

# Cognitive UX

Using cognitive science and psychology to drive UX design

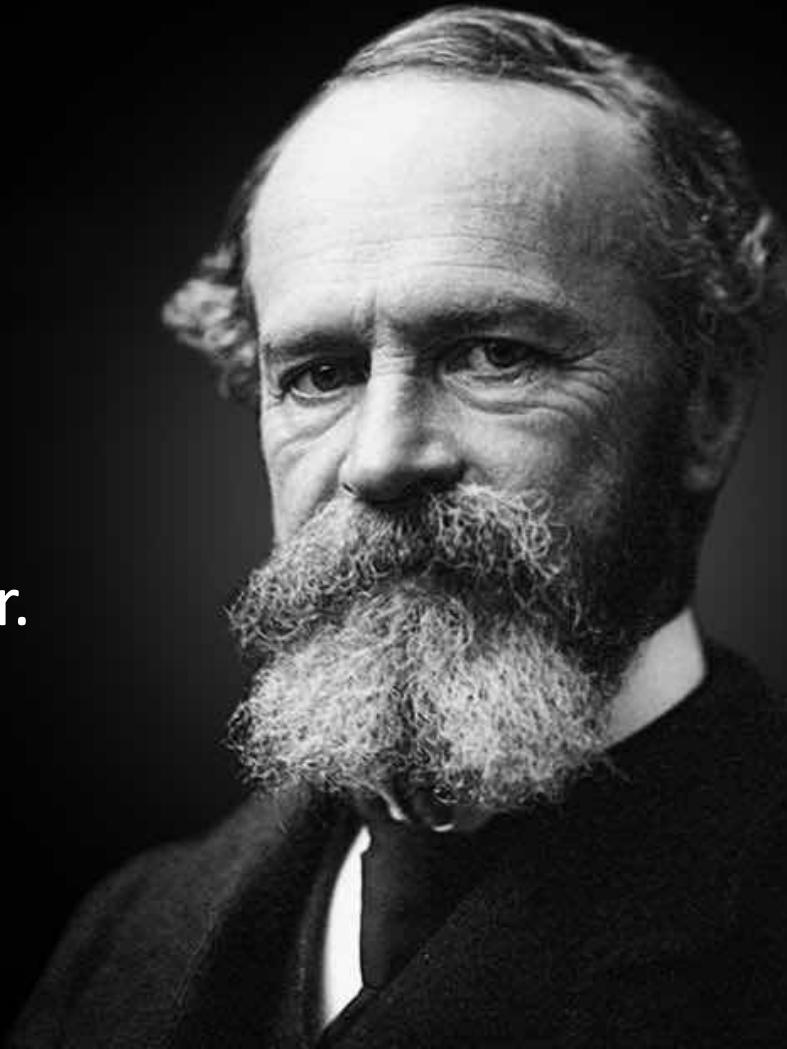


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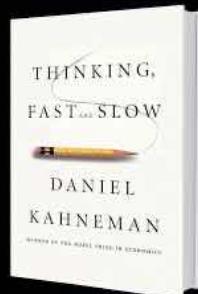
“ The greatest weapon  
against stress is our  
ability to choose one  
thought over the other.

*William James, 1842 - 1910*



“

Intuition is nothing  
more and nothing less  
than recognition.



