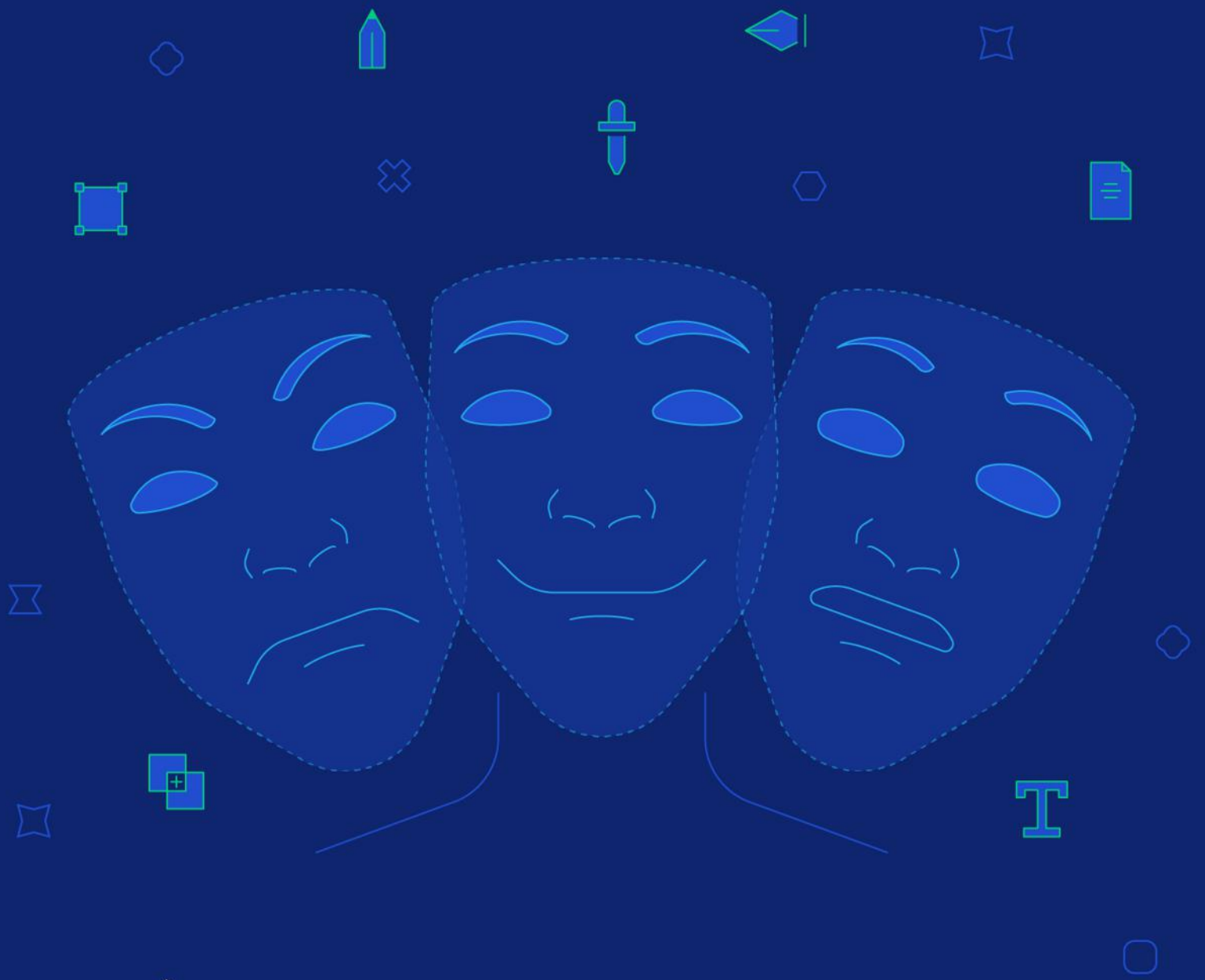

Toptal®

The Psychology of Design

A collection of our top articles on behavioral design

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CHAPTER 1

Design for Emotion to Increase User Engagement

“Design is really an act of communication, which means having a deep understanding of the person with whom the designer is communicating.”–Donald A. Norman, The Design of Everyday Things

The reward for companies that connect with customers’ emotions in a positive way can be substantial. How can we identify the powerful motivators that lead to making those connections?

Emotional design can influence those motivators, paving the way to competitive advantage and growth.

How is Emotion Connected to Design?

Everything around us has been designed in some way and all design ultimately produces an emotion. We experience an emotional reaction to our environment moment-by-moment: a like or a dislike, elation, joy, frustration. We ‘feel’ it. It’s personal.

There is an old adage in the UX professionals’ world: “interaction with any product produces an experience (emotion) whether it had UX or not.” Take industrial design for example and you will find its end products elicited an emotion from their audience, whether good or bad, pleasing or frustrating.

An iron - industrial design is also emotional design.

Response > Emotion

Let's reflect on the definition of UX design: "UX design considers how a user interacts with and **responds** to an interface, service or product." That response is an emotion. User experience designers not only strive to design usable, functional products but to also generate a certain emotional effect on the user while they are using a product—usually a positive one :) —and try to maintain it throughout the user journey.

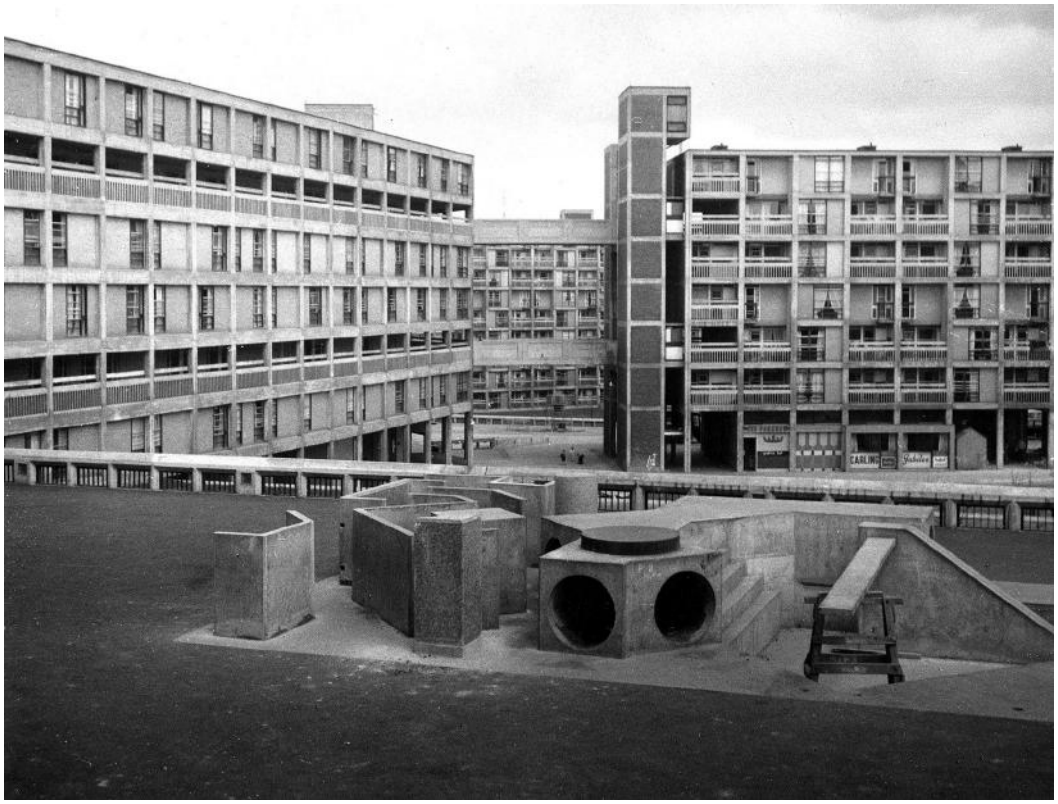
When we talk about emotional design, we're talking about how a product's design, or an interaction with it affects the user. In the case of digital design, it's a moment-by-moment effect "in the flow" and operates on three levels in the brain: visceral, behavioral and reflective. There is a delay between these levels: first it's visceral, second it's behavioral and lastly reflective. But more about this later.

An example of classic **visceral design**: James Bond's Aston Martin, sleek, elegant, exciting.

Utilitarianism and Brutalism

Emotional design is an evolution of "functional design," or utilitarian design which very much subscribes to the "form follows function" style prevalent since the early 20th century. The idea behind it is that the shape of an object or building should be based mainly on its function and purpose, not its aesthetic.

The twin brother of utilitarianism is brutalism, where not only does form follow function, but is also put together with the least amount of effort, the cheapest materials available and with zero regard to appearance or the human experience. Examples include the the housing estates in London and the concrete and steel housing projects built during the reign of communism in Eastern Europe.



A brutalist housing estate in London. Functional? Yes. Pretty? It's not.

Aesthetics and Perceived Usability

In the early 90s two Japanese researchers studied two different layouts of controls for ATMs. They were interested in finding out how aesthetics affected "perceived usability." All versions of the ATMs were identical in function, but some had less and some had more attractive interfaces. The researchers found that the ones with attractive interfaces were perceived to be easier to use, i.e. "they worked better."

Braun, a very successful design and manufacturing company founded nearly a 100 years ago in Germany was famous for its minimalist, elegant designs which captivated people. They were functional but also simple, refined, good-looking and consequently a joy to use.

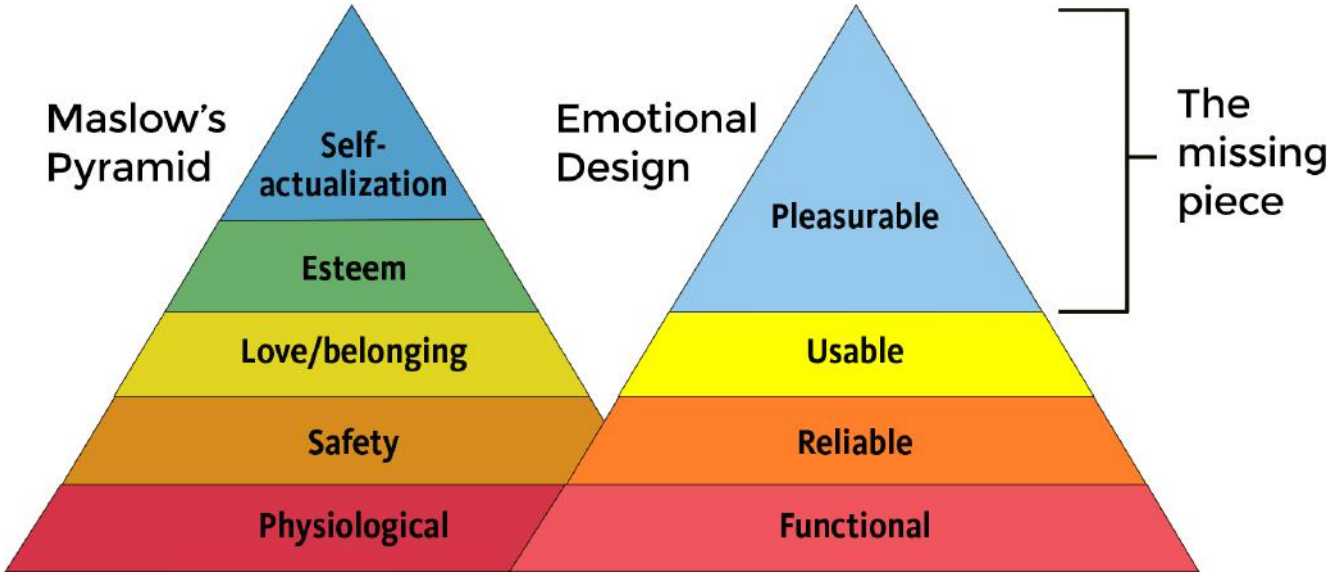
Utilitarian designs that are simply functional and feature-rich do not please people. In this day and age they don't measure up and no longer satisfy customers.

Designs by Braun

“A basic design is always functional but a great one will also say something.” – Tinker Hatfield, shoe designer, Nike.

The Emotional Design Pyramid

Human motivation is based on people seeking fulfillment and change through personal growth as stated in Maslow’s hierarchy of needs, a theory in psychology proposed by Abraham Maslow in his 1943 paper “A Theory of Human Motivation.” Maslow’s pyramid of “self-actualization,” and “self-transcendence” is a pattern that human motivations generally move through. Emotional design can be similarly put on a pyramid that illustrates its importance.



Functional **and** attractive things are actually perceived by people to "work better." As we saw earlier with the Japanese ATM experiment, a product's attractive aesthetic affected "perceived usability." Furthermore, products that include a pleasing aesthetic and anticipatory design can lead to such a degree of customer satisfaction, that people will forgive minor frustrations when encountering imperfections with those products.

Do we remember Blackberry and Nokia? Something rings a bell but they're pretty much history. Contrast their designs with the iPhone's or Samsung's people-pleasing slick designs.

Apple and Samsung mobile phones - smooth, slick, functional **and** attractive: emotional design

Emotions and The Brain

Emotions actually change the way the human brain operates. Negative experiences focus the brain on what's wrong; they narrow the thought process and make people anxious and tense. We don't feel free and "in the flow." We feel restricted and frustrated. If a website or an App is badly designed and doesn't perform to expectations, the feeling can grow into anger. This is known as "computer rage." Our pulse-rate goes up, we click away from the site and we delete the App in frustration. This is an example of "design gone wrong" producing an extreme emotion. Good emotional design elicits pleasure and a sense of security and safety.

Even the ol' potato peeler can be designed for emotion. It's about how it looks, feels, functions.

"Design is How it Works"

Why is one product more successful than another? There were plenty of beige-box PCs at the time the translucent, candy-colored iMacs were released in 1998. The arrival of those iMacs signaled more than a renaissance for Apple; it sparked a widespread industrial design revolution.

Steve Jobs had the brilliant insight earlier than most that design is emotional. “Most people make the mistake of thinking design is what it looks like. People think it’s this veneer - that the designers are handed this box and told, ‘Make it look good!’ That’s not what we think design is. It’s not just what it looks like and feels like. **Design is how it works.**” – Steve Jobs, CEO Apple Computer, Inc. in The Guts of a New Machine”

“People are seeking out products that are not just simple to use but a joy to use.” - Bruce Claxon, Professor, Design Management at Savannah College of Art and Design.

