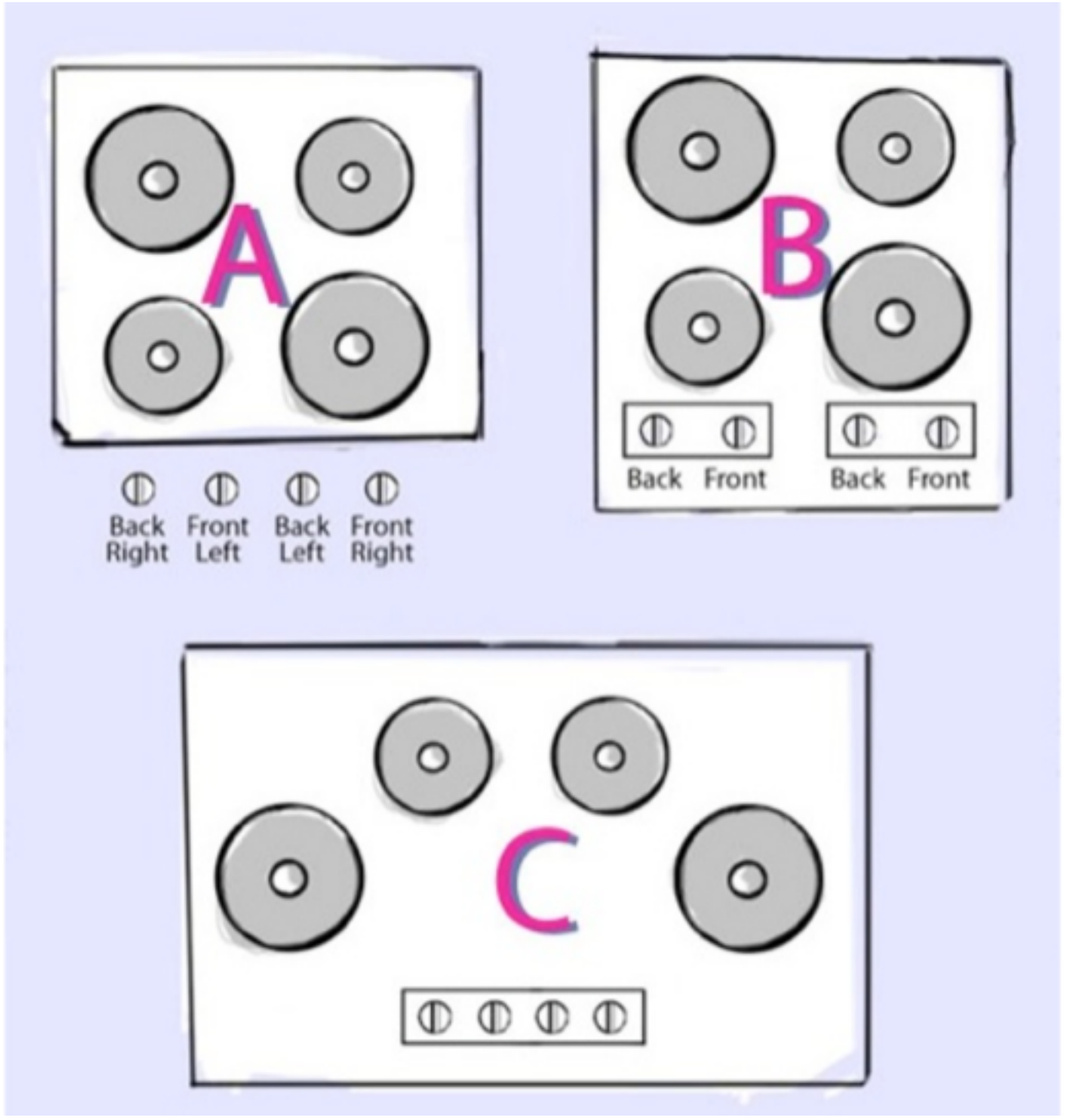
4

Mapping

Where am I and where I can go?

Mapping is the relationship between control and effect. The idea is that with good design, the controls to something will closely resemble what they affect.

A great example of mapping is the vertical scroll bar. It tells you where you are in a page, and as you drag it down, the page moves down at the same rate; control and effect are closely mapped.


A
Back Right
Front Left
Back Left
Front Right
B
Back
Front
Back
Front
C

5

Constraints

Why I can’t do that?

Constraints are the limits to an interaction or an interface. Some are really obvious and physical, for example the screen size on a phone.

Others are more nuanced, like a single, continuous page website having an image peeking onto the main page. It is logical for the user to scroll down to see the next image, and thus the rest of the website.