*Daniel Kahneman*

*“Thinking fast and slow”, 2011*



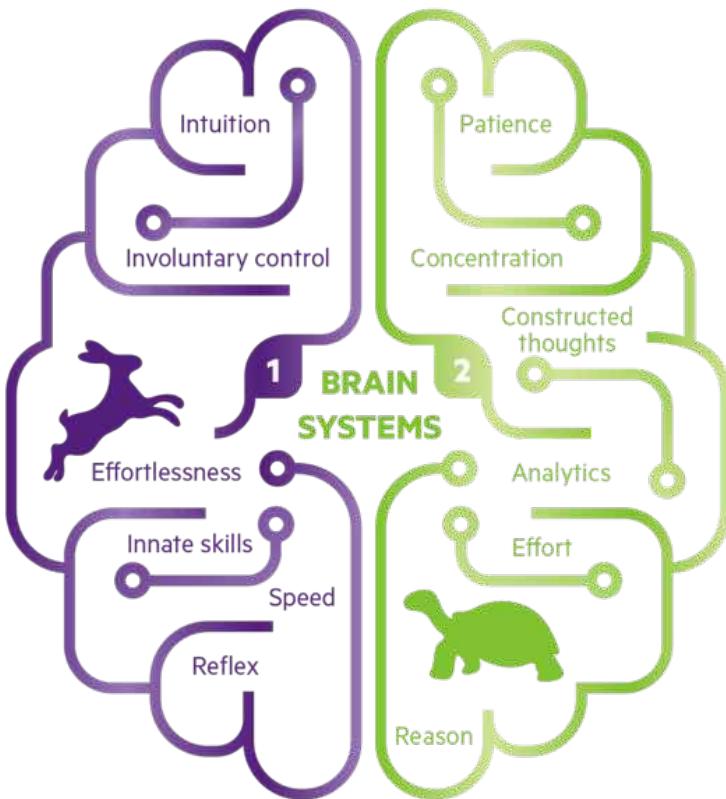
# Dual Process Model

## System 1 - Intuition

Fast  
Always on  
Automatic  
Unconscious  
Hot  
Heuristic  
Error prone

## System 2 - Reflection

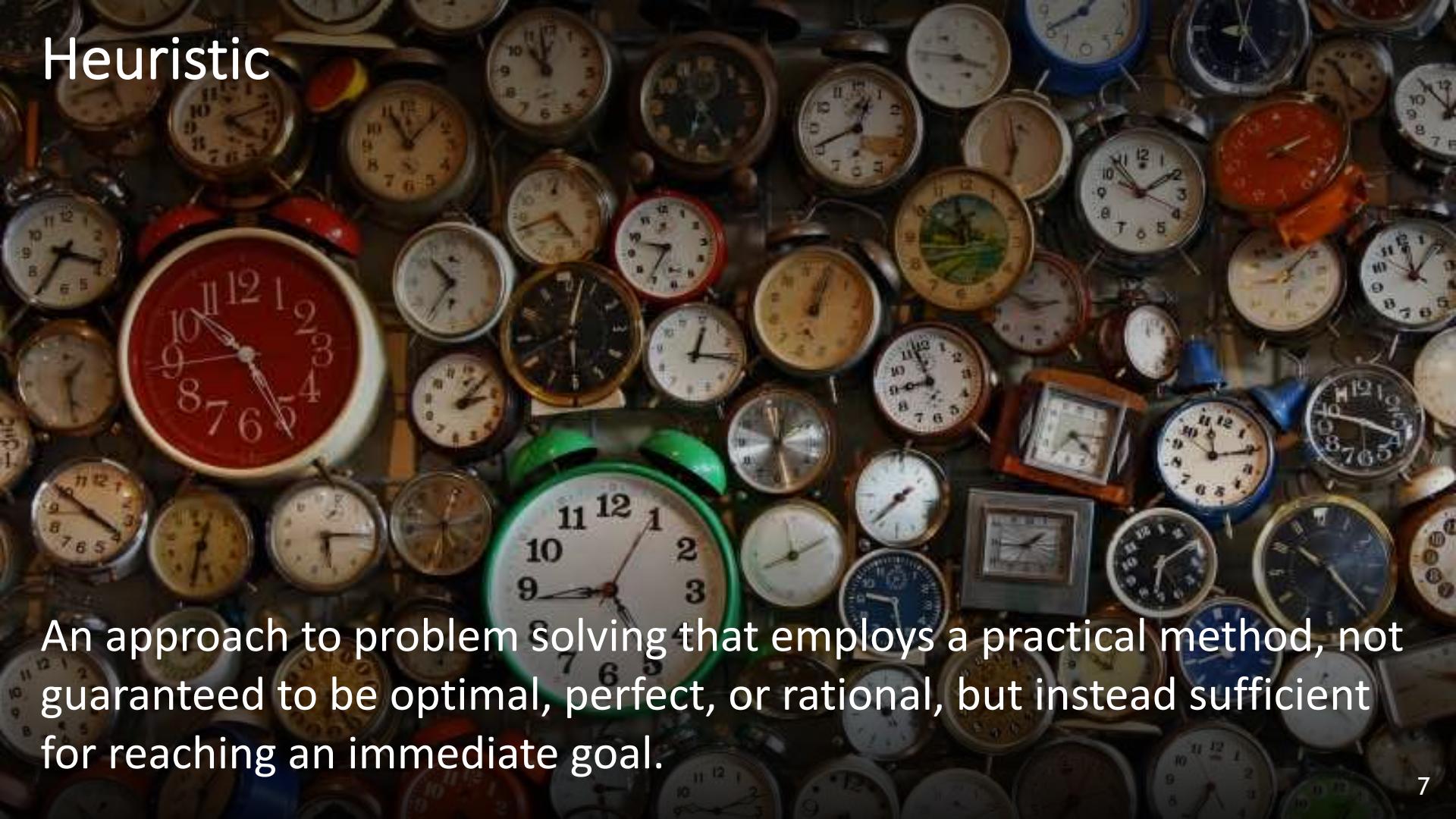
Slow  
On demand  
Deliberate  
Conscious  
Cold  
Analytic  
Reliable



# System 1 usually wins the race!



# Heuristic



An approach to problem solving that employs a practical method, not guaranteed to be optimal, perfect, or rational, but instead sufficient for reaching an immediate goal.

# Cognitive Biases

A pair of dark sunglasses with brown frames is positioned in the center of the frame. The lenses are dark and reflective, showing a distorted reflection of a colorful, abstract background that appears to be a close-up of flowers or leaves. The background is a soft, out-of-focus green and yellow.

Systematic patterns of deviation from norm or rationality in judgment.