Similar to the candy-colored translucent iMac, the Fiat 500 has a cute, fun, approachable design.

From Passive to Interactive

We didn't always have "interactive relationships" with the objects and systems around us. They've been mostly "dumb," passive, one-way machines. It's been mostly one way because the relationship hasn't been interactive. A car was for getting us from A to B. Now we expect to talk to it; it talks back to us. We're forming a relationship with it and that "gets emotional." Generally, we used to press a button and the machine turned on and did something; like the TV or a record player. Now we have Music Apps, interactive TVs and fridges connected to apps that tell us when we need to get more milk.

These days we have an emotional relationship with our "machines" which gives rise to anthropomorphism: the tendency to project intentions, human qualities, behaviors, emotions, and character traits onto inanimate objects. When people form relationships with 'things,' there is a potential for negative emotions to kick in when 'the thing' is not doing what we want. People start feeling frustrated and no longer in control.

Positively valanced emotions are evoked by positively valanced events, objects, or situations.

Annoyance and irritation may arise with the possibility of escalation into anger if the aggravation persists. Or, at the other end of the spectrum, users feel satisfied and altogether delighted because it puts just what they were looking for at their fingertips and at the perfectly right moment.

How do We Deliver an Ideal Emotional Design That Gives Rise to Positive Emotions?

Customer experience strategies need to include designing for the entire human experience which includes emotion. Use the power of user research and product testing to effectively set up and gauge the emotional effect of the product on users. Doing user-testing, deep research and subsequent touch-point mapping that identifies pain points, designers can identify the frustrations users may encounter while using the product. Not only should designers strive to eliminate these frustrations, but in addition, find opportunities that bring customers pleasure and turn critical moments into positive emotional experiences.

Visceral ⫸ Behavioral ⫸ Reflective

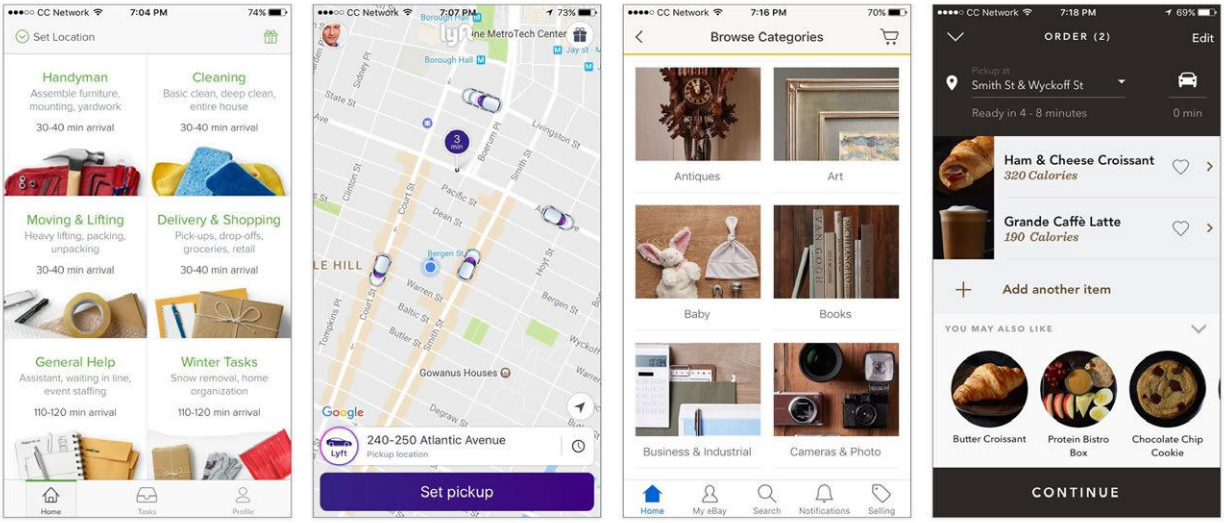
In order to create a successful product, a design needs to work extremely well on the three levels described earlier: visceral, behavioral and reflective. (Huge nod here to Don Norman's seminal book on "Emotional Design.")

Visceral design: "I want it. It looks amazing, so will I." This is an immediate, deep-level gut reaction to your product. As they say "you never get a second chance at making a first impression." If at this stage the product's design induces a positive, instinctual reaction you're on your way. Visceral design also affects the perception of your product's credibility, trustworthiness, quality, appeal, and even perceived ease of use.

Visceral design: fun, exciting, tough, speedy, uncompromising, intimidating.

Behavioral design: “I can master it. It makes me feel smart.” It has to feel good, look good and perform well. It’s about pleasure with a product’s effectiveness of use. Behavioral design is a concept that focuses on how a structure or system, as viewed by the users, meets their needs and requirements. Good behavioral design is like a lock and key. Customers and their behavior are the lock, the product is the key. Perfect harmony is achieved when the two work smoothly.

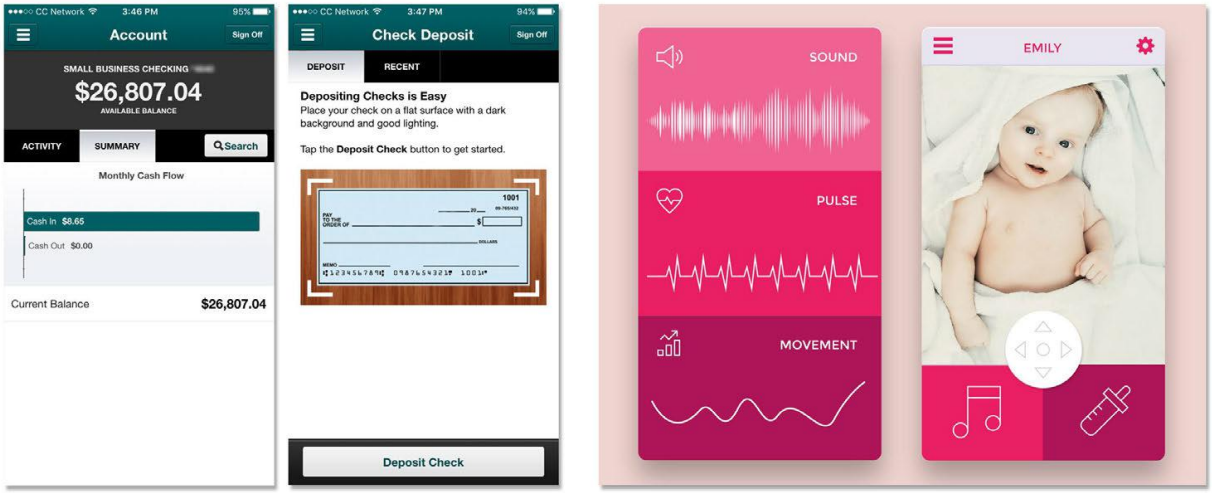
If something doesn’t work as advertised, it gives rise to an immediately negative emotion. First and foremost products must work well for people, thereby contributing to its users’ satisfaction. If a product’s design does not fit with user behavior it will not last long. Here’s a fact: 77 percent of users never use an app again 72 hours after installing. The most successful apps are those, that as a result of good behavioral design people use on a regular basis and can’t imagine life without them.



TaskRabbit Lyft eBay Starbucks

Behavioral design: perfect product-market behavioral fit such as these examples above

Reflective design: “It completes me. I can tell stories about it (and me).” It’s about self-image, personal satisfaction, memories, reflecting back on the experience. Beauty is a desirable feature of the products we buy. Buying and using a product creates a sense of status in society, it’s about socioeconomic status. Your customers ask: “Is it beautiful? Was it a pleasure to use? Did it make my life easier? How do I look using it, driving it, wearing it?” Do your customers “bond” with your product? For example, good visual design contributes to the perception of improved performance and quality (attractive things work better) and perception of pleasure.



Functional Emotional

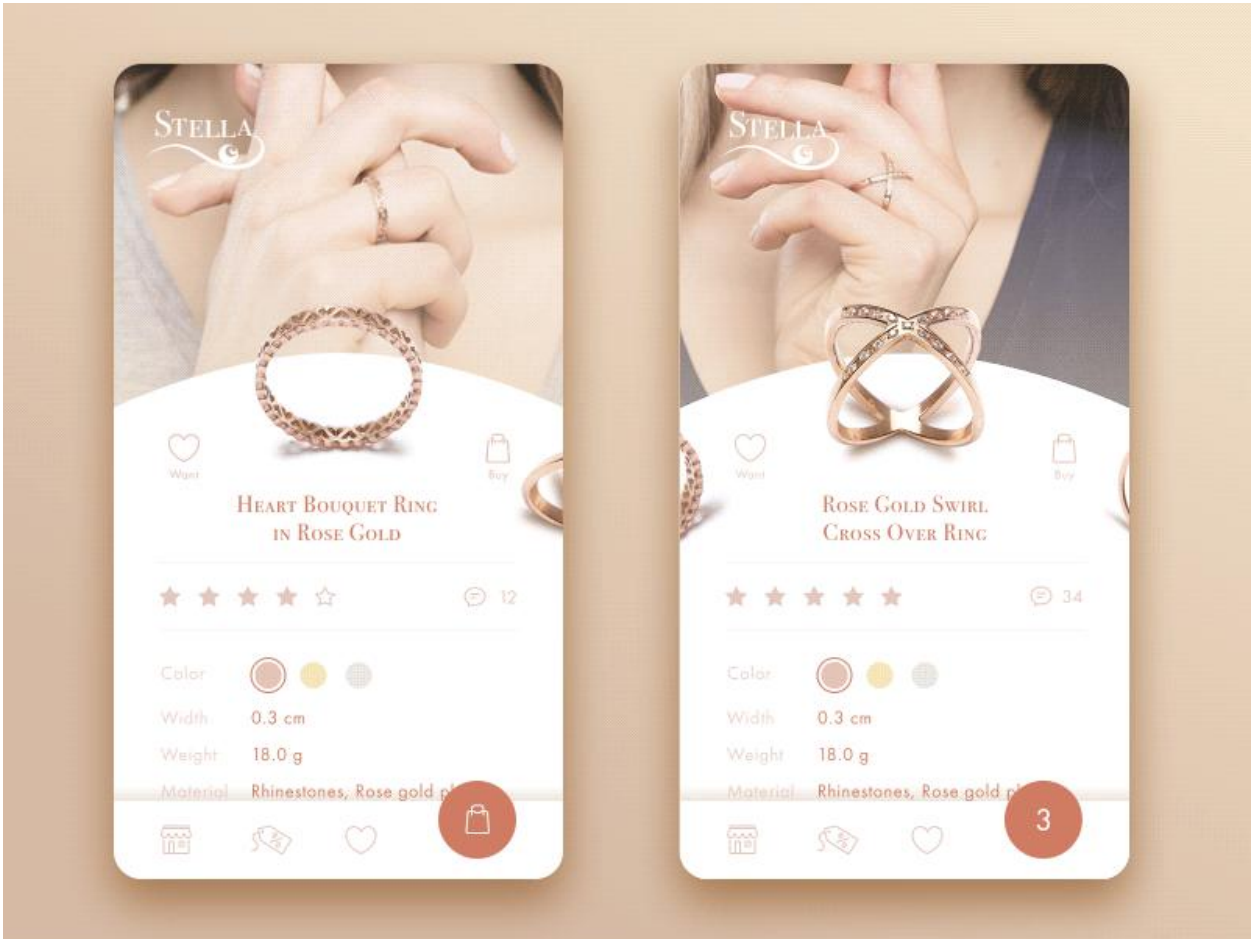
Reflective design: The banking app on the left is functional and sufficient but not a pleasure to use. It doesn’t work well as reflective design. On the other hand, the baby monitor app’s color scheme and overall design is appealing, emotional, meaningful and a pleasure to use.

It may seem obvious, but if a design is to be emotional, people need to feel emotionally connected to it. Big brands and their marketers strive to form an emotional bond between their brands and consumers and they spend millions every year to renew that connection. Likewise, designers need to strive for the same emotional connection if their products are to be meaningful and successful.

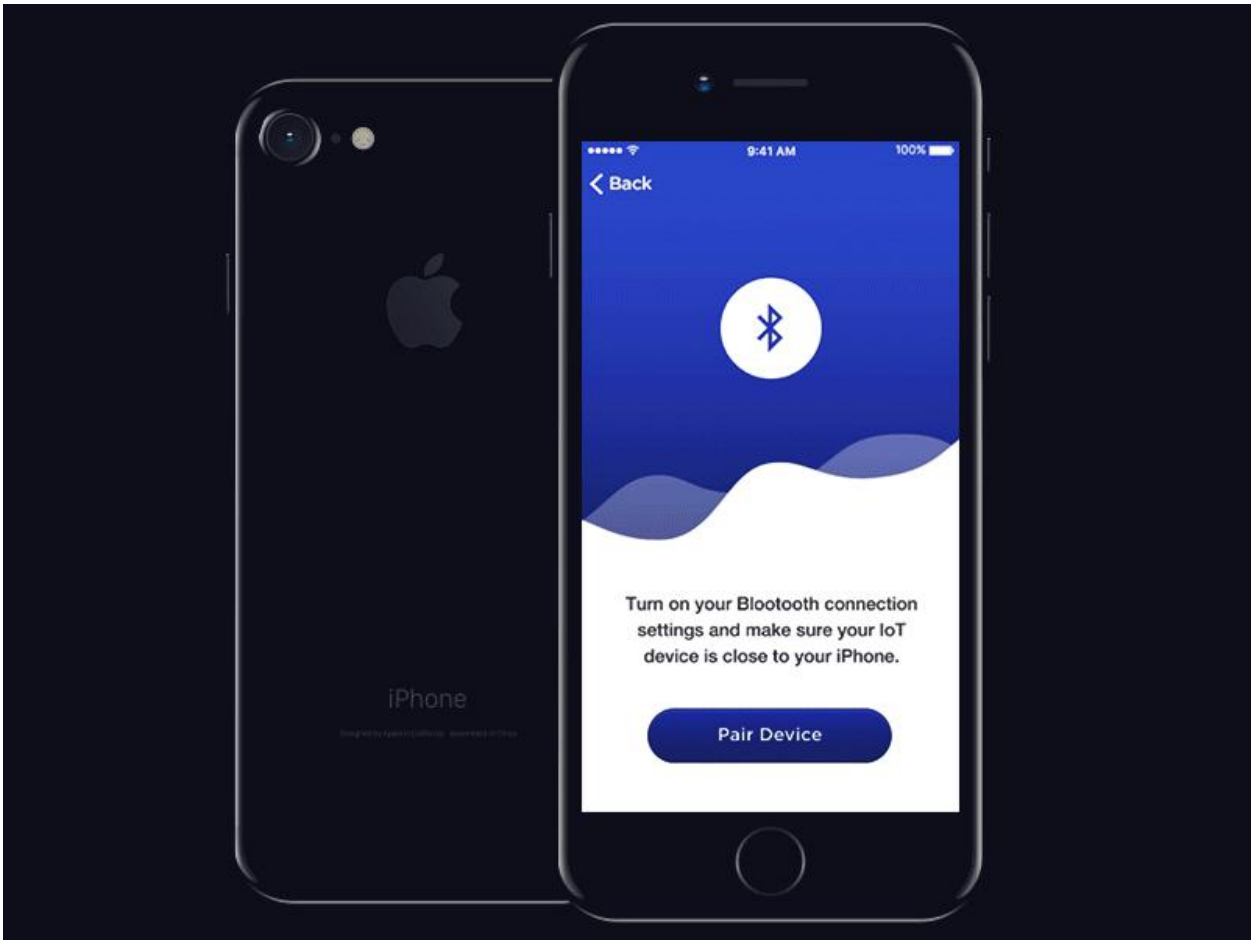
To that end, product design should try to give products a “personality”; something that resembles the real world and brings pleasure and fun to the interaction.