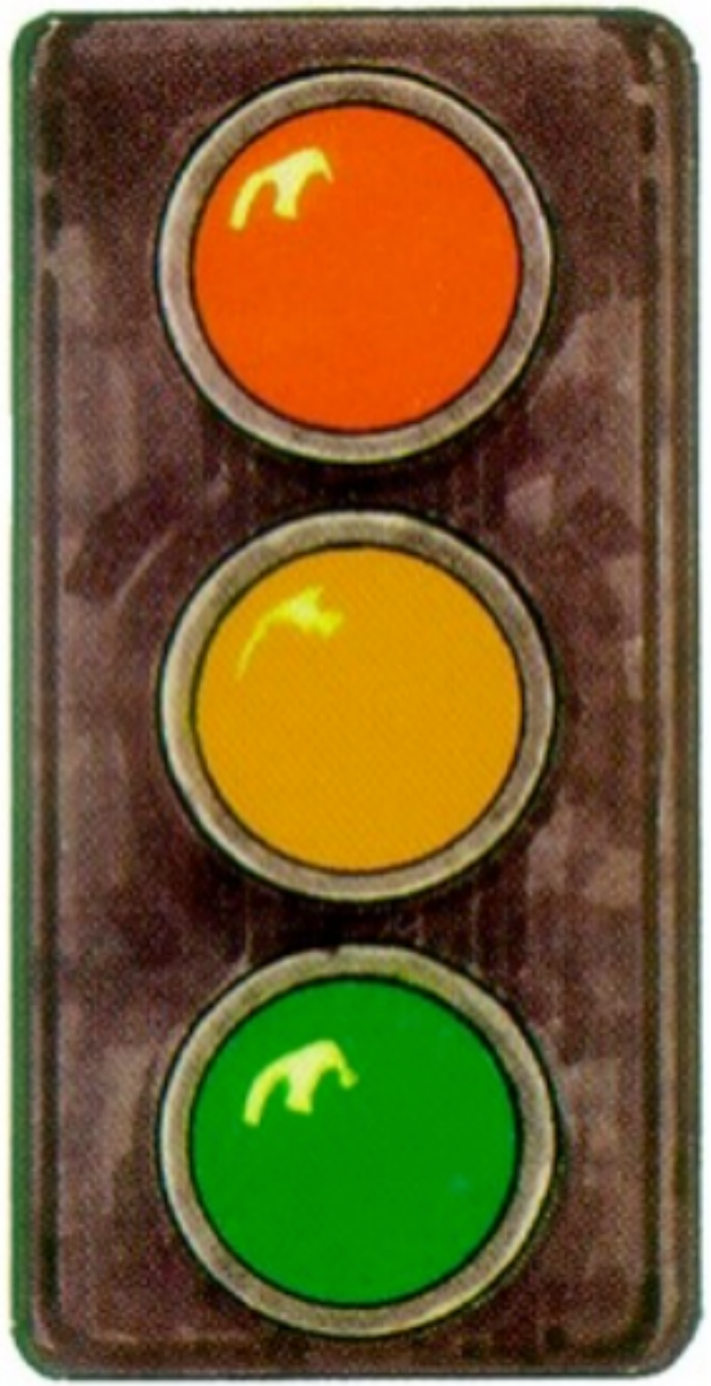
6

Consistency

Have I seen this before?

The same action has to cause the same reaction, every time. The same symbol should have the same meaning, no matter what context it is.

Moving clockwise usually means “to open something” - think about a plastic bottle.



To drive the user experience thanks to your design choices

Thanks to these - and other - principles we can design products that work with the user, and not against him

The next time you are using something and you feel frustrated, ask yourself who’s the fault?

when we design something, we should also include the psychological side of it

how is the user going to respond to this?
is the user going to understand?
is blue or red better for this product?
which shape is evoking some emotions?
how can we attract more customers?

Don Norman - 3 ways design makes you happy
(English with Thai subtitles)

Product Design Psychology Tips

Principles to be applied to your own design in order to generate a positive response in the user

The Principles Of Gestalt

Follow how the brain **perceives** things around us and can help us to produce produce design based on our mental models.

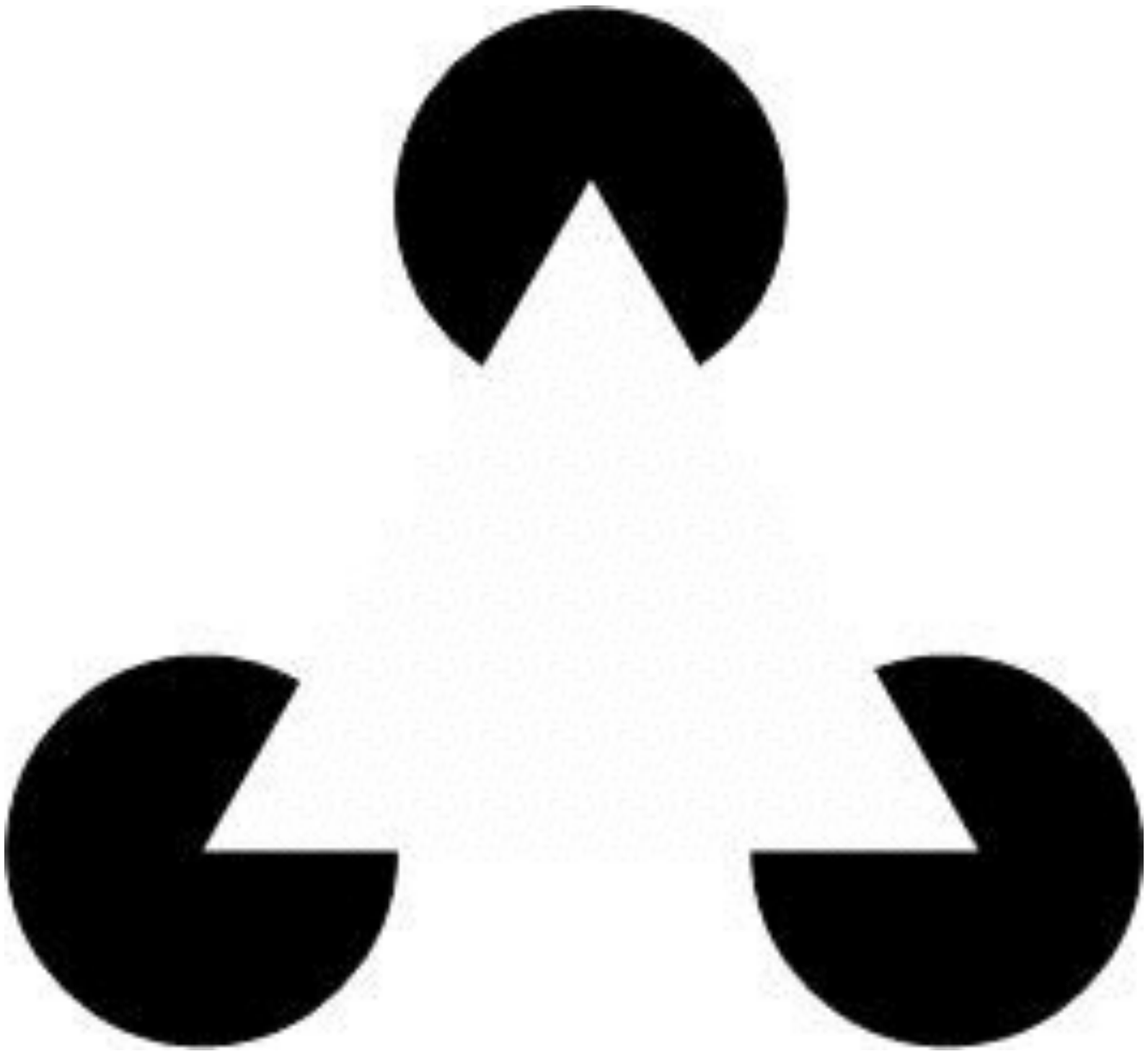
Since these principles are about how perceive things, they can be applied to any kind of design.