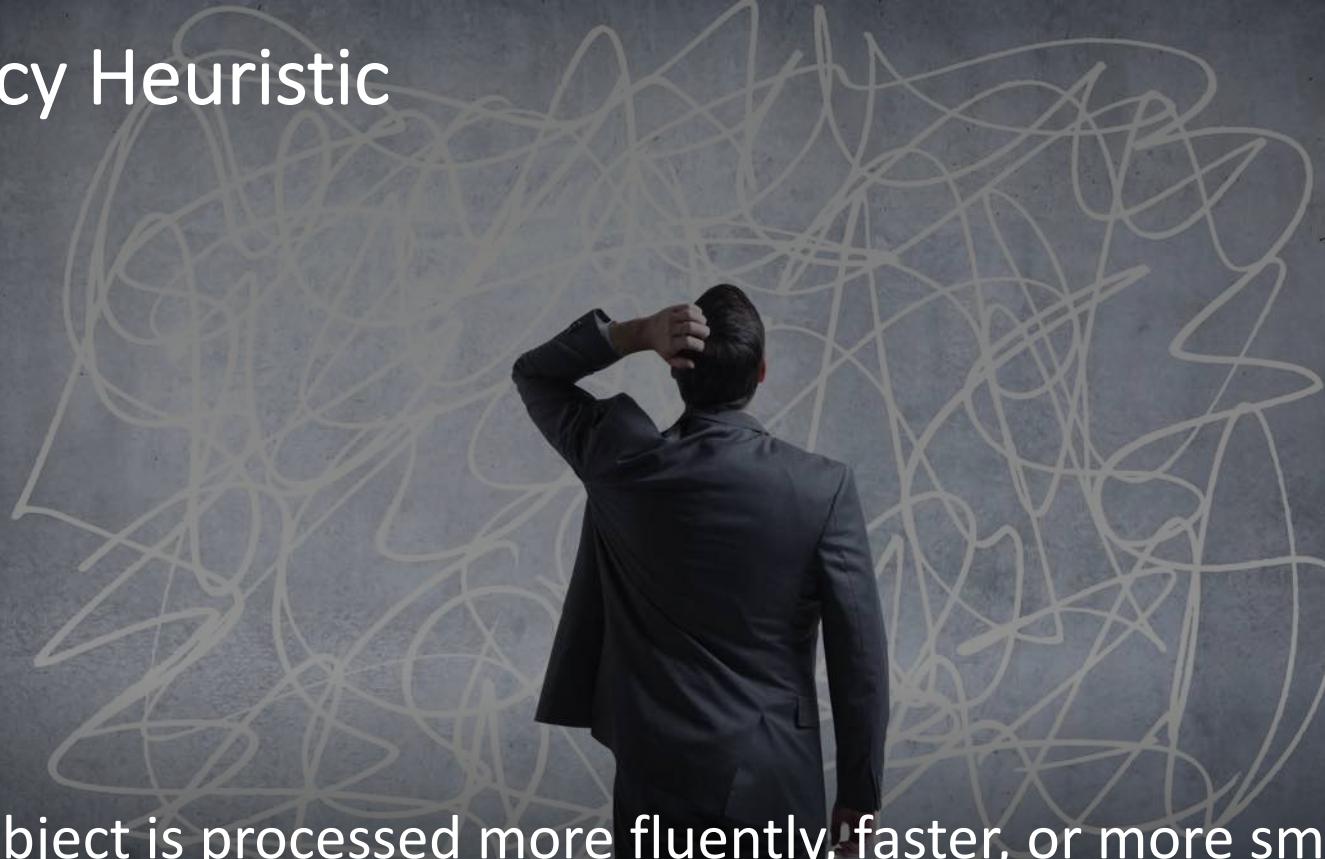
# Blind Spot Bias



The tendency to see oneself as less biased than other people

# Biases and UX Design

# Fluency Heuristic

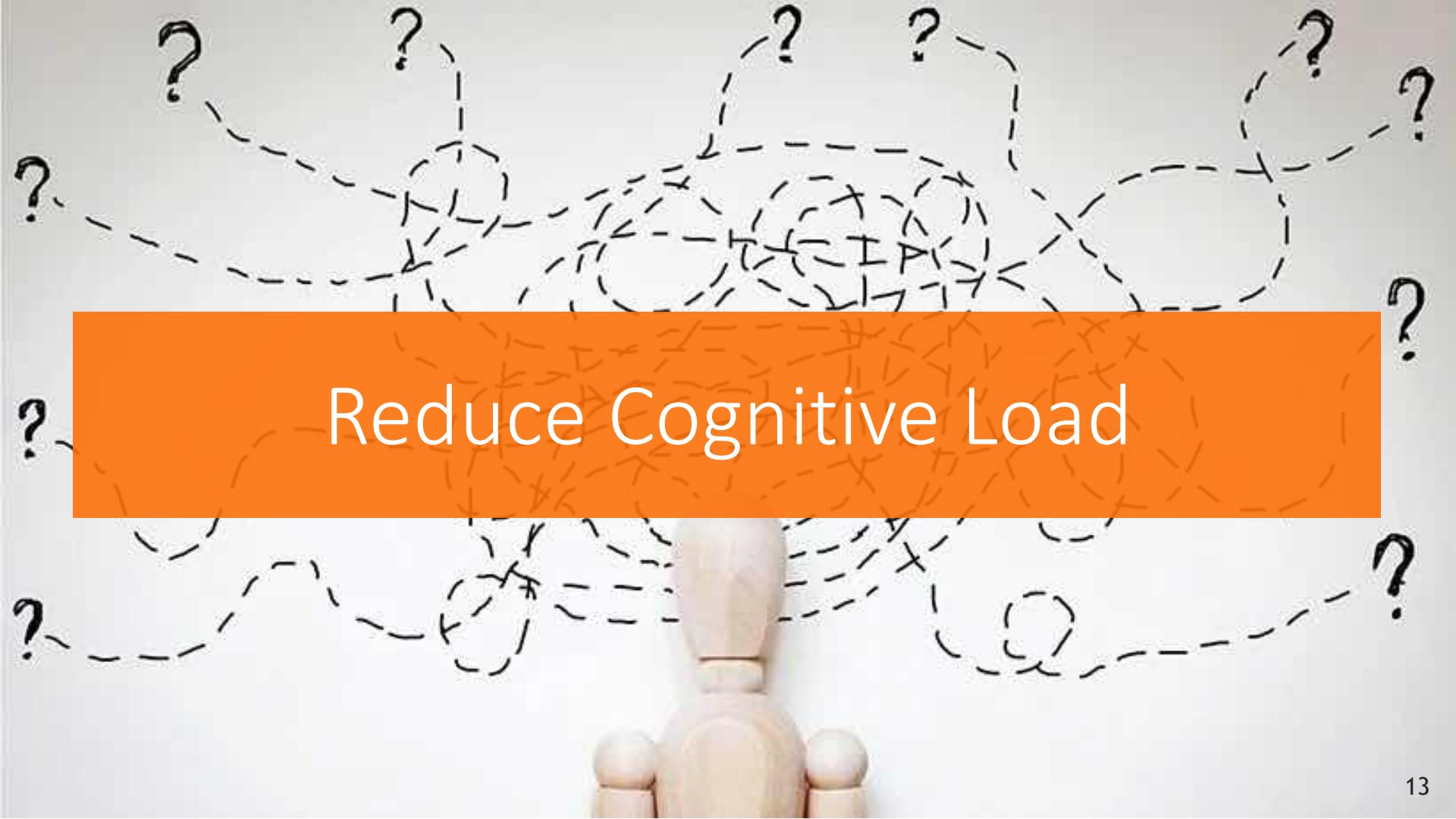


If one object is processed more fluently, faster, or more smoothly than another, the mind infers that this object has the higher value with respect to the question being considered – even if it is illogical!

# Illusory Truth effect



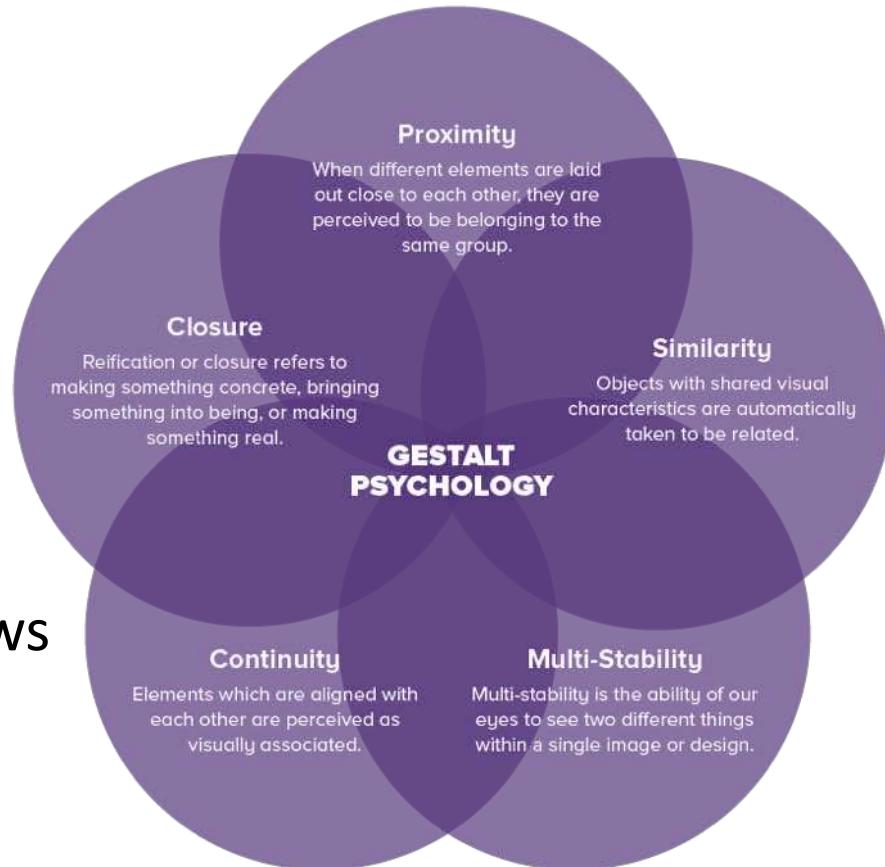
A tendency to believe that a statement is true if it is easier to process, or if it has been stated multiple times, regardless of its actual veracity.