The World is in Motion

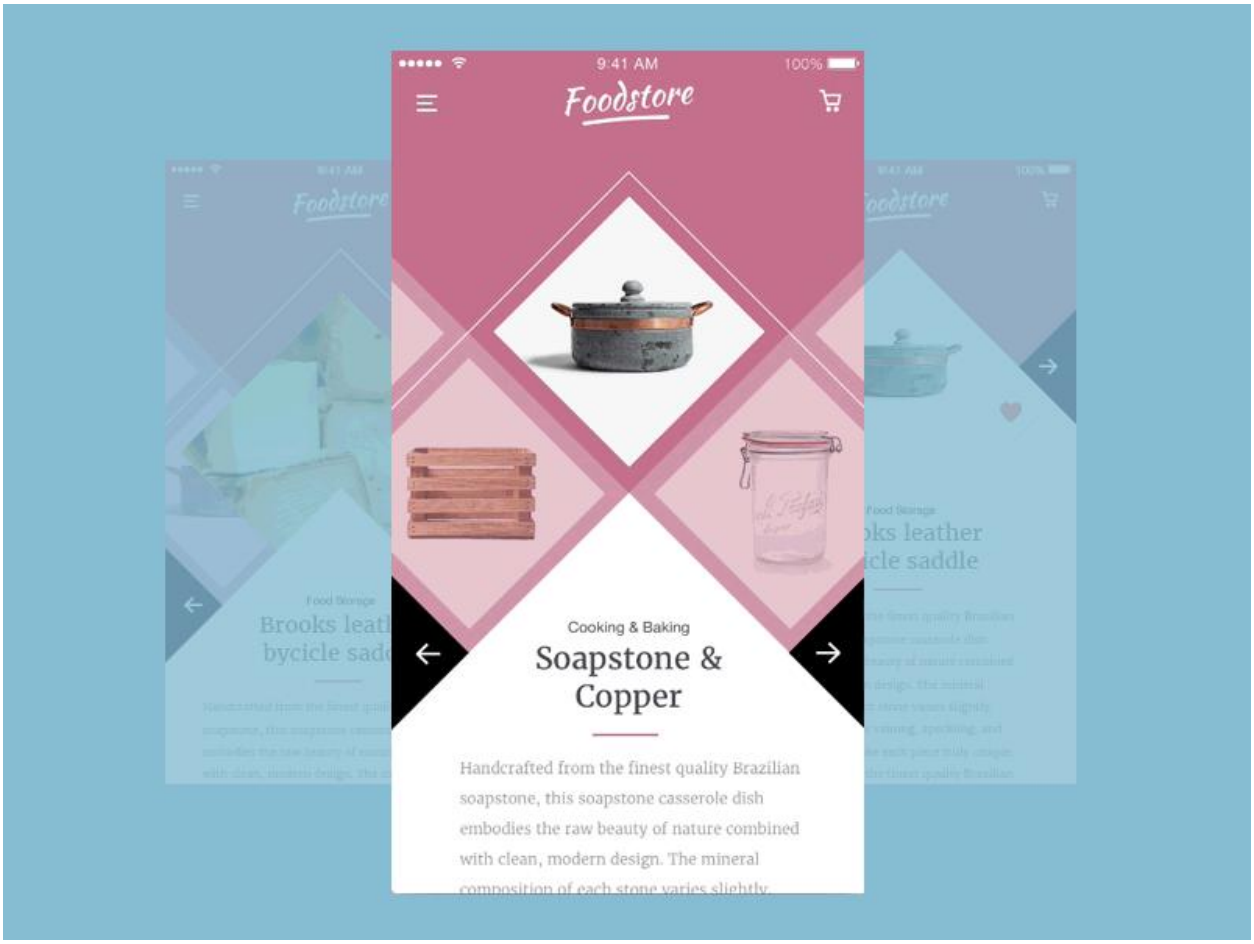
More and more apps use animated micro-interactions and screen transformations to give their Apps a “personality,” to make them seem “alive.” The world around us doesn’t operate with “hard-cuts.” It’s in motion, flowing and fluid; in constant transformation from one state to another. Animated user interfaces mimic the real-world and thus allow users to form a more human-like relationship with digital products via anthropomorphism. They’re more fluid, “alive,” animated; something we can relate to. It starts to get emotional.



Jewelry store e-commerce concept by Tubik (Dribbble)



Bluetooth pairing sequence by InFullMobile (Dribbble)



E-commerce store concept by Remco Bakker (Dribbble)

Final Words: Functional Beauty and Emotion

It's no longer enough to say "We are bringing a software driven product together that will push the boundaries of technology and be functional and useful to people." As technology levels the playing field, almost anyone can bring together a team and technology to create functional and feature-rich everyday consumer products. What is a more difficult task, however, is having a deep understanding of your customer's motivations and behavior. Translating them into effective emotional design that is elegant, beautiful and truly unique will play a vital role in delivering an ideal customer experience which in turn will lead to competitive advantage and growth.

CHAPTER 2

Design Psychology and the Neuroscience of Awesome UX

There's a science as to why particular designs catch your eye and get your blood pumping.

The human brain is lazy, biased, and prone to shortcuts.

The user experience study of human cognition can be mushy, unscientific, and filled with false assumptions—perhaps it's the fault of a lazy brain.

Cognition is complex, and many factors play into gut reactions or an instant impression. **When you ask someone, "Why'd you do that?" there's a high chance they won't be able to answer** or that you'll misinterpret their response.

Enter neuroscience.

While research methods like observation and interviewing often require the UX researcher and participant to make guesses, modern technology like eye tracking **allows researchers to study nearly imperceptible reactions and preferences**.

In the case of products with substantial traffic, seemingly tiny details like the width of a button or the color contrast of text can make millions of dollars of difference. That's why tech giants like Facebook and Google are beginning to employ neuroscience-based techniques to study how people use their products.

Let's start with an introduction to reactive, "fast thinking" and provide a few tips for designers to help leverage the power of neuroscience in order to create great user experiences.

Design Psychology: Fast Thinking, Slow Thinking

It is no secret that much of what drives human behavior is subconscious. In the milliseconds after a person encounters a new app or website, millions of neurons fire and the brain makes hundreds of subconscious decisions.

YouTube UX Researcher Javier Bargas-Avila determined in a 2012 study that people form aesthetic reactions to a web page in the first 17 to 50 milliseconds after exposure.

To put that into perspective, it takes the eye 300-400 milliseconds to blink. Your product may receive its trial, judgment, and sentence all in less than the blink of an eye.

These impressions might not register, but they do impact behavior. For example, if a site loads slowly and the brain reads the first items that load as “off-topic” the user may navigate away immediately rather than wait for the site to load.

Companies like Facebook invest significant resources into studying load order of elements. If someone logs into Facebook and doesn’t see any notification badges, they may navigate away instantly. If the badges load first, they may wait while the content-heavy News Feed loads.

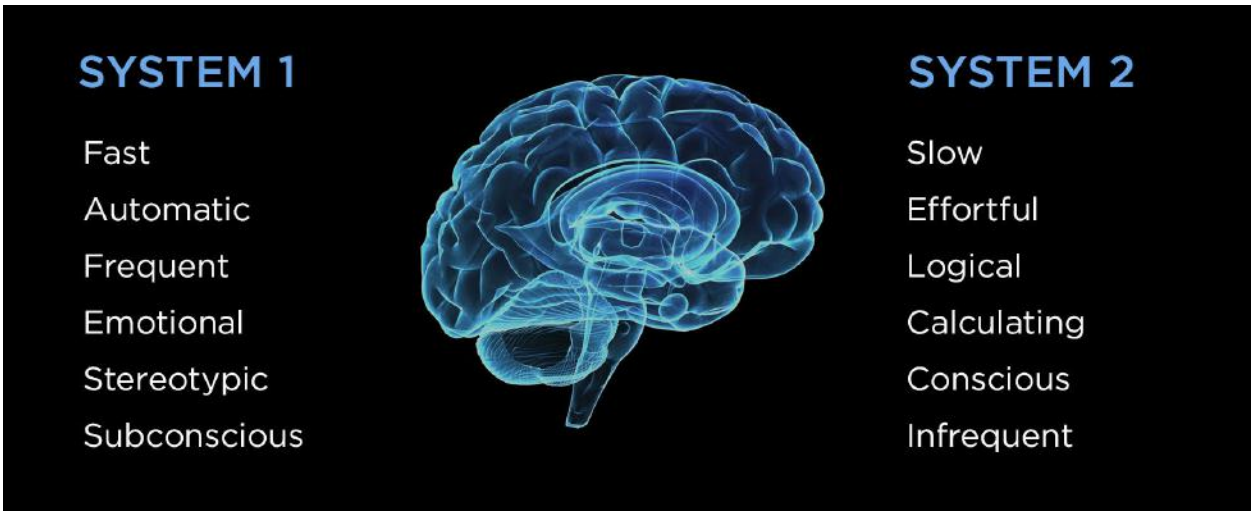
Nobel laureate Daniel Kahneman’s book Thinking, Fast and Slow breaks human thought and decision making into two systems to help illustrate the difference.

System 1: fast, automatic, frequent, emotional, stereotypic, subconscious.

System 1 thinking is **reactive**—responsible for complex but instinctive cognition like determining the distance between objects or determining emotional responses. Your lazy brain generally defaults to System 1 thinking.

System 2: slow, effortful, logical, calculating, conscious, infrequent.

System 2 thinking is **analytical** and is applied to more complex scenarios, like determining appropriate social behavior or comparing two products with different prices and characteristics.



Since the brain doesn't want to re-process information or make novel decisions every time it is faced with a new scenario, much of human decision-making falls into System 1, or "fast thinking."

When making decisions quickly the **brain can over-rely upon schemas or mental models**—familiar patterns of information and interaction. When System 1 thinking is engaged, System 2 never kicks into effect. People may not be aware of their brain's decision-making shorthand, but it strongly impacts their behaviors and perception of the product.

The Science of Psychology in Design

The human brain consumes a whopping 25% of the body's oxygen despite making up only about 2% of its mass. The brain is lazy as a survival mechanism—**pattern recognition and shortcuts mean less energy spent consciously processing the situation**. The brain identifies things, labels them, and ignores them until they're relevant again.

The brain's preference for patterns and lazy decision making might make survival easier, but it makes UX design more difficult. How do you study something your research subject can't even perceive?

A handful of **neuroscience techniques have recently made the jump into UX research,** helping researchers shed light on the things that stimulate "fast thinking."

Attention and perception can be studied with eye-tracking cameras. Emotional response and arousal can be determined with skin sensors or facial analysis. Electrical response in the brain can be measured with electroencephalography.

An electroencephalogram (EEG) is a test that detects electrical activity in the brain.

To designers, it might sound like an impossible task to capture someone's interest and convey vital information in less than the blink of an eye. Luckily, just as neuroscience can help us diagnose problems, it can also reveal general solutions and best practices.

Here are a few general lessons learned from neuroscience user experience research that designers can employ when designing digital products.

Design Psychology Tip #1: Make It Easy to Identify

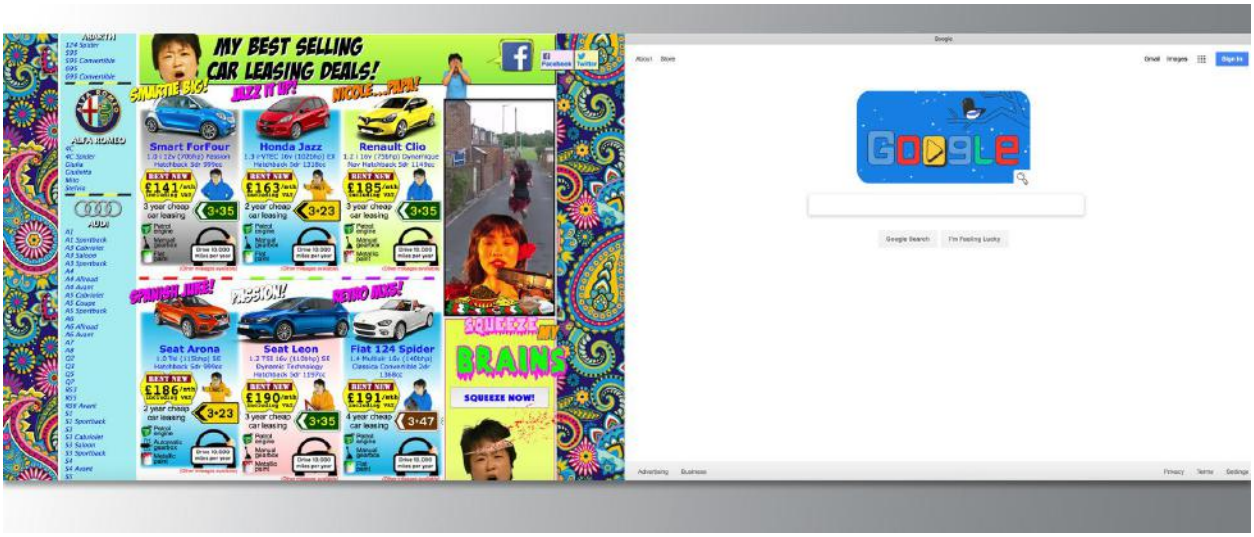
Everyone arrives at a website or an app with some expectation of what it should look like. Staying close to that expectation helps designers benefit from instant subconscious decision making.