EMERGENCE

The whole is perceived before its single parts

Emergence is the **process of forming complex patterns from simple rules**. When attempting to identify an object, we first seek to identify its **outline**. We then match this outline pattern against shapes and objects we already know to find a match. Only after the whole emerges through this outline pattern matching, do we start to identify the parts that make up the whole.

When designing, keep in mind that people will identify elements first by their general form. A simple well defined object will communicate more quickly than a detailed object with a hard to recognize contour.

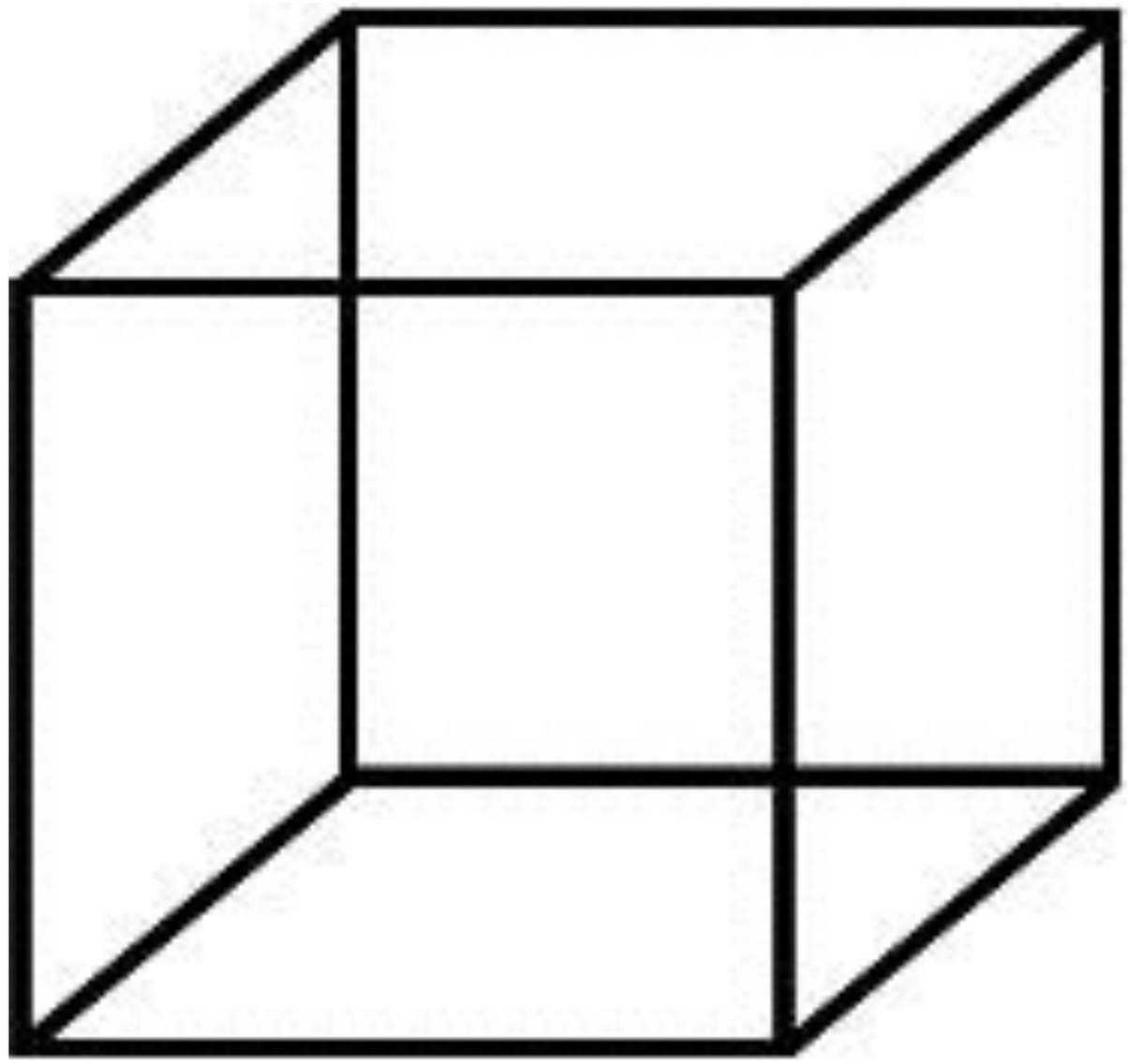


REIFICATION

Our minds fill the gaps

Reification is an aspect of perception in which the object as perceived contains more spatial information than what is actually present. As we attempt to match what we see to the familiar patterns we have stored in memory, there isn't always an exact match. Instead **we find a near match and then fill in the gaps of what we think we should see.**