Reduce Cognitive Load

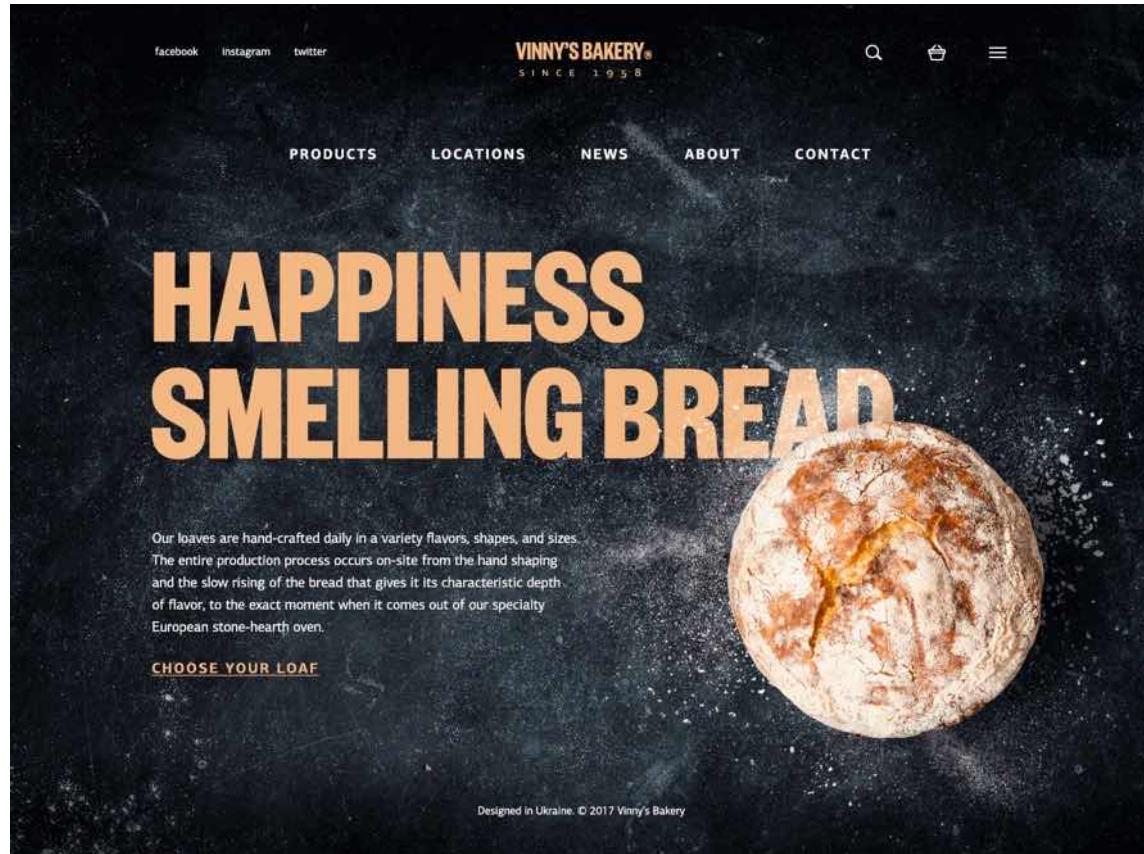
# Visual Hierarchy

- Visual hierarchy is one of the core techniques which are applied to the design process.
- It is initially based on Gestalt psychological theory which examines users' visual perception of elements in relation to each other and shows how people tend to unify the visual elements into groups.



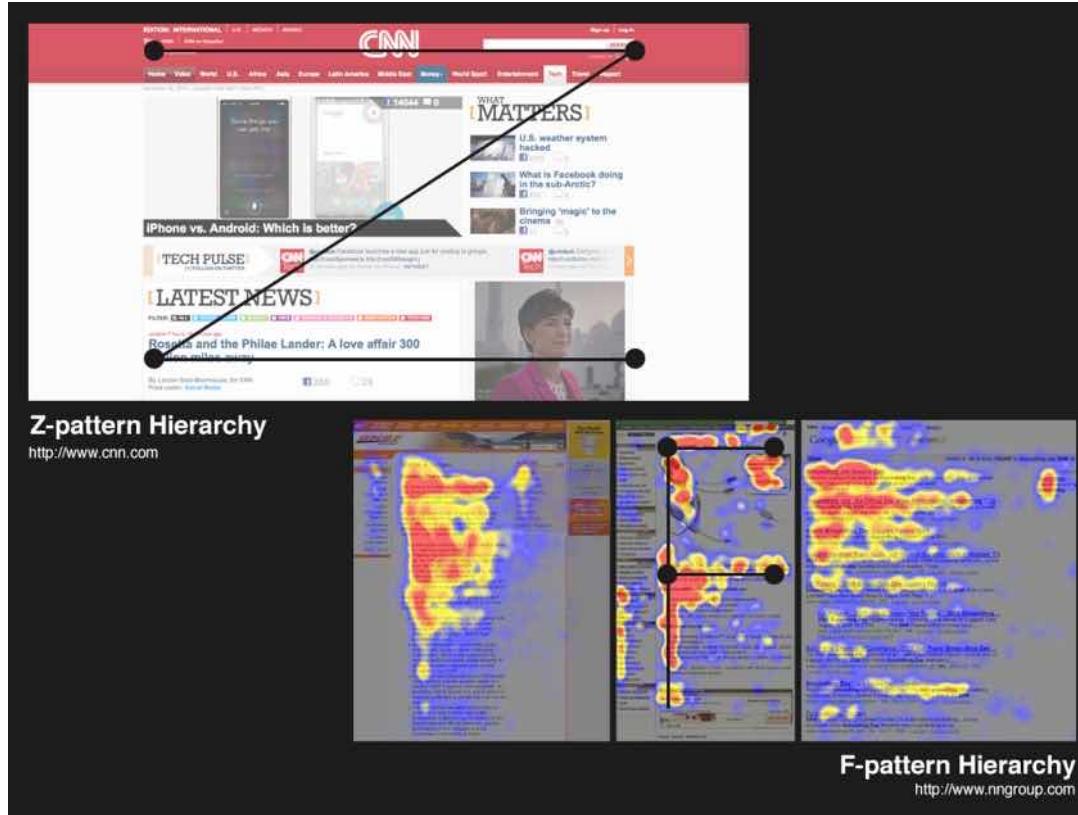
# Visual hierarchy tools

- Size
- Color
- Contrast
- Negative space
- Proximity
- Repetition
- Texture and style
- Typography hierarchy



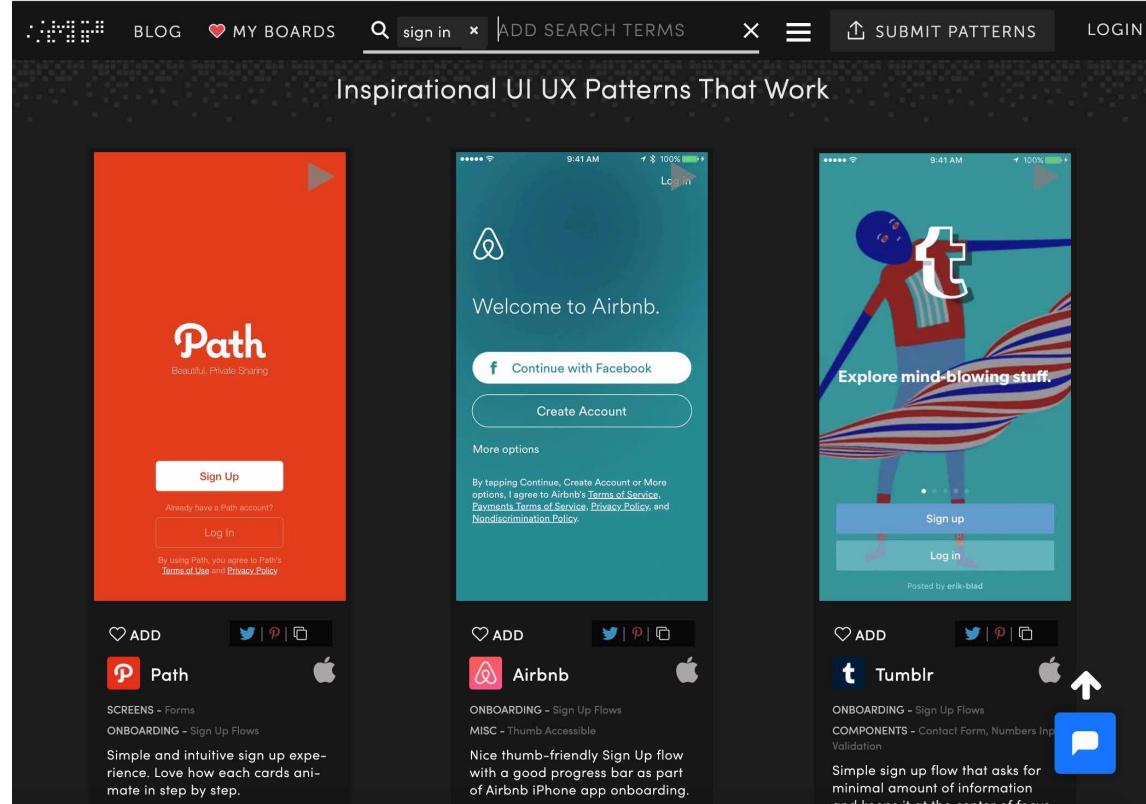
# Consider scanning patterns

- Z-shaped pattern takes place on the pages which are not heavily concentrated on copy.
- F-pattern appears on digital pages or screens with big amount of content (blogs, news platforms etc.)
- Put all the core UI elements on the most scanned spots to draw users' attention.