The person who opens your app or website wants to know a) does this have what I am looking for; and b) is this high quality? Keeping **designs simple and keeping brand, services, and products front and center** help people orient themselves.

Putting some information front and center means keeping other information from crowding it out. **Decluttering a design is just as important as re-arranging components.**

You'll notice a movement across tech companies to simpler, less crowded interfaces. These minimalist designs outperform more complex designs in task completion and visual clarity is shown to impact purchasing decisions on and offline.

It's been scientifically proven that visually simple and clean designs perform better. The lazy brain can grasp the site's purpose instantly and understand what action to take.

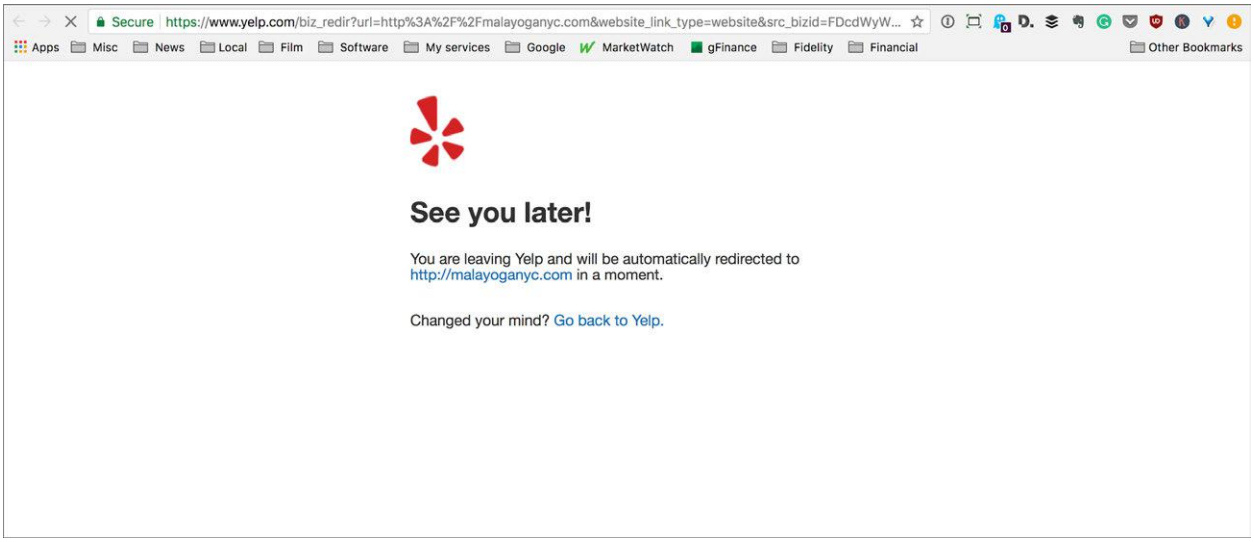


Noise vs. calm. Google has optimized their site to draw the user's eye to their logo and encourage interaction with the search box. In 2017, they held 80.5% of total web search traffic, up from 65.5% in 2016.

Design Psychology Tip #2: Indicate What's Coming

Priming, or preparing someone for some upcoming information or interaction can improve the user's ability to understand and react to new information. You can prime someone to expect things like elements of the UI, certain interactions, or timing in a process.

For example, Yelp uses an additional screen to alert users they are leaving Yelp to visit a third-party site. The additional context helps signal the user to expect a new design and information architecture.



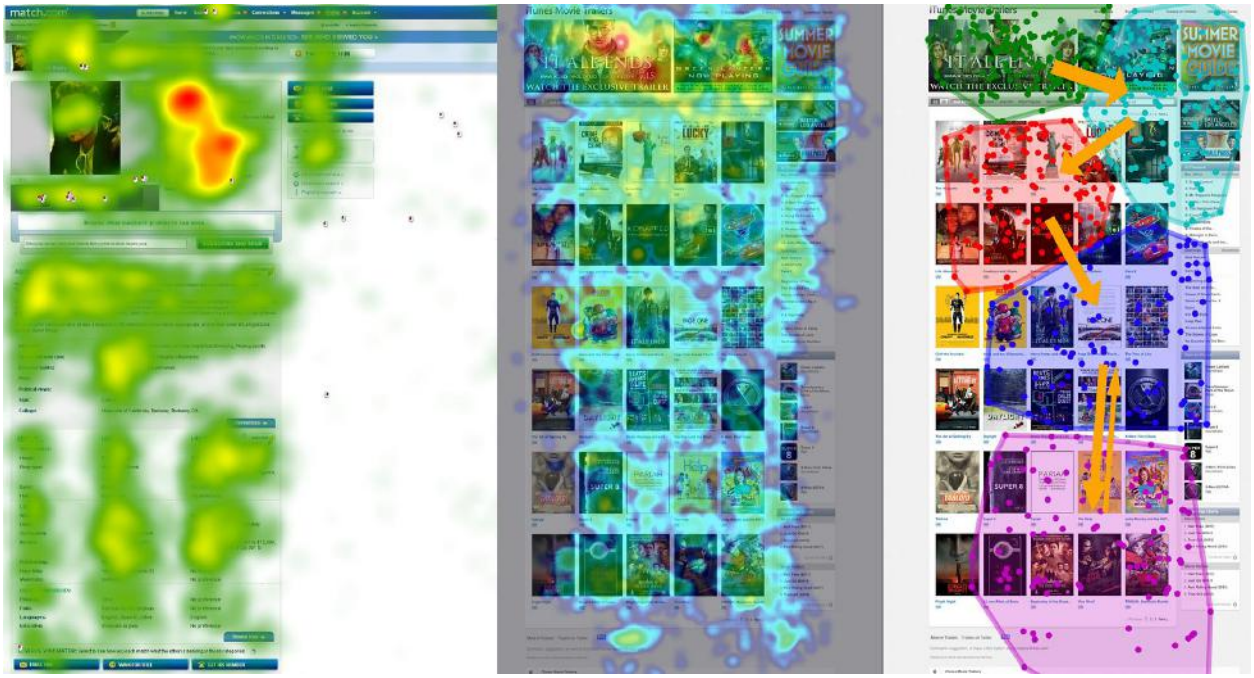
Priming is a double-edged sword. **Information you do not mean to communicate can still impact decision-making**. For example, if your photography company only features pictures of babies, a person might incorrectly snap to the assumption that you serve infant clientele only.

Design Psychology Tip #3: Organize for Lazy Readers

Eye tracking studies are able to follow a person's gaze as they interact with a product. They can produce heat maps that show the length of time spent focused on one part of the screen, or maps of how the eye jumps around the page.

We know that, across industries and app types, **the brain commonly scans for information in an F-pattern** (or E-pattern). The person looks at the information at the top, reading to the right, and then scanning down the page for relevant information or icons.

Breaking the F-pattern—for example, putting important information in the bottom-right corner—will make it harder to find.



Eye-tracking heatmaps show the length of time participants focused on each part of the page. Notice the F-pattern to the attention, and that attention drops off as the person moves down the page.

Tame Your Text

According to a Nielsen Norman study of 45,237 page views, people read only about 20% of the text on a page. Worse, on sites with more content, people dedicated only about 4 extra seconds for each additional 100 words of text.

In a world where people don't read word-for-word, Nielsen Norman employs the **following guidelines for scannable text**.

- Highlighted **keywords**
- Meaningful **subheadings**
- Bulleted **lists**
- **One idea** per paragraph
- The inverted pyramid style—**start with the conclusion**
- **Half the word count** (or less) of conventional writing

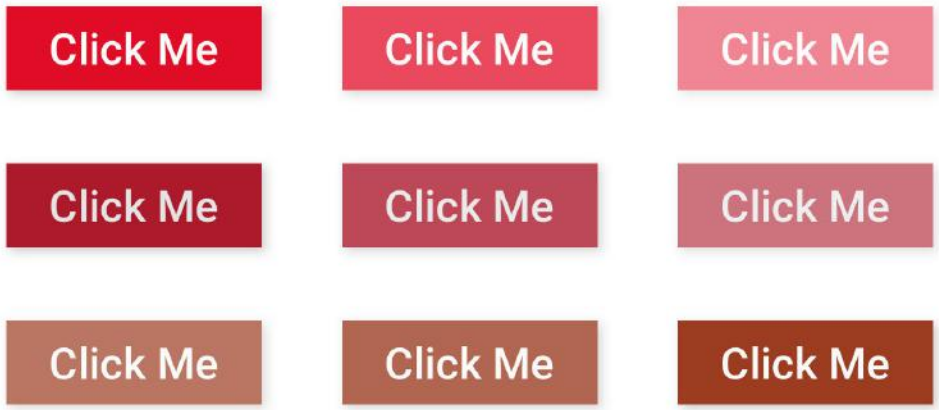
The sheer amount of text on this site is hard to absorb—the user may exit immediately rather than keep reading. The text is uniform without bolding or bullets. The section titles are generic, making it hard to parse accurately without reading.

Work with Color Pop and Contrast

Text organization and location are not the only important factors in design. Color theory, weights, and contrast can be used to direct user attention.

NASA's cockpit design team uses luminance—or the perceived brightness of a design—to help manage the pilot's attention in an area crowded with competing information. The cockpit design team uses color and contrast to give visual prominence to the most important elements.

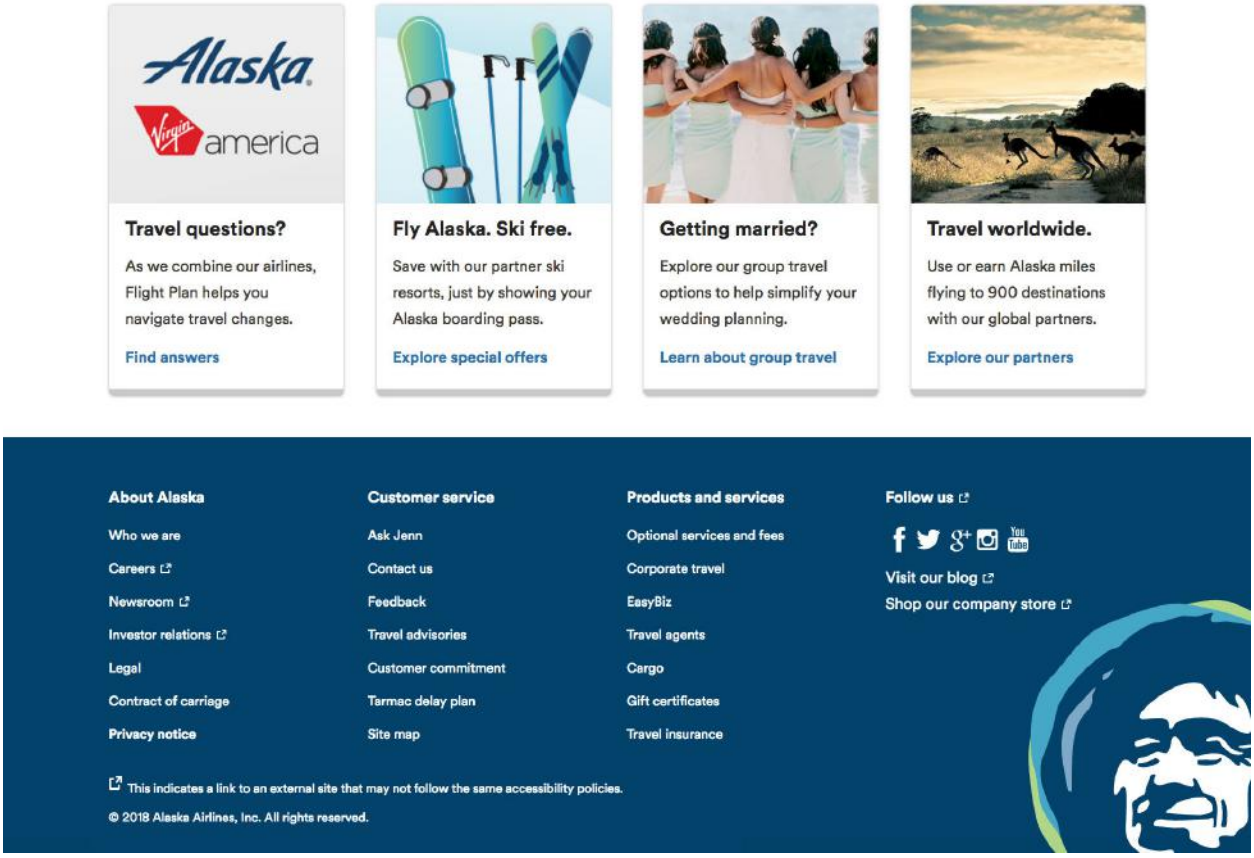
Luminance, and contrast, can be used across your product to highlight or downplay specific information, but it is most often referenced in button or call-to-action design. As you can see in the red example buttons below, though the button in the top left corner is the most saturated, it "feels" the brightest because the contrast is the highest.



Contrast and luminance are just a first step. Color theory suggests balancing your product's colors by using the dominant color 60% of the time, secondary 30%, and accent 10%. This breakdown is consistent with the neuroscience behind what draws the eye. **Because the accent color is used the least, it draws the eye the most.**

Just as the use of bright color can draw the eye, use of more muted colors can help a user determine which information is secondary or less important. For example, most websites use footer areas with a more neutral color to show separation from the rest of the information on the page.