Reification suggests that we don't need to present the complete outline in order of viewers to see it. **We can leave out parts of the outline as long as we provide enough of it to allow for a close enough pattern match.**

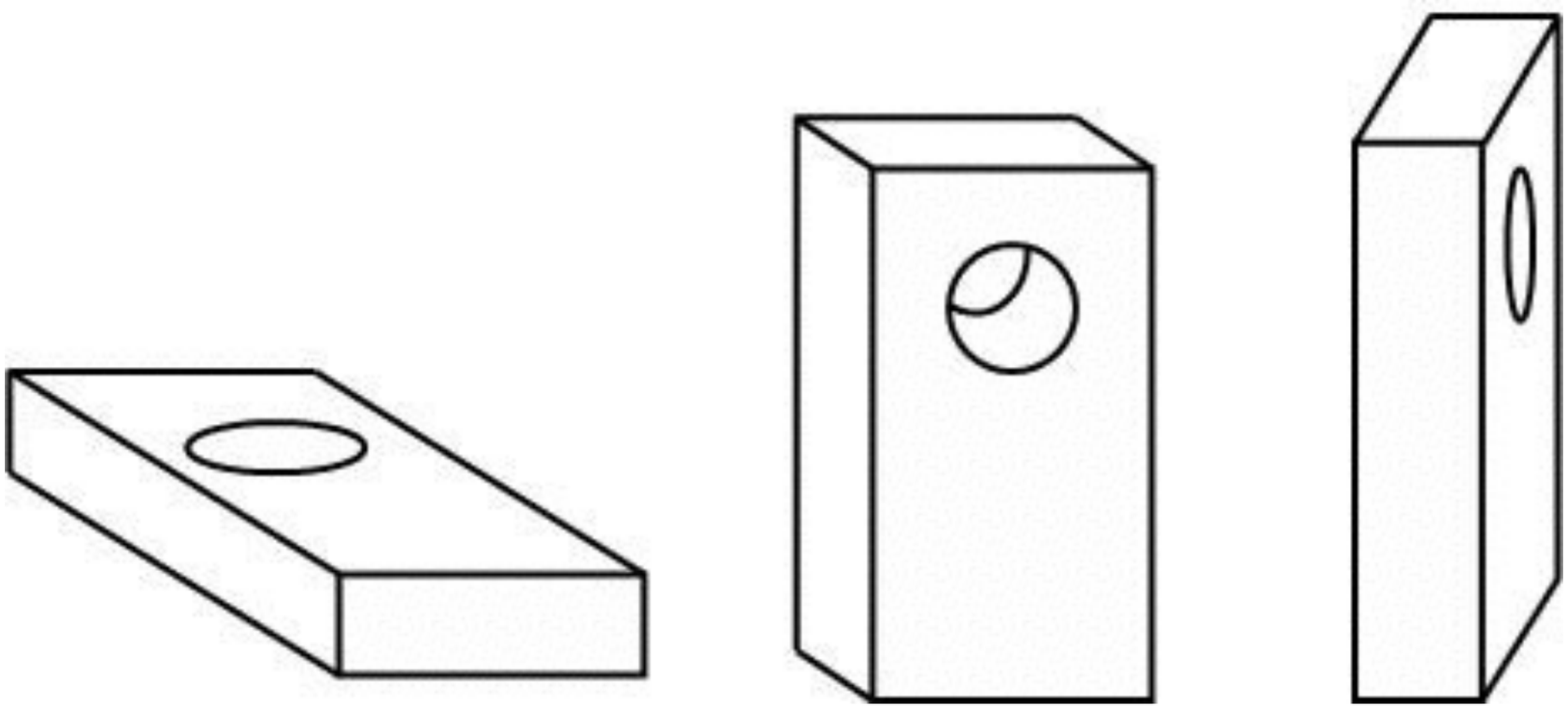


MULTI-STABILITY

The mind seeks to avoid uncertainty

Multi-stability is the tendency of ambiguous perceptual experiences to move unstably back and forth between alternative interpretations. Some objects can be perceived in more than one way.

From a design perspective if you want to change someone's perception, don't try to change it all at once. Find a way to get them to see an alternative. Then work to strengthen that alternative view, while weakening the original.

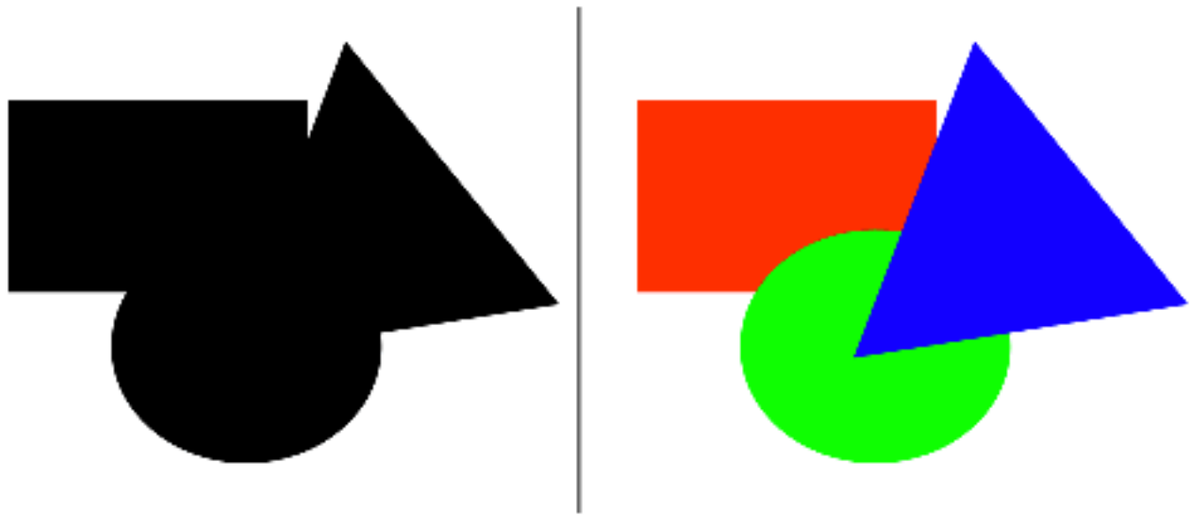


INVARIANCE

We are good at recognising similarities and differences

Invariance is a property of perception in which **simple objects are recognised independent of their rotation, translation and scale**. Since we often encounter objects from different perspectives, we've developed an ability to recognise them despite their different appearance.