# Design Patterns

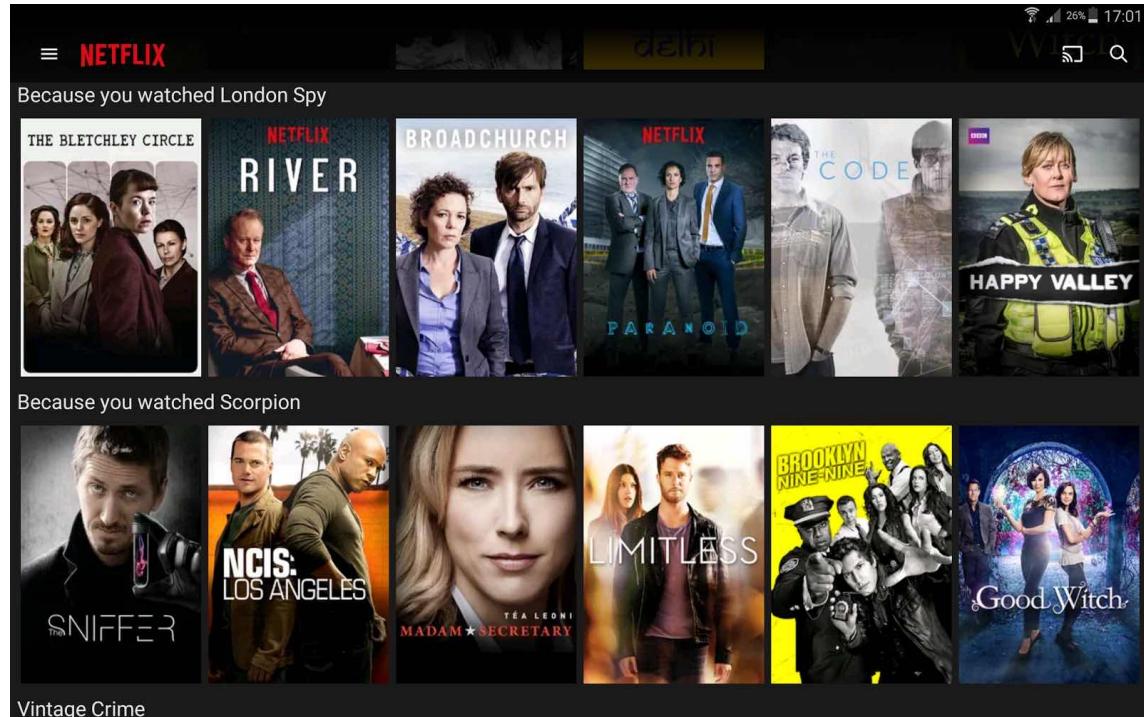
- Leverage common design patterns
- Keep your UIs consistent
- Adopt a design system



<https://www.mobile-patterns.com/>

# Less is more

- Avoid unnecessary options
- Reduce number of choices
- Consider personalization and anticipatory design



# Aesthetic-usability effect



Users often perceive aesthetically pleasing design as design that's more usable.

# Aesthetically pleasing design...



Can make users develop feelings towards the product

***Halo Effect***



...and it works both ways!

***Horn Effect***

# Aesthetically pleasing design...

- Can make users more tolerant of minor usability issues.

→ Consider tuning down aesthetic values if focus is on usability



# Priming



Exposure to a stimulus influences behavior in subsequent, possibly unrelated tasks.

# Colors can prime emotions

<b>Red</b> Excitement Strength Love Energy	<b>Orange</b> Confidence Success Bravery Sociability	<b>Yellow</b> Creativity Happiness Warmth Cheer	<b>Green</b> Nature Healing Freshness Quality	<b>Blue</b> Trust Peace Loyalty Competence
<b>Pink</b> Compassion Sincerity Sophstication Sweet	<b>Purple</b> Royalty Luxury Spirituality Ambition	<b>Brown</b> Dependable Rugged Trustworthy Simple	<b>Black</b> Formality Dramatic Sophistication Security	<b>White</b> Clean Simplicity Innocence Honest

# Metaphors in visual imagery

The image is a composite of two panels. The left panel is red and features a white silhouette of a bird at the top. Below it, the text "Our work combines design and development." is displayed, followed by a white button with the text "VIEW THEMES". The right panel is white and features a large, detailed image of a hummingbird in flight. Overlaid on the left side of the hummingbird's body is a dark blue code editor window showing snippets of HTML and CSS code, including "Flexxier", "meta name="description", and "assets". At the top of the right panel, there is a navigation bar with links: "THEMES +", "EXTENSIONS", "SHOWCASE", "BLOG" (which is underlined), and "HELP". A "LOGIN" button is also present. To the right of the hummingbird, there is a small circular icon containing a stylized profile of a person.

Our work combines  
design and development.

VIEW THEMES

THEMES + EXTENSIONS SHOWCASE BLOG HELP LOGIN

We make **sleek** and modern  
designs for your business.

# Typefaces can convey character

- Fonts can elicit different emotions and associations
- Important in logo design



# Avoid Dissonant and Accidental Priming

- Study market trends to identify user expectations (prototypicality and beauty-in-averageness effect)
- Avoid ‘trigger words’ that cause a visceral reaction.

**Control:**



The Control sign-up form contains fields for Username, Email, and Password, along with a checkbox for accepting Terms and Conditions and a green "Sign up +" button.