Any features or information designers de-prioritize help the user focus directly on the most import interactions or information.



Most websites use muted colors at the bottom to denote navigation or reference material. The brighter colors in the center signal to the user that they are the most important information.

Design Psychology Tip #4: Gut Check

Luckily you don't need thousands of dollars of eye-tracking software or an electroencephalogram to tell if a design is working.

5-second tests are a powerful tool for determining whether or not your designs are instantly understandable.

In a 5-second test, the participant views a site or app for 5 seconds, then responds to questions about the subject matter and design. Unable to refer back to the image, the participant gives their "impressions"—what participants assumed was the purpose and function of the product, and what they would do or where they would look for next steps.

Your product might have all the functionality your user desires, but if the lazy, pattern-loving brain can't instantly grasp that, it will move on.

Designers as "Mind Readers"

As we learn more about design psychology, the brain, and perception, design norms will continue to change across the industry. The connecting thread is data—as methods for the study of neuroscience and cognition improve, so will the type and quality of data available for UX design.

Great user experience design isn't magic—it's science. Neuroscience.

This article was written in collaboration with UX researcher Caitria O'Neill, previously at Facebook and a fellow at Stanford's d.school.

CHAPTER 3

Anticipatory Design: How to Create Magical User Experiences

This morning the song “This Magic Moment” by The Drifters popped into my head for no apparent reason.

Those restless neural networks in our brains do funny things. They make seemingly unrelated, unconnected thoughts and concepts connect.

Slapping my forehead I said to myself: “But, of course…”

Recently I’ve been thinking about those magic moments in UX that happen when we’re interacting with our digital devices or services. We encounter perfect moments, when everything falls into place, in exactly the right way, at exactly the right time, as if its magic. It could be at your bank, in your car, a vending machine, or on your phone.

I believe the era of anticipatory design is here, or least within our reach.

Our limited GUIs are changing as a result of evolving technologies and input methods. It is an organic, natural evolution —– we already take talking to our devices for granted!

For example, while driving we might say: “Dial Anna.” We ask Siri to start a timer or about movies playing nearby. And we ask Alexa to play music or order our coffee. Nonetheless, the metaphors and graphical elements established more than four decades ago haven’t changed that much.

The Past

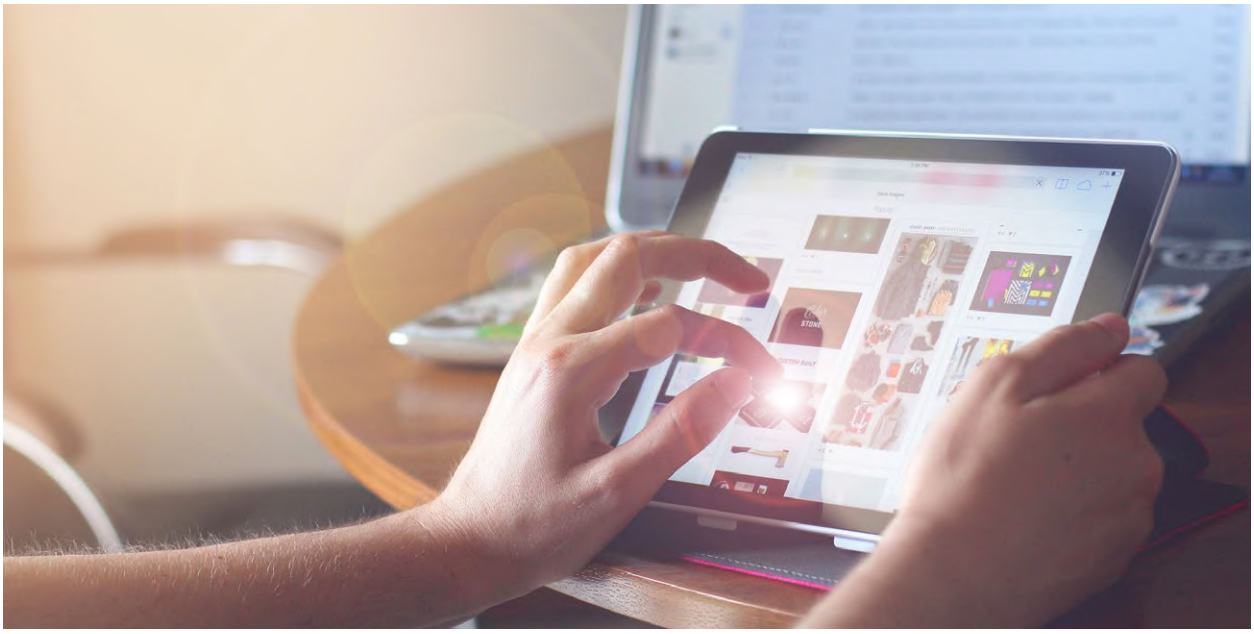
Consider that Xerox PARC's original GUI is 44 years old yet our user interfaces still look remarkably like it.

The Xerox Star workstation introduced the first commercial Graphical User Interface (GUI) operating system in 1973

Today, we're still looking at two-dimensional screens and mostly use keyboards and mice for input; devices designed for interaction methods that were optimized for computers, not humans.

The machines we interact with – laptops, desktops, tablets, mobiles, vending machines, etc. – are still designed and built with mental models and technologies that are legacy systems from the past.

It's as if we're using interaction models from the Flintstones' era in a Jetsons' world; they still rely on a lot of interaction from users (input) to move to the next step and display useful information (output).



What is anticipatory design?

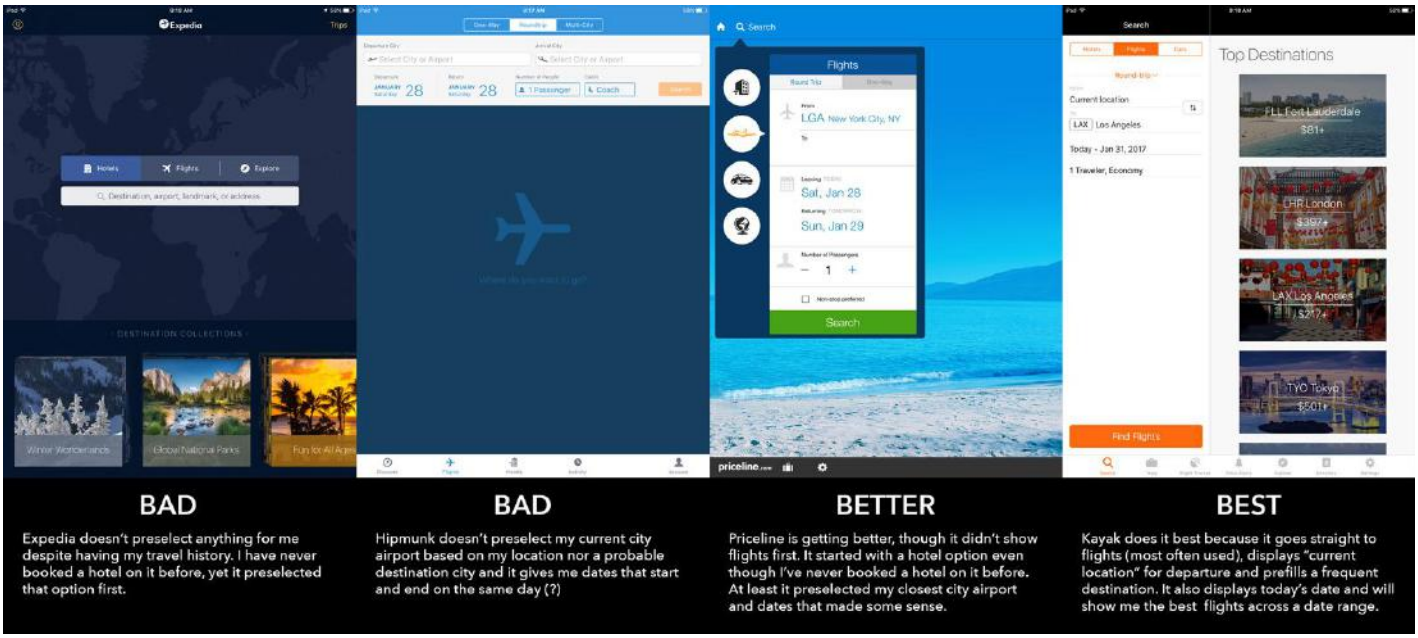
The application of anticipatory design is more important than ever if digital businesses are to simplify and facilitate the course of our digital lives.

In light of this, what is anticipatory design?

It's output, without much need for input. It's about leveraging past choices to predict future decisions.

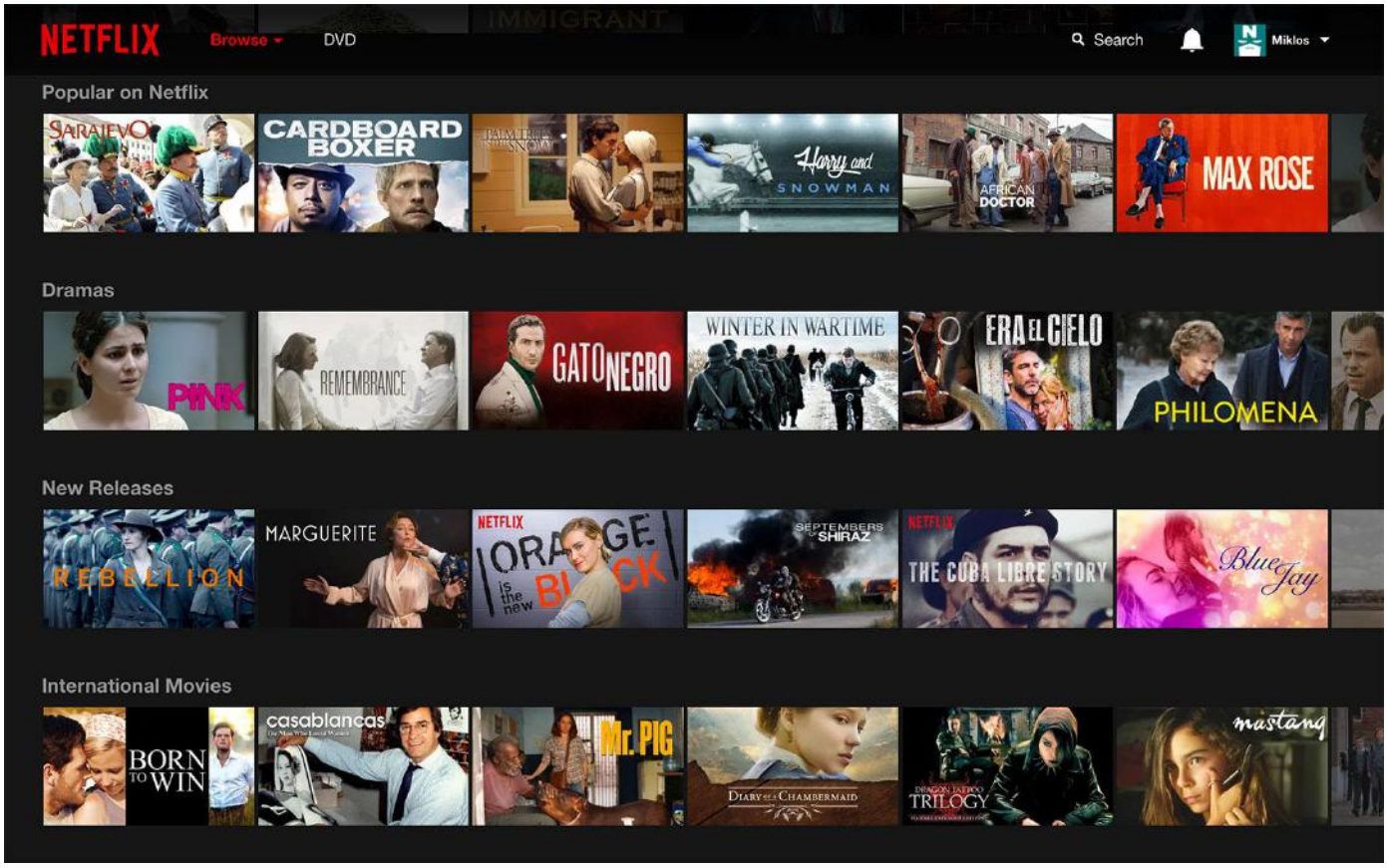
A world where our computing machines are designed for interaction methods optimized for humans, not computers. A digital world where we move from user intent that's deterministic to probabilistic.

Huge's Aaron Shapiro defines anticipatory design as a method of simplifying processes by responding to needs one step ahead of the user's decisions, i.e. responding to user needs they haven't expressed yet.



Anticipatory design in its finest form goes way beyond personalization.

For example, Netflix showing you movies to watch based on your taste preferences and history is personalization. With anticipatory design, the interface actually changes in the moment as you're interacting with an app.



Netflix is an example of personalization. Not anticipatory design.

Anticipatory design would mean—in the case of online shopping for example—that the system would know and personalize a user experience to the degree that it would feel like a magic hand guiding your experience. It would actually change the UI on the fly, eliminate any extraneous information, and only present the most relevant options in a timely, simple, and efficient manner.

This is not too difficult to accomplish today.

Let's say someone is shopping for a very expensive guitar on guitarcenter.com. At checkout the site would automagically present "Ship to store for pick-up" as a default choice because it knows by observing the past behavior of other users, buying expensive guitars, that they would prefer to pick it up at the nearest brick-and-mortar store.

For another example, let's pretend you're shopping for a shirt on Amazon.