Imagine if you could only recognise someone you knew if they stood directly in front of you and faced you, but you couldn't recognise them once they turned in profile. Despite the different visual perspective we can still recognise people.



law of pragnanz

good figure, law of simplicity

People will perceive and interpret ambiguous or complex images as the simplest form(s) possible

When confronted with complex shapes, **we tend to reorganise them into simpler components or into a simpler whole**.

closure

When seeing a complex arrangement of elements, we tend to look for a single, recognisable pattern.

With closure, we instead combine parts to form a simpler whole. Our eye fills in the missing information to form the complete figure.

symmetry and order

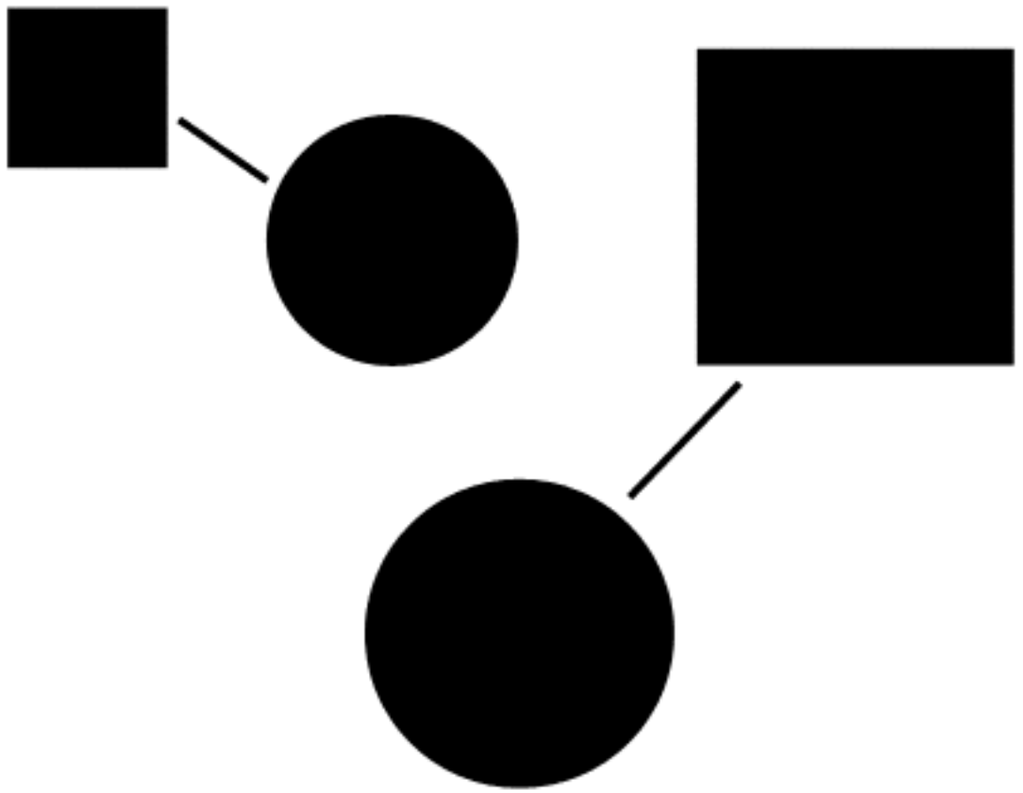
People tend to perceive objects as symmetrical shapes that form around their center.

Symmetry gives us a feeling of solidity and order, which we tend to seek. It’s our nature to impose order on chaos. This principle leads us to want balance in composition, though our compositions don’t need to be perfectly symmetrical to be in balance.

figure / ground

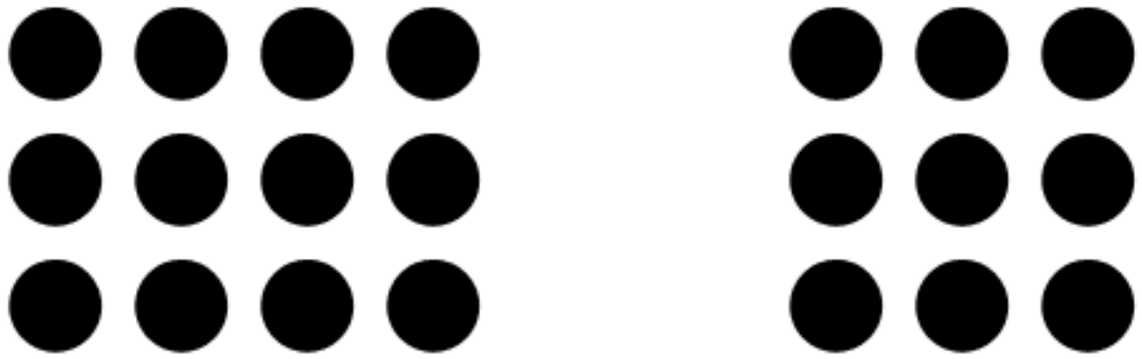
Elements are perceived as either figure (the element in focus) or ground (the background on which the figure rests).