**Treatment:**

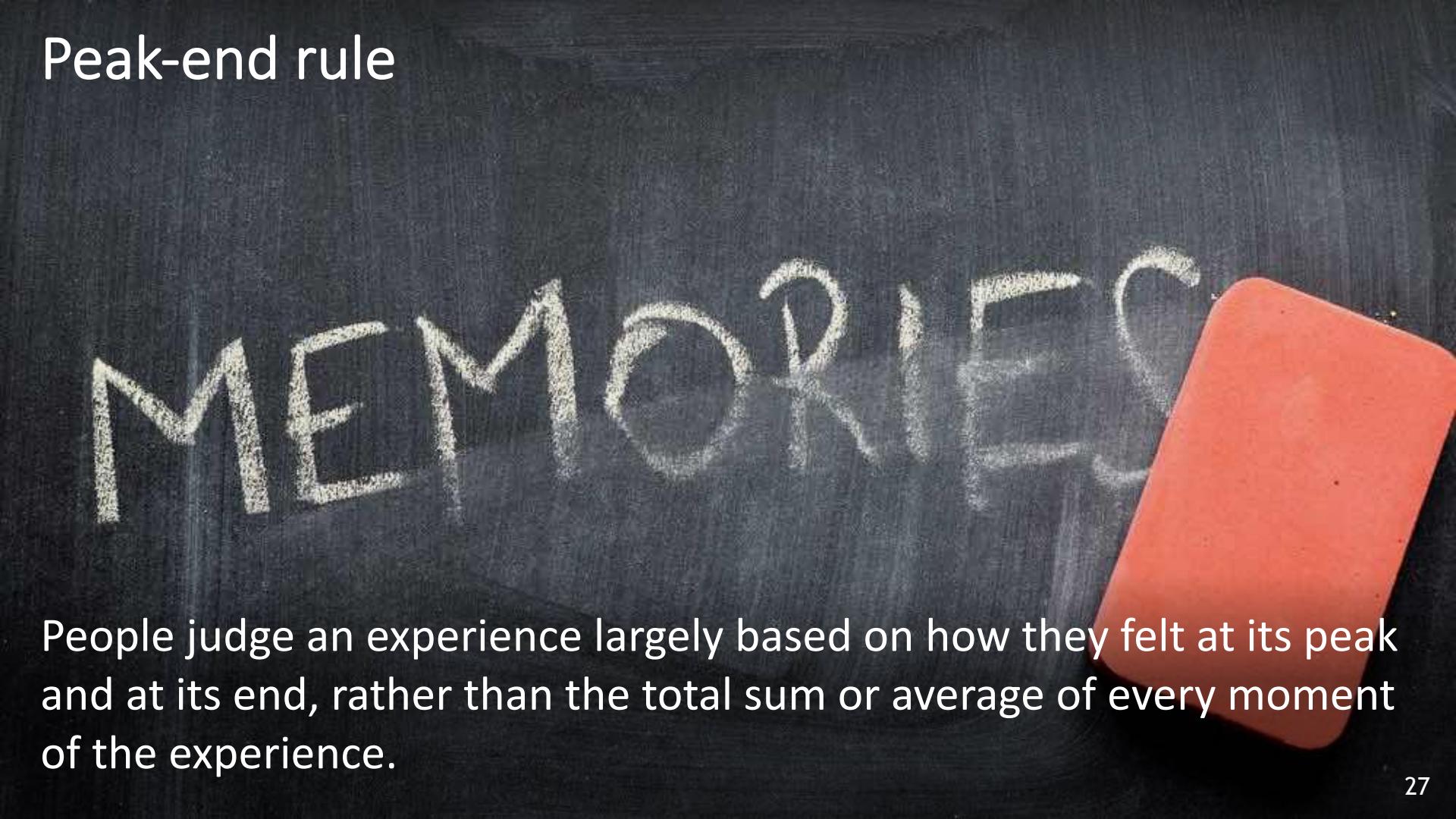


The Treatment sign-up form includes the same fields as the Control version. It adds a circled statement: "I accept the Terms and Conditions" and "100% privacy - we will never spam you!". A red arrow points from the Treatment form to a summary at the bottom.

**Results:**

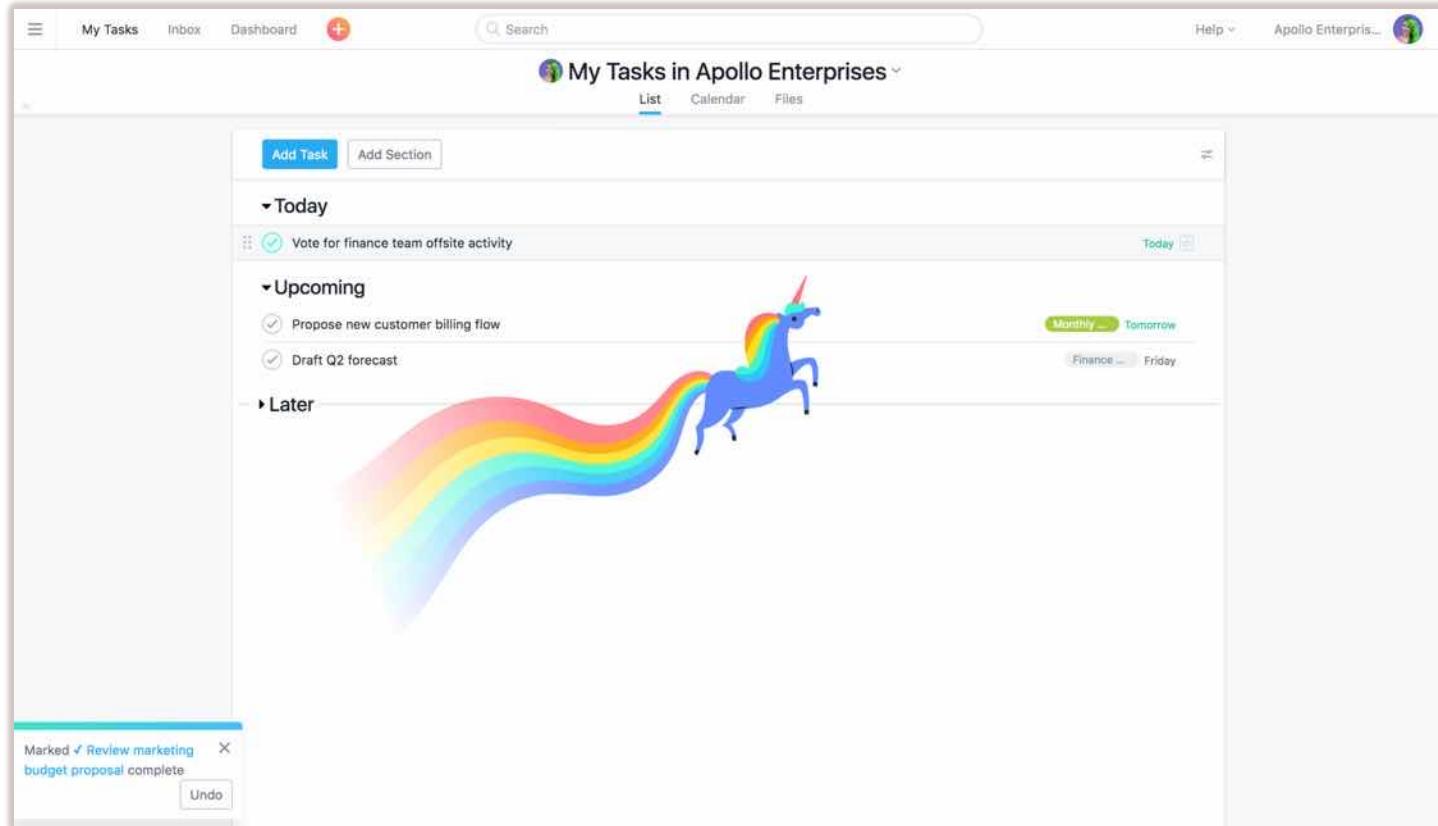
**18.70% less signups**  
Statistical confidence 96%