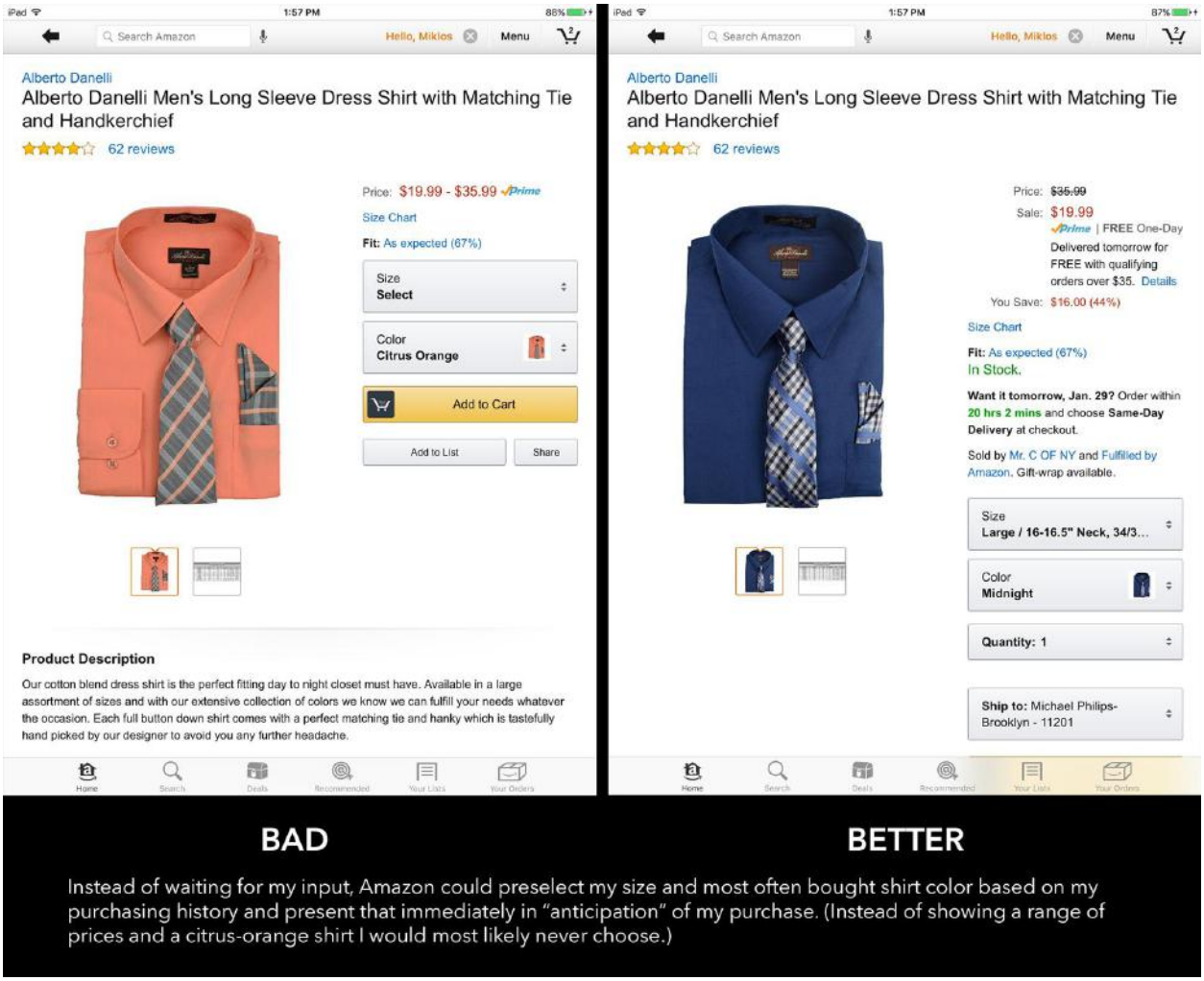
Amazon already personalizes a whole host of things for you and ought to know your size and color preferences since you have purchased shirts on the site before.

When going to the product detail page, it could pre-select your size, and show you navy, white and checkered shirts first, de-emphasize pink and yellow ones, and not force you to select your size every single time.

Why?

Anticipatory design's promise is the elimination of friction and an increase in efficiency that would greatly improve user experiences, and in turn impact the bottom line. People return to products and services that deliver what they want when they want it.

Our daily interactions with digital systems have reached an unprecedented scale. Yet many of these interactions are stifled with friction and subsequent feelings of frustration.



There is a real need for customization and personalization on a grander scale that would delight users, and simplify their lives.

Take self-serve transportation ticketing machines, where commuters can refill commuter cards.

They're still designed to be dumb – driven by user input in which everyone is taken through the same frustrating plethora of options.

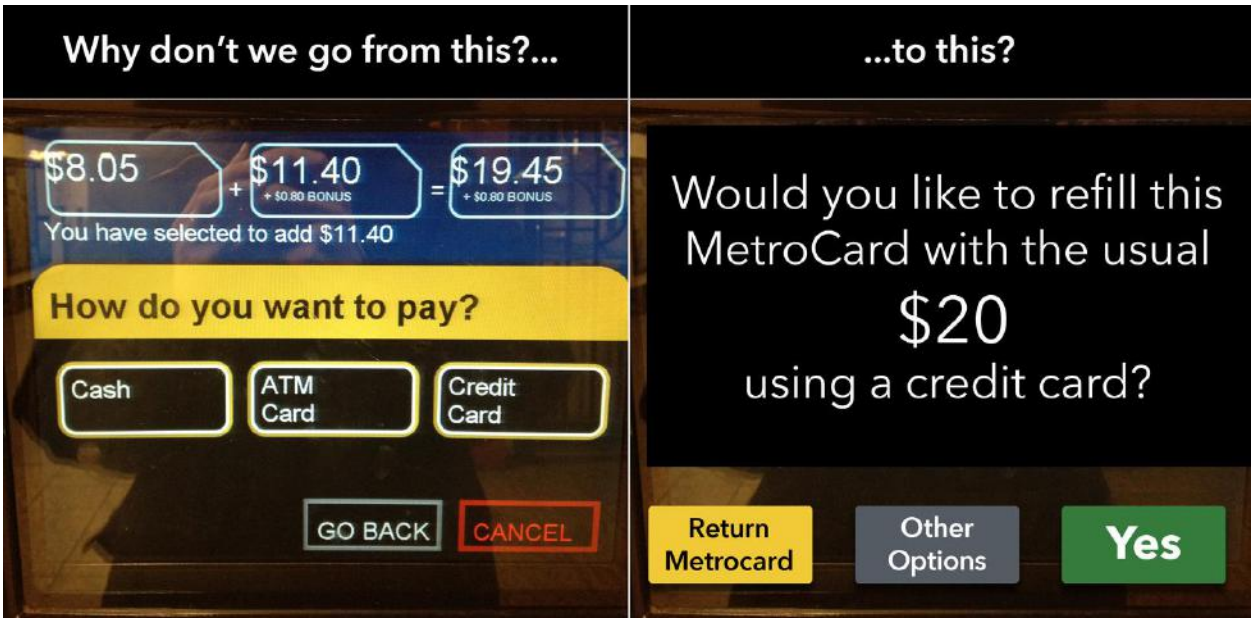
One could easily imagine a much improved, more personalized system, where refill history could be stored on your card.

Instead of countless requests for input: select this option first, then select this other option, and so on, the entire interaction could start with you inserting the card you always refill and the system would immediately display, “Hello, would you like to refill this card with $20, using your MasterCard?”

The next step would be to pay and go.

It would cut down the time needed to refill cards by at least 75 percent, increase efficiency, move people along faster, and subsequently make them more satisfied.

This is already possible, yet I don’t know of a single ticketing machine that does this.



A “dumb” user interface that requires a lot of input vs one that’s anticipatory.

Interfaces of the future.

When AI becomes more pervasive, a higher degree of personalization will enable a higher level of anticipatory design.

Based on all kinds of user authorized behavioral tracking – purchase histories, preferences, etc., the system would recognize you, and with a high degree of certainty predict what your next choice might be.

The lack of anticipatory design is surprising given that technologies exist today that would make doing so not that challenging.

Some companies are already practicing early forms of anticipatory design. Two examples are Google Now and Uber.

Google Now

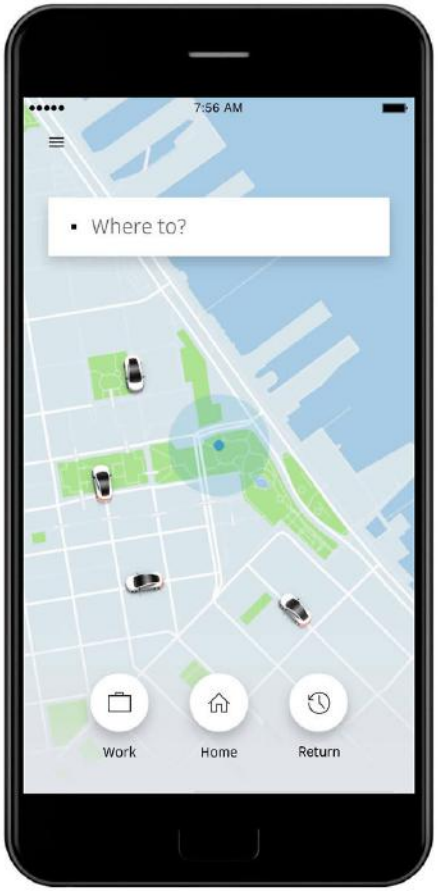
The Google Now app is one of the more ambitious evolutions of Google's search software. The idea is simple — predict what you'll want or need to know before you know you need or want it, and serve it up in an easy-to-read card-based format.

Google's data mining capabilities are second to none. It knows who you are, and it can display cards with personalized, location-aware information, such as calendar events, local weather, news, stock prices, flights, boarding passes, hotel's, photo spots nearby, and more. It also tells you how long it will take you to get home from work, based on current traffic conditions.

If Google doesn't think you need something at the moment, it won't be displayed. It's the embodiment of anticipatory design.

Uber

In the Uber app, when you take a trip somewhere it will provide a return button on a subsequent launch of the app because there is a 90 percent chance you would want to return to your original destination. No need to specify pickup and drop-off locations. Brilliant.



The Uber app gives users a quick shortcut to “Return” when it’s launched shortly after completing a trip

The times they are a-changin'

Things are evolving to natural interaction methods.

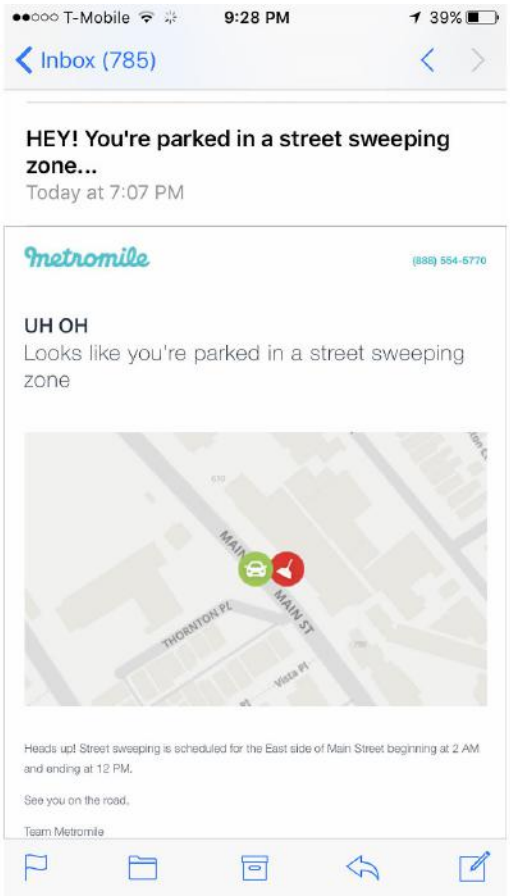
In a not too distant future, our input will be more effortless.

We’ll have augmented and virtual reality with interaction methods, such as voice, gesture tracking, eye tracking, and speech. Google is already working on it. It’s called Project Soli.

Anticipatory design methods, assisted by AI and machine learning, will deliver experiences on an entirely better level.

How do we bring anticipatory design into play?

There is no magic wand, uttering “abracadabra,” so how do we design for those magic moments now? What are the steps we can take today to deliver those magic moments, using anticipatory design?



Sophisticated, personalized algorithms at work on Metromile create a sense of being anticipatory and incredibly useful to customers—in this case preventing parking tickets.

Until we have incredibly sophisticated predictive algorithms, fully developed AI, and machine learning, businesses can mine existing data for personalization opportunities thereby reducing potential pain points and barriers.

They can also fully engage the user-centered design process, employ deep research, extensive user-testing, and use tools, like an open-source software library, for machine intelligence, such as Tensorflow.

Deep research will tell us a lot—contextual observation perhaps or ethnographic studies—where we could observe what users are inclined to do from moment-to-moment in their flow. We could map these user journeys step-by-step, and design the interaction accordingly.

The ideal outcome of applying such data mining and personalization, coupled with user-centered design methods, would create fluid and seamless anticipatory experiences that would please customers and generate loyalty by having things appear as if by magic.

It would advance the state of the art of user experience and create a win-win situation for both businesses and users, offering deeper customer satisfaction that positively impacts the bottom-line.

CHAPTER 4

Persuasive Design: Using Advanced Psychology Effectively

"Emotions shape all activity in adaptive ways. In the absence of emotional markers, decision making is virtually impossible."—Saver & Damasio (1991)

Websites have come a long way in a short space of time—it's really quite amazing just how much some of the sites belonging to the last decade's most established brands have changed from their first iteration.

When websites were first used for commercial purposes, they didn't pay too much attention to user experience; the aim was to cram as much content into one page as possible. Now they are heavily researched, data-mined, and optimized in order to grab your attention and offer up the right content, functionalities, and options at the right time.

More and more companies are using advanced psychological research and in order to drive more engagement and purchases, have turned what used to be an art into a science.