Figure/ground refers to the relationship between positive elements and negative space. The idea is that the eye will separate whole figures from their background in order to understand what’s being seen. It’s one of the first things people will do when looking at any composition.



uniform connectedness

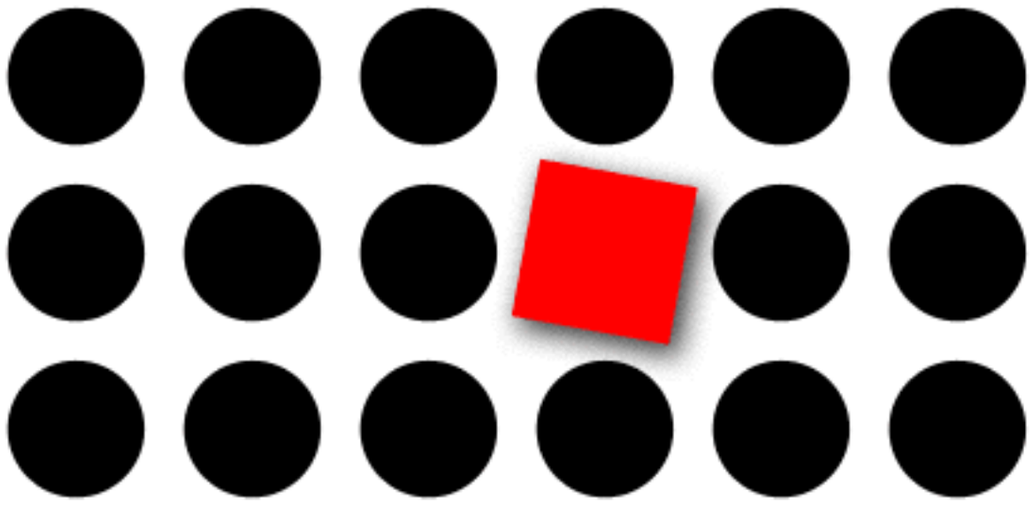
Elements that are visually connected are perceived as more related than elements with no connection.



proximity

Objects that are closer together are perceived as more related than objects that are further apart.

When elements are positioned close to one another, they are seen as part of a group rather than as individual elements. This is especially true when the elements in the group are closer to each other than they are to any elements outside the group.



focal points

Elements with a point of interest, emphasis or difference will capture and hold the viewer’s attention.

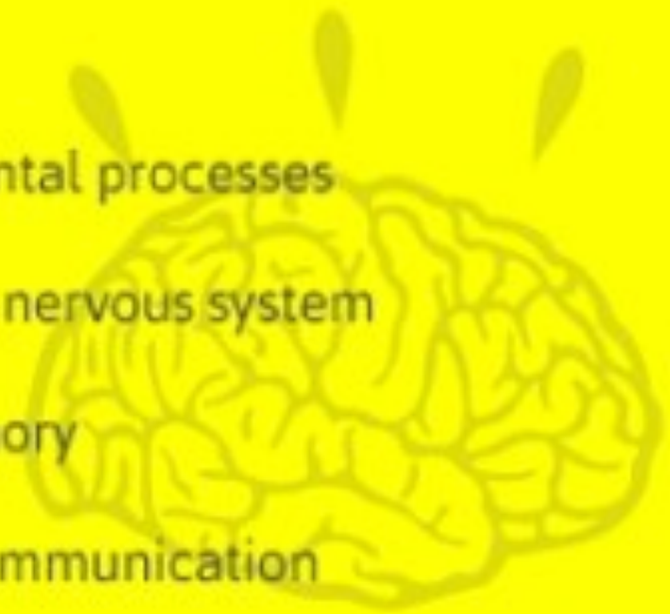
colour psychology

design and colours go together, and applying the right colours to the right function should be the norm - humans are highly influenced by colours

Yellow

Yellow shines with optimism, enlightenment, and happiness. Shades of golden yellow carry the promise of a positive future. Yellow will advance from surrounding colors and instill optimism and energy, as well as spark creative thoughts.

Effects



Stimulates mental processes

Stimulates the nervous system

Activates memory

Encourages communication

Facts

During the tenth century in France, the doors of traitors and criminals were painted yellow.

Yellow signifies "sadness" in Greece's culture and "jealousy" in France's culture.

Yellow is psychologically the happiest color in the color spectrum.

The comic book character Green Lantern was afraid of the color yellow.

75% of the pencils sold in the United States are painted yellow.

Blue

Blue is seen as trustworthy, dependable, and committed. The color of ocean and sky, blue is perceived as a constant in our lives. As the collective color of the spirit, it invokes rest and can cause the body to produce chemicals that are calming.

Effects

Calms and sedates

Cools

Aids intuition

Facts

Blue is the least "gender specific" color, having equal appeal to both men and women.

Blue is the favored color choice for toothbrushes.

Owls are the only birds that can see the color blue.

People are often more productive in blue rooms.

Mosquito's are attracted to the color blue twice as much as to any other color.

Red

Red has more personal associations than any other color. Recognized as a stimulant, red is inherently exciting and the amount of red is directly related to the level of energy perceived. Red draws attention and a keen use of red as an accent can immediately focus attention on a particular element.

Effects

Increases enthusiasm

Stimulates energy and can increase the blood pressure, respiration, heartbeat, and pulse rate

Encourages action and confidence

Provides a sense of protection from fears and anxiety

Facts

Red is the highest arc of the rainbow.

Red is the first color you lose sight of at twilight.

The longest wavelength of light is red.

Feng shui recommends painting the front door of a home red to invite prosperity to the residents.

Bees can't see the color red, but they can see all other bright colors. Red flowers are usually pollinated by birds, butterflies, bats, and wind, rather than bees.