# Peak-end rule

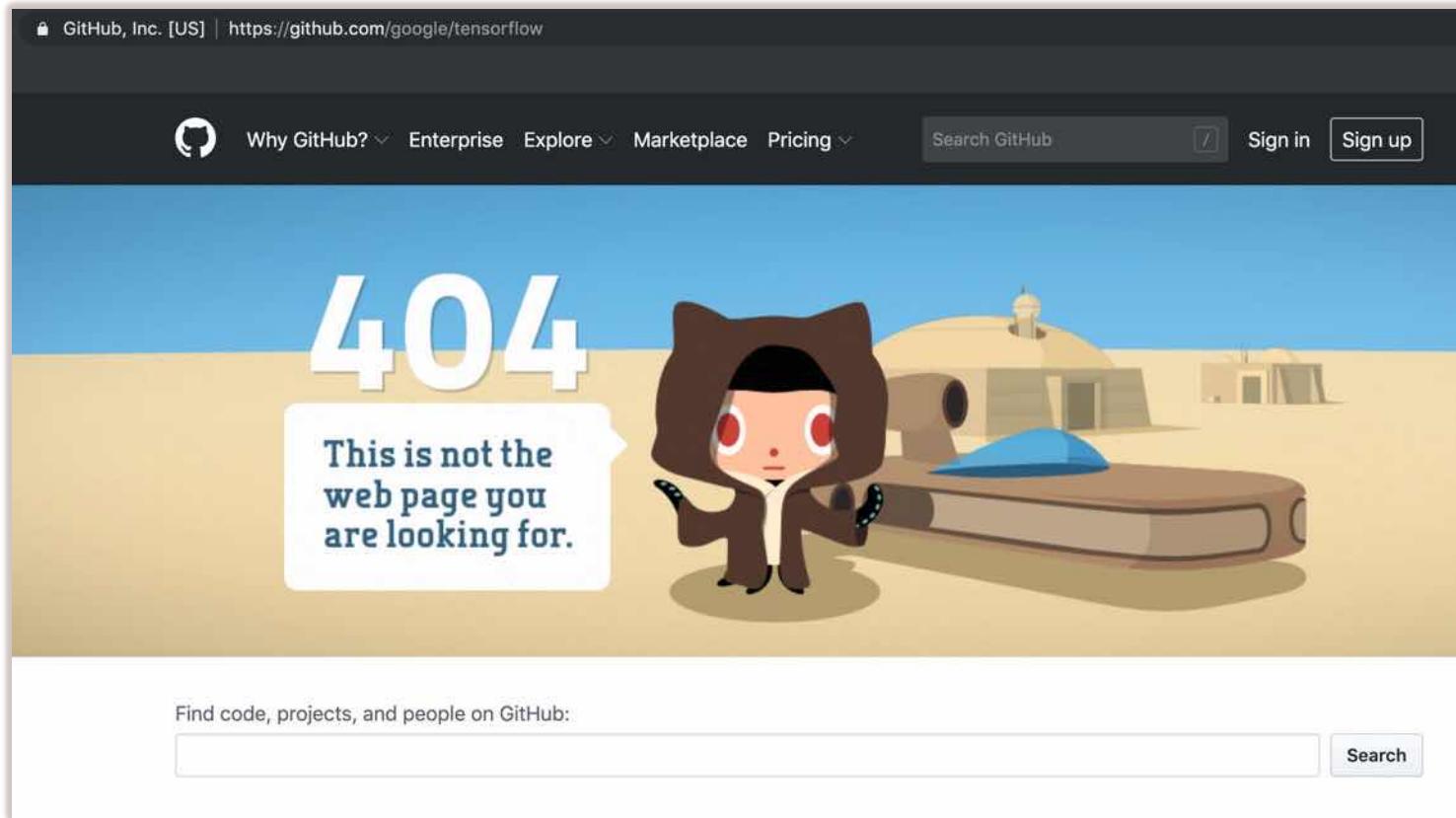
A chalkboard background featuring the word "MEMORIES" written in white chalk. The letters are slightly irregular and have a hand-drawn appearance. To the right of the text, a large, solid red rectangular eraser is positioned, partially overlapping the board.

People judge an experience largely based on how they felt at its peak and at its end, rather than the total sum or average of every moment of the experience.

# Creating positive peaks



# Reduce the impact of negative peaks



# Leave a memorable last impression

You did it! You just e-filed your taxes.

A confirmation email celebrating your success is on its way.



We truly appreciated the opportunity to help you with your taxes.

You filed on January 31, 2016 @ 3:22 PM EST

How likely are you to recommend TurboTax to a friend?

Not very likely



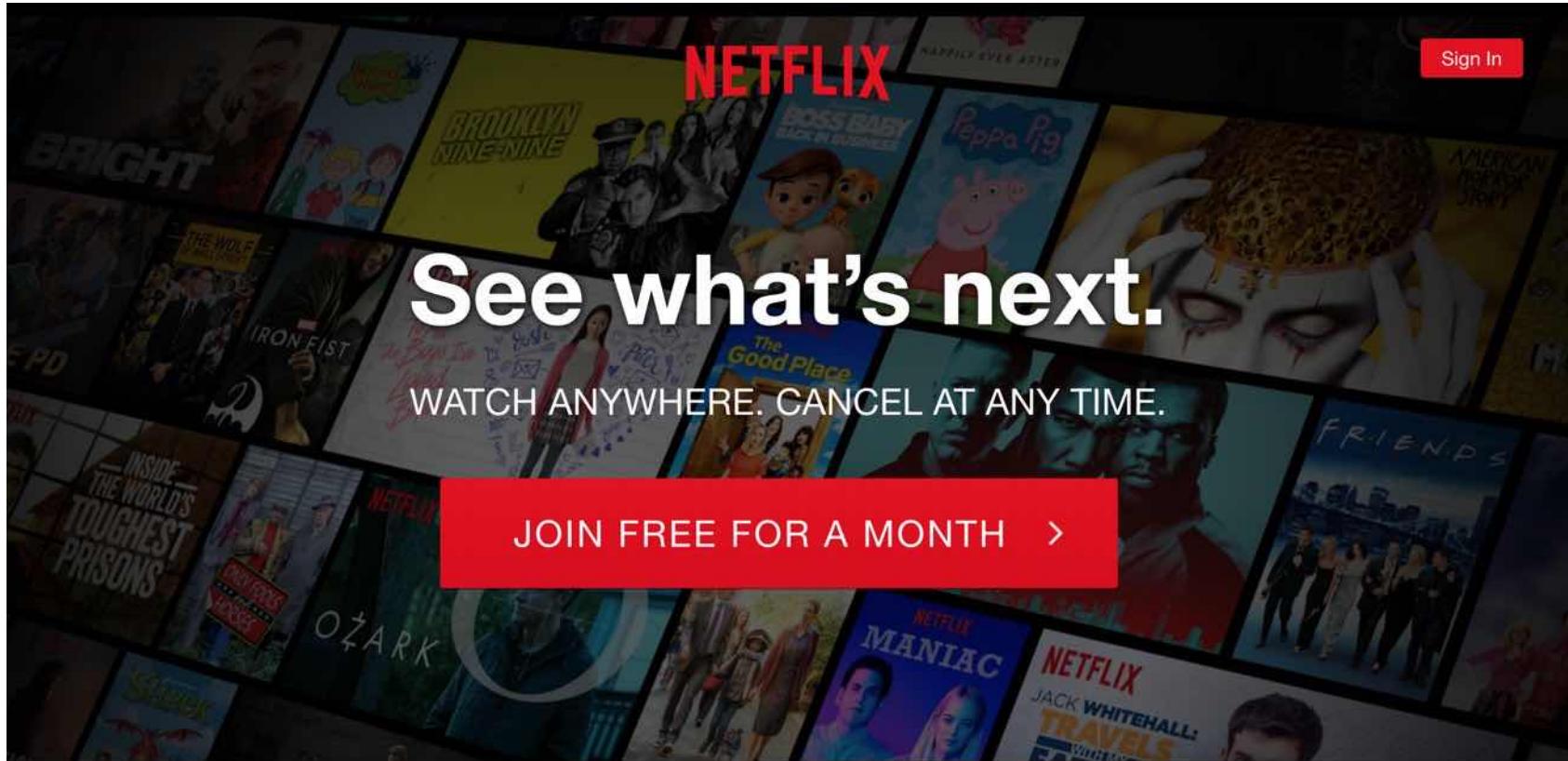
Extremely likely

# Loss aversion



People will go to great lengths to avoid losing.  
In fact, the psychological pain of losing is twice as powerful as the pleasure of winning.