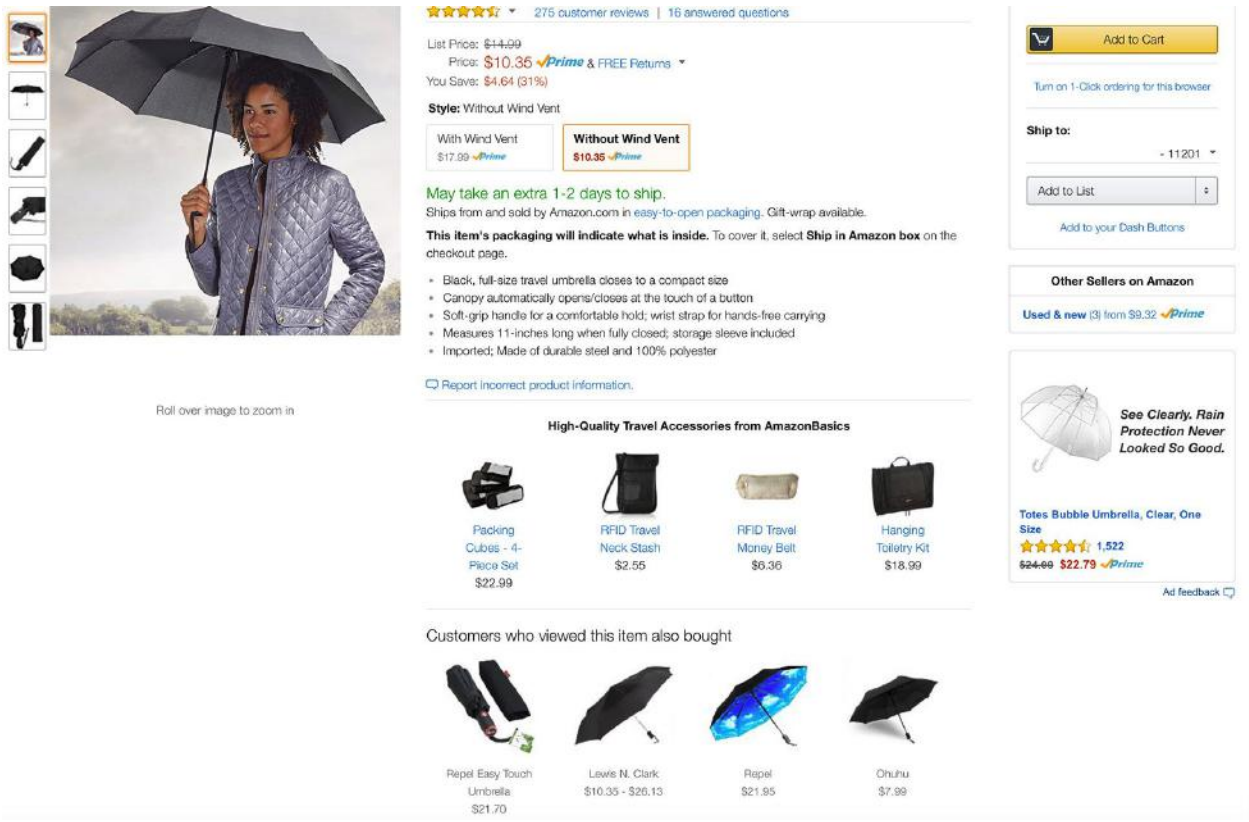
Apple's website from 1997

Persuasive Design

In addition too many essential elements, good design will always take into account a user's emotional and psychological needs. Let's look at persuasive design and explore how the mental processes that influence how humans behave can be applied to design.

The word **"persuasion"** is often associated with manipulation, trickery, and—especially for a designer—the use of dark patterns. It's earned itself a bit of a reputation. Nevertheless, let's be clear that's not what we are discussing here. Persuasive design can improve user experience by making a site easy to use—it understands psychological triggers, the behavior of users and engages them.

For example, Amazon persuades users to keep buying more by recommending alternative products and accessories, and employing mimetic, persuasive patterns by displaying “customers who viewed this item also bought…” options. In order to close the sale quickly, they also offer shoppers the ability to purchase items with one click.



We are all spending a lot more time in an online world, and designers can use what they have learned from offline behaviors to craft better user experiences. Whether you want to tweak an existing website or build an app, persuasive design will guide and support the user’s online experience.

How can a designer use the latest research in psychology to enhance the impact of their designs?

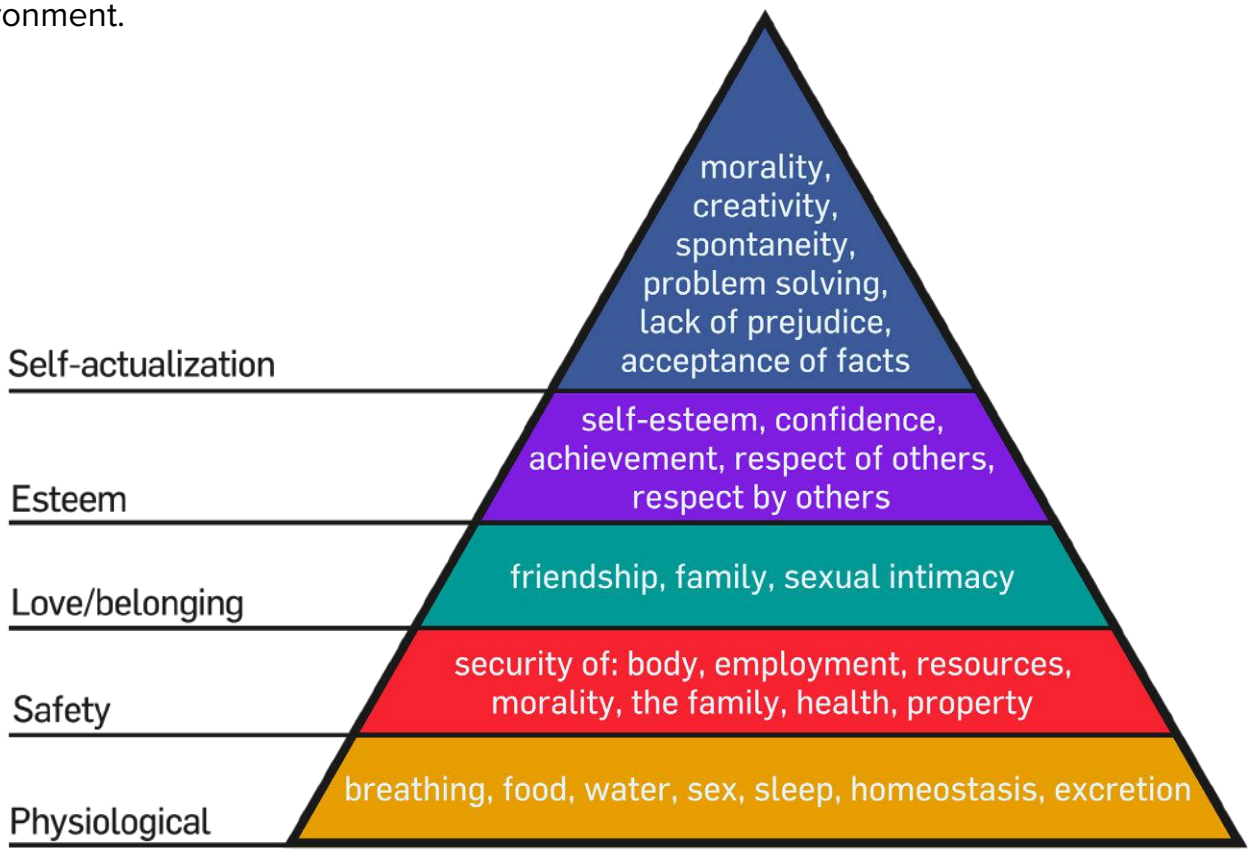
Understanding the principles of psychology provides you with an ability to explain the underlying rationale of your work. It can:

- Serve as a source of research and justification in a shortfall of user research.
- Help validate your design and reasoning to a client.

Let's discuss a few of the theories.

The Perception of Control

As humans, we have an innate need for control. This is traced back to our humblest of beginnings. In coining the hierarchy of needs, psychologist Abraham Maslow named our most basic ones: health, food, and sleep. All these require a level of control over our environment.



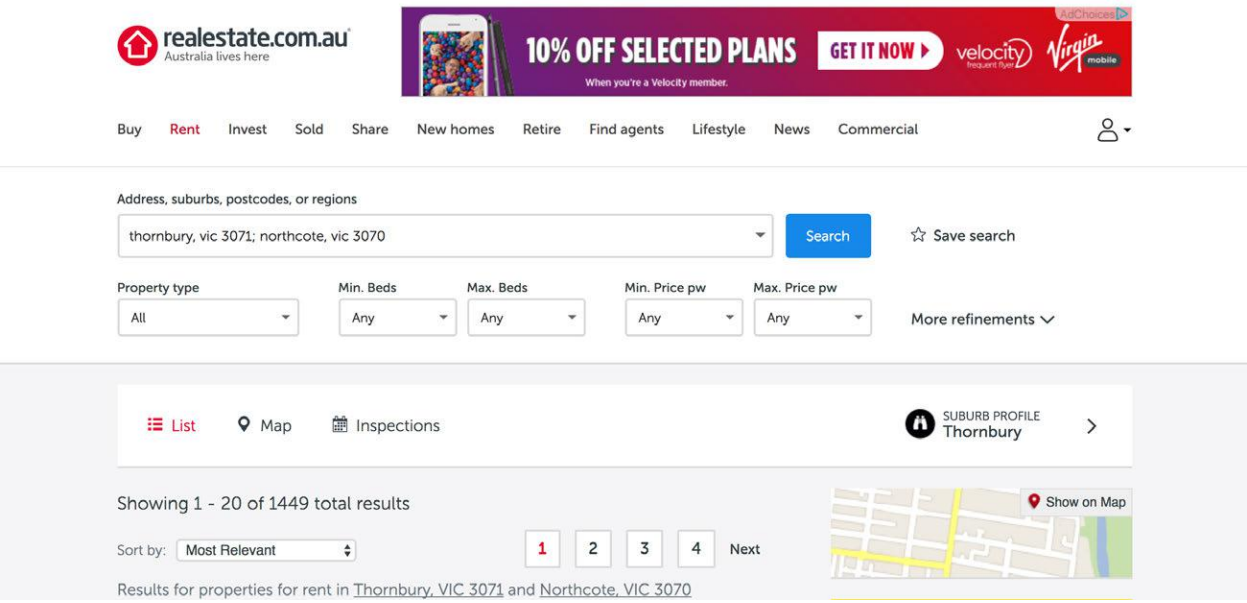
Maslow's Hierarchy of Needs (courtesy psychologytoday.com)

As UI designers, we need to ensure that our users have a positive experience within the environments we create for them. This means empowering them by offering tools that will make them feel as if they are in control of their journey.

> UX Consultant Nadine Kintscher says, “Today, you can adjust your screens [sic] brightness, disable notifications, and decide whether your phone should connect to both data and phone network or not… Even if these adjustments only extend your phone’s battery life by a few minutes, it gives you a warm and fuzzy feeling of accomplishment. YOU are in charge.”

We need to create interfaces that are balanced between being functional and visually engaging *and* giving users some control so they have a more satisfying experience.

Realestate Persuasive Design, an Australian property search website, succeeds in doing this by enabling users to filter all properties by their preferences, and giving them the option to sort by limited criteria.

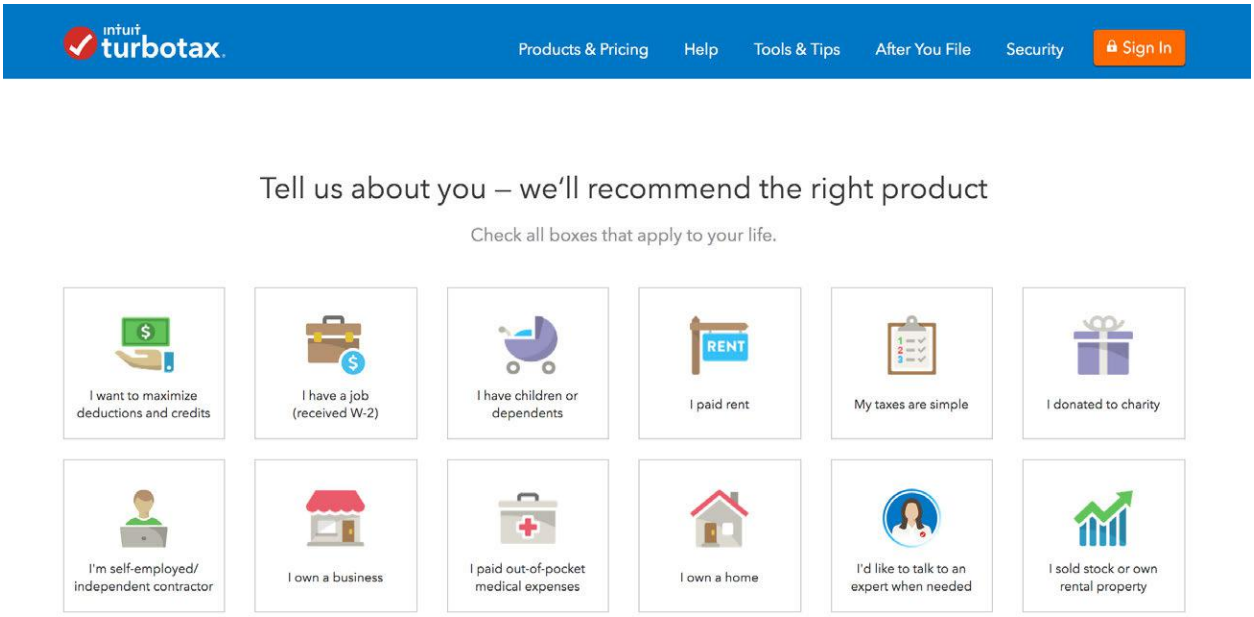


Motivation, Ability, and Trigger

How do you design a digital experience that allows users to engage in desired behaviors that occur at the right moment? **Motivation, ability, and trigger**—a simple theory based on Fogg's Behavioral Model—is ideal for anyone trying to come to grips with persuasive psychology. According to the motivation, ability, and trigger principle, behavior happens when a person is motivated, has the ability to partake in the behavior, and is presented with a trigger. When these three elements come together at the same moment is when a desired behavior can occur.

A good example is TurboTax, discussed in the book Design for the Mind: Seven Psychological Principles of Persuasive Design.