Purple

Purple embodies the balance of red's stimulation and blue's calm. With a sense of mystic and royal qualities, purple is a color often well liked by very creative or eccentric types and is the favorite color of adolescent girls.

Effects

Uplifts

Calms the mind and nerves

Offers a sense of spirituality

Encourages creativity

Facts

Purple was the royal color of the Caesars.

Purple was the color of the first dye made by man.

Purple is the color of Madison Square Garden and seating for VIP's was once covered in purple.

Purple is the color of the highest denomination = $5,000

During the Silver Age of comic books, those with purple on their covers sold better.

Pink

Brighter pinks are youthful, fun, and exciting, while vibrant pinks have the same high energy as red; they are sensual and passionate without being too aggressive. Toning down the passion of red with the purity of white results in the softer pinks that are associated with romance and the blush of a young woman's cheeks.

Effects

Bright pinks, like the color red, stimulate energy and can increase the blood pressure, respiration, heartbeat, and pulse rate. They also encourage action and confidence.

Pink has been used in prison holding cells to effectively reduce erratic behavior.

Facts

In 1947, fashion designer Elsa Schiaparelli introduced the color "hot pink" to western fashion.

Pink encourages friendliness while discouraging aggression and ill-will.

Since the color pink is said to have a tranquilizing effect, sport's teams sometimes use pink to paint the locker room used by opposing teams.

Studies of the color pink suggest that male weightlifters seem to lose strength in pink rooms, while women weightlifters tend to become stronger around the color.

Pastries taste better when they come out of pink boxes or served on pink plates (it only works with sweets) because pink makes us crave sugar.

Orange

Orange, a close relative of red, sparks more controversy than any other hue. There is usually strong positive or negative association to orange and true orange generally elicits a stronger "love it" or "hate it" response than other colors. Fun and flamboyant orange radiates warmth and energy.

Effects

Stimulates activity

Stimulates appetite

Encourages socialization

Facts

The interior dash lights on older model Suburu cars were orange.

Orange is the color that means "high" in the color-coded threat system established by presidential order in March 2002.

In the United States Army, orange is the color of the United States Army Signal Corps.

Safety orange is a color used to set things apart from their surroundings.

Agent Orange, an herbicide named after the color of its containers, was used in a systematic herbicidal program organized by the US military that ran from 1961 through 1971 in Vietnam.

White

White projects purity, cleanliness, and neutrality. Doctors don white coats, brides traditionally wear white gowns, and a white picket fence surrounds a safe and happy home.

Effects

Aids mental clarity

Encourages us to clear clutter or obstacles

Evokes purification of thoughts or actions

Enables fresh beginnings

Facts

A white flag is universally recognized as a symbol of truce.

According to Pantone Inc., white is the best selling color for the classic american t-shirt.

More shades of white are available commercially than any other color.

White clothing typically becomes translucent when wet.

The appearance of white in a dream is thought to represent happiness at home. White castles are a symbol of achievement, destiny perfectly fulfilled, and spiritual perfection.

Originally, scientists wore beige coats. In the late 19th century, medical professionals chose white ones. The color white was chosen because of the idea of hope and expectations for healing and recovery that the physicians would bring.

Black

Black is authoritative and powerful; because black can evoke strong emotions, too much can be overwhelming. Black represents a lack of color, the primordial void, emptiness. It is a classic color for clothing, possibly because it makes the wearer appear thinner and more sophisticated.

Effects

makes one feel inconspicuous

provides a restful emptiness

is mysterious by evoking a sense of potential and possibility

Facts

In England, taxi cabs are traditionally black.

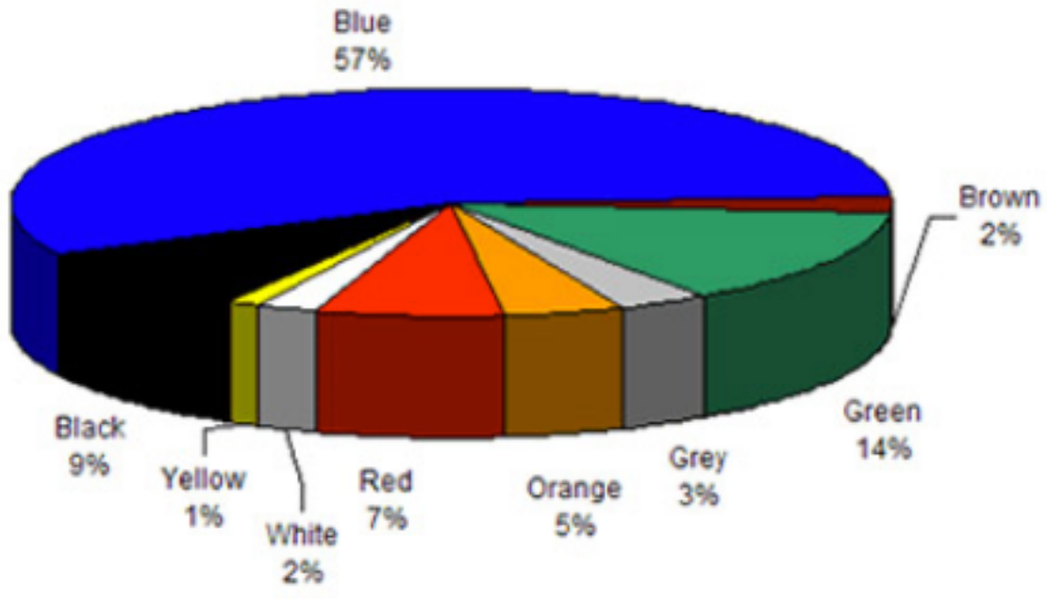
Black implies weight -- people will think a black box weighs more than a white one.