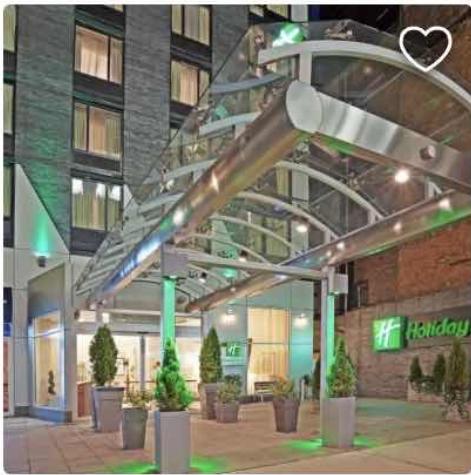
# Create an emotional bond with free trial



# Create an emotional bond with free trial

The screenshot shows the homepage of the Roadtrippers website. At the top, there's a navigation bar with a menu icon, the brand name "Roadtrippers", and links for "HOME", "MAGAZINE", "TRIP GUIDES", and "TRIP PLANNER". On the right side of the header are "Get Plus", "Login", and a green "Get Started" button. The main visual features a large, stylized map background with a yellow winding road and a bridge over a cliff. Overlaid on the map is a large, bold text message: "Ready to hit the road? Don't leave without us." Below this, a subtext reads: "Map your route, discover amazing places, and get out there...". There are two calls-to-action: "Let's get started" with a blue button, and "Plan Your Trip" and "Explore Places" with small icons. At the bottom, there are input fields for "STARTING FROM" and "DESTINATION", and a prominent yellow "Plan Trip" button.

# Create FOMO with scarcity



## Holiday Inn Manhattan 6th Ave - Chelsea

★★★★★

[Chelsea, New York – Show on map](#) (1.7 miles from center) –  
Subway Access

Booked 2 times for your dates in the last 24 hours on our site

King Room with City View –

Only 6 rooms left on our site!

Good  
1,596 reviews

5 nights, 2 adults

US\$871

includes taxes and charges

[See our last available rooms >](#)

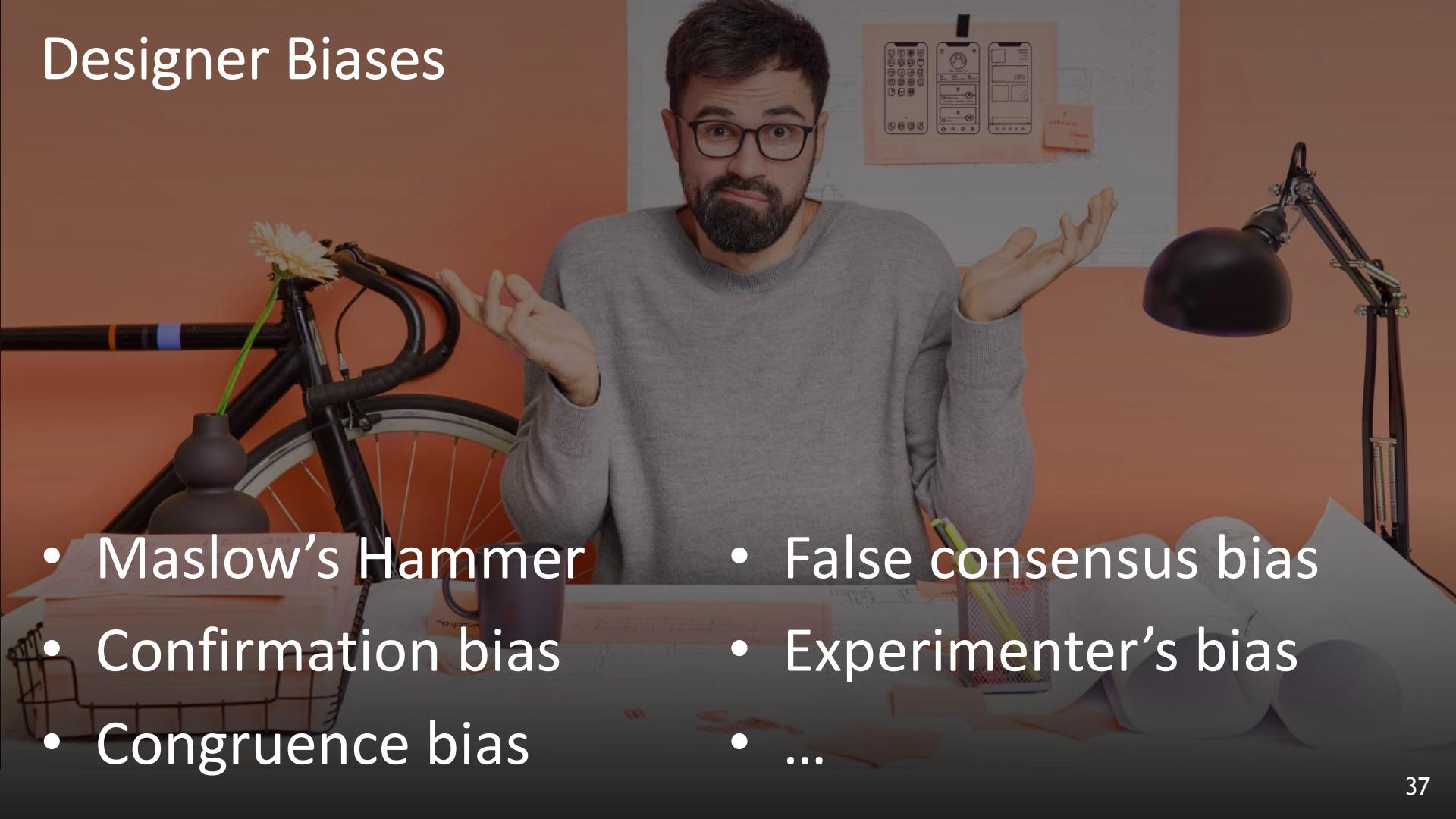
# Create FOMO with a countdown clock





I'm only human after all!

# Designer Biases

- 
- Maslow's Hammer
  - Confirmation bias
  - Congruence bias
  - False consensus bias
  - Experimenter's bias
  - ...

# Acknowledge your biases and counteract!

- Cultivate curiosity
- Don't make assumptions
- Do research with real users
- Test alternative solutions



Source: Crazy Egg



Embrace UX Research



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