The color black is associated with sophistication and power - tuxedos, limousines, judge's robes, and priests' attire are all typically black.

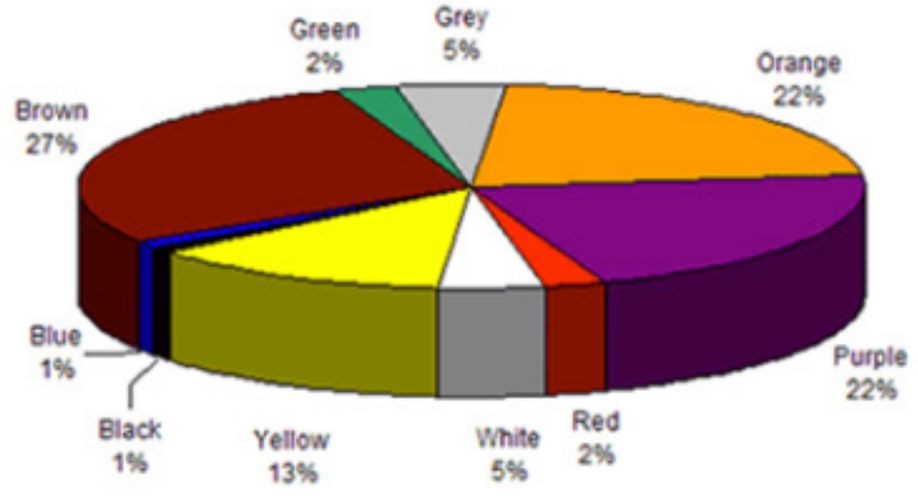
The color black is so widely regarded as sophisticated in fashion that the term "the new black" is often used to describe and give merit to a color trend.

One old wives' tale claims that if a woman is buried wearing the color black, she'll come back to haunt the family.

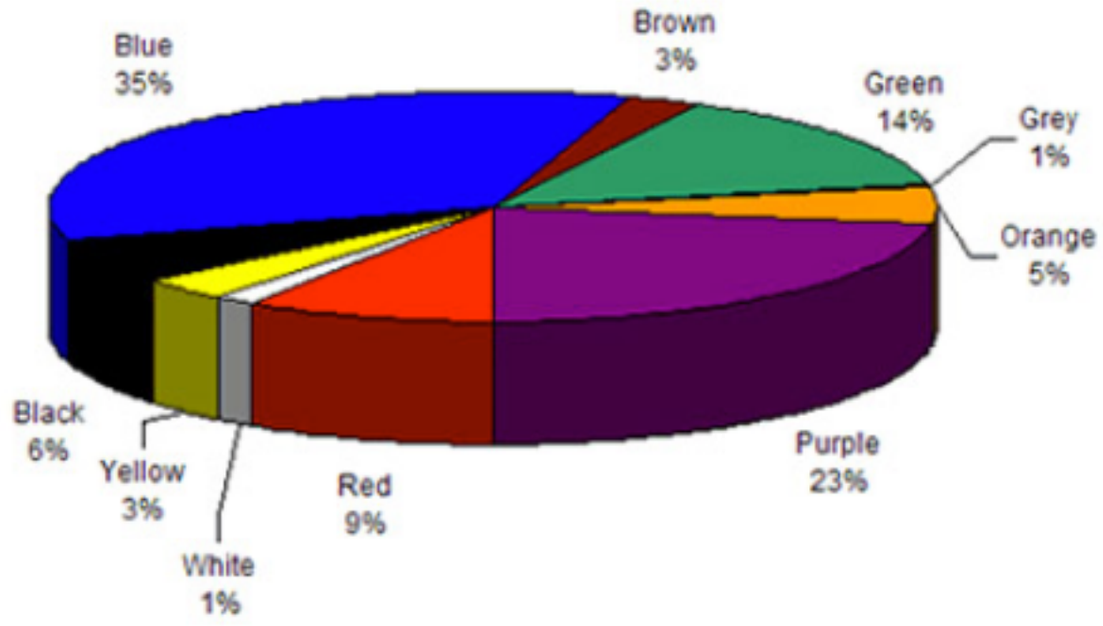
Men's Favorite Colors



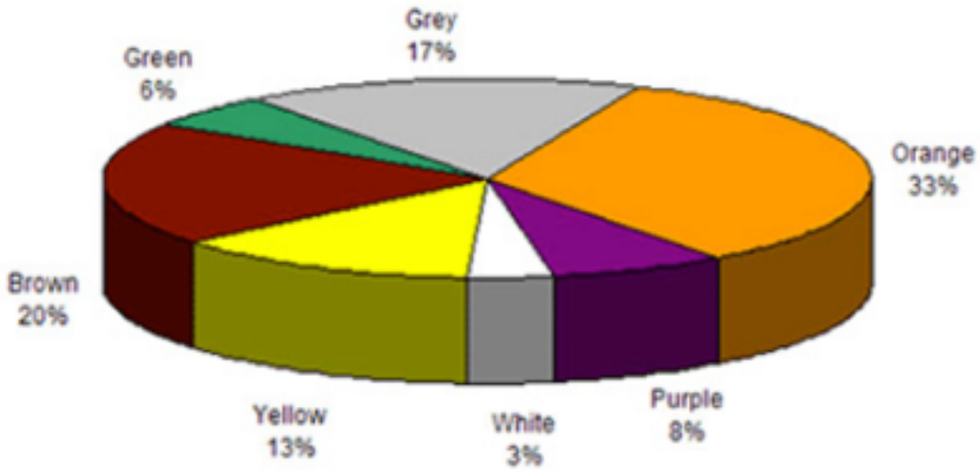
Men's Least Favorite Colors



Women's Favorite Colors



Women's Least Favorite Colors




Men prefer
bright colors
Women prefer
soft colors


Shades
Tints