Even if we don't enjoy it, we are highly **motivated** to file our taxes. However, the US tax system, like every other country's, is too complex to easily understand. TurboTax has increased **ability** by allowing users to more easily complete their taxes by asking basic questions. Gone are the long documents—instead, TurboTax has created a workflow where users are taken through a simple step by step process. The final value proposition is the

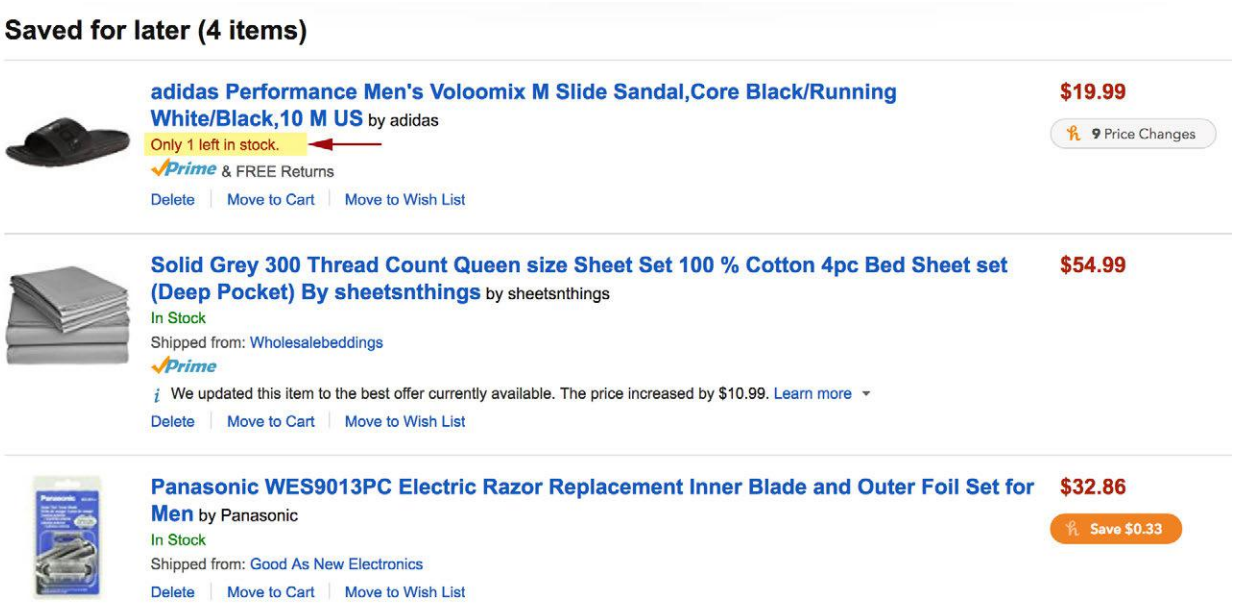


Finding situations with exactly the right combination of motivation and ability with an effective trigger may feel artificial or unnatural. It's okay if one outweighs the other. A good example is tweeting—motivation could be low, but the trigger may be there and ability is super high.

As designers, we can use this theory to examine how we're building our users' motivation and ability before we ask them to engage in a behavior.

- **Motivation** provides a reason for someone to engage in the task.
- **Ability** provides people with the opportunity to complete the task.
- **Triggers** occur in our environment or brain and prompt a person to do something.

Both of these theories require some research but are highly useful in designing interfaces. Alternatively, there are few simpler psychological theories that require less research and can be implemented into your designs immediately, such as the concepts of scarcity and fear of missing out (FOMO).

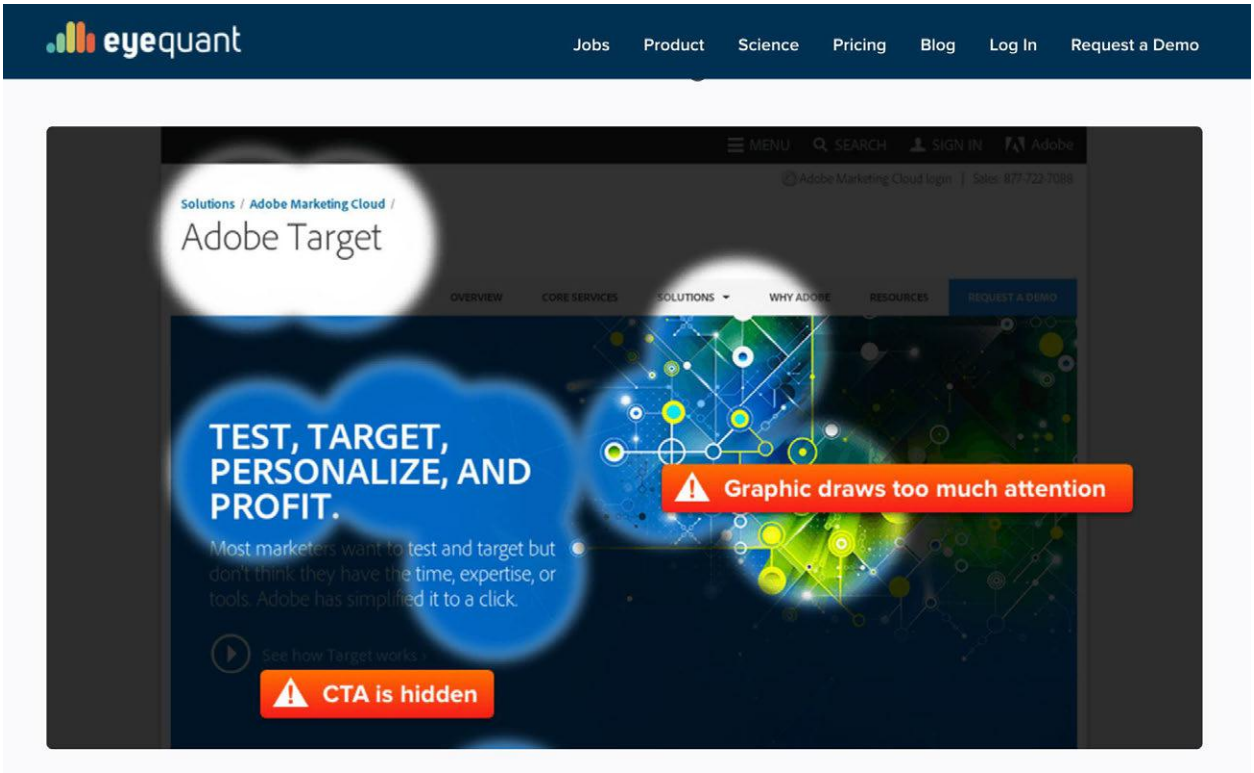


Amazon uses FOMO effectively by adding a note of urgency to a product (highlighted)

Capture Your Audience's Attention

For decades, psychologists have been obsessed with our diminishing ability to maintain attention.

Eye tracking that measures where and for how long a user fixates on one point has been around for some time. It shows that the average attention span on the internet is less than a few seconds—we make immediate decisions about a site and, if it's not for us, we are gone.



EyeQuant Persuasive Design has taken this idea a step further by building a predictive algorithm using eye tracking data. Instead of using an eye tracking program on your own site, you upload a design to their website and they will tell you how people would perceive and focus on your site.

Using German participants, they built a massive database of what attracts a user's attention and what doesn't—color contrast was found to attract the eyes, and so do faces and bold text.

Eye tracking software can be expensive. In lieu of it, online analysis software like Sumo Heat Maps are useful to show what and where your visitors are clicking, and what's attracting the most attention. However, it's essential to remember that while we may be capturing the brain's attention, we may be pulling users away from something far more important.

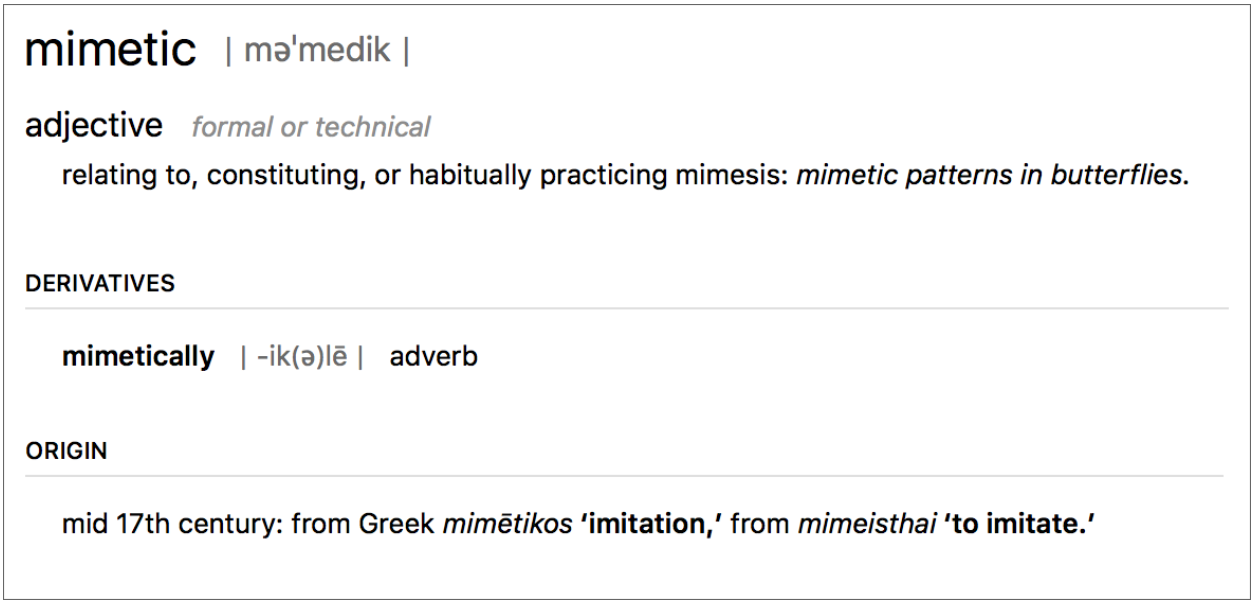
Using eye tracking or heat maps allows designers to get immediate objective feedback on their designs. As a designer, it can serve as validation for your UX ideas and provide data for your design decisions, as well as allowing you to optimize your designs by running smart A/B tests.

Sumo Heat Map

Mimetic Desire

Have you ever noticed that human beings naturally imitate the desires of other human beings? Human desire is, by and large, mediated desire. This theory, originated by Rene Girard, suggests that if someone shows a desire for an object, you will also desire that object. Advertisers love this—it has had demonstrated success.

You and I are mimetic creatures. *Neuro Design* by Darren Bridger explored this theory and found we have a mirror neuron system. In other words, just seeing someone perform an action like picking an item can cause your brain to mirror that activity.



mimetic | məˈmedik |

adjective *formal or technical*

relating to, constituting, or habitually practicing mimesis: *mimetic patterns in butterflies.*

DERIVATIVES

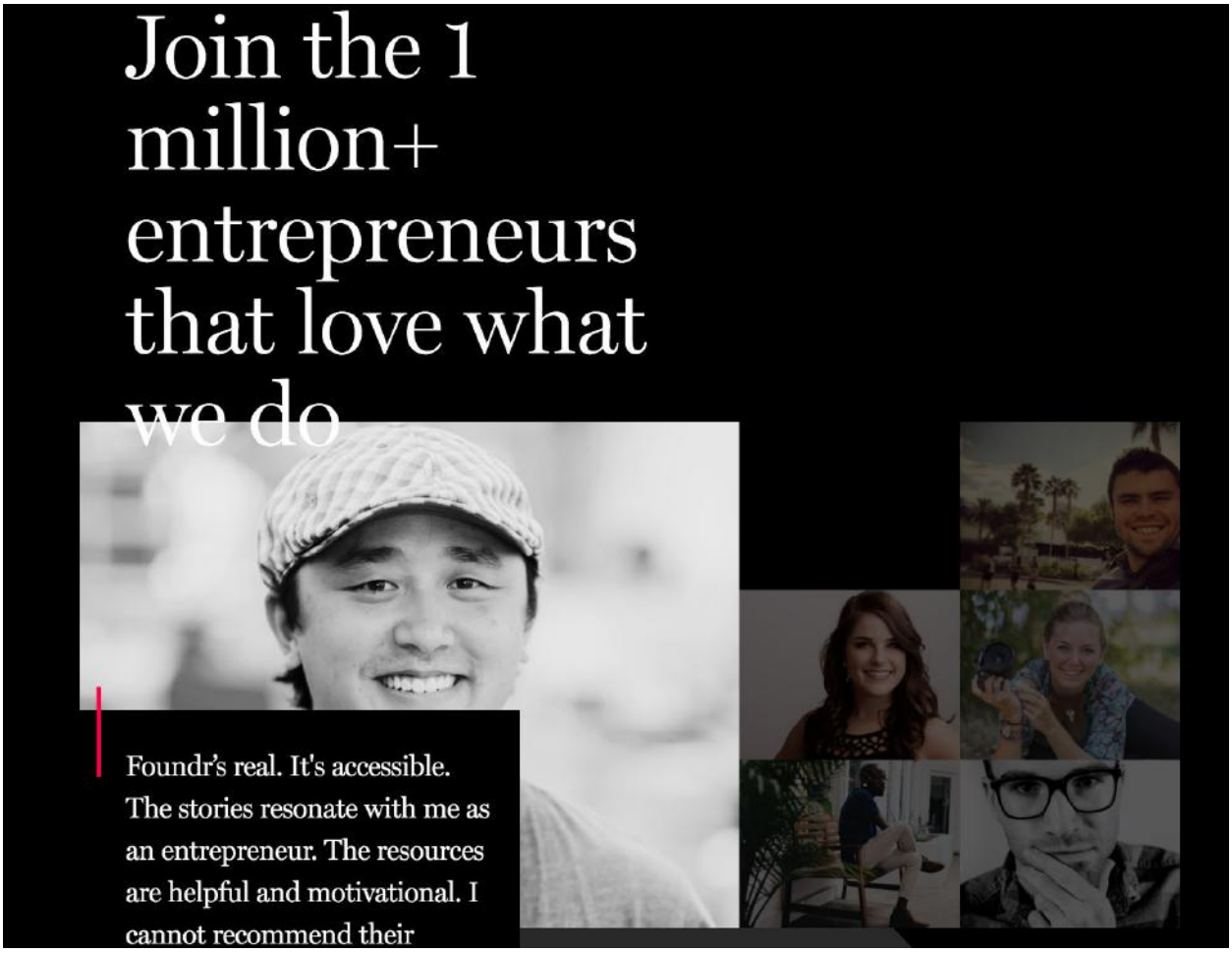
mimetically | -ik(ə)lē | adverb

ORIGIN

mid 17th century: from Greek *mimētikos* **'imitation,'** from *mimeisthai* **'to imitate.'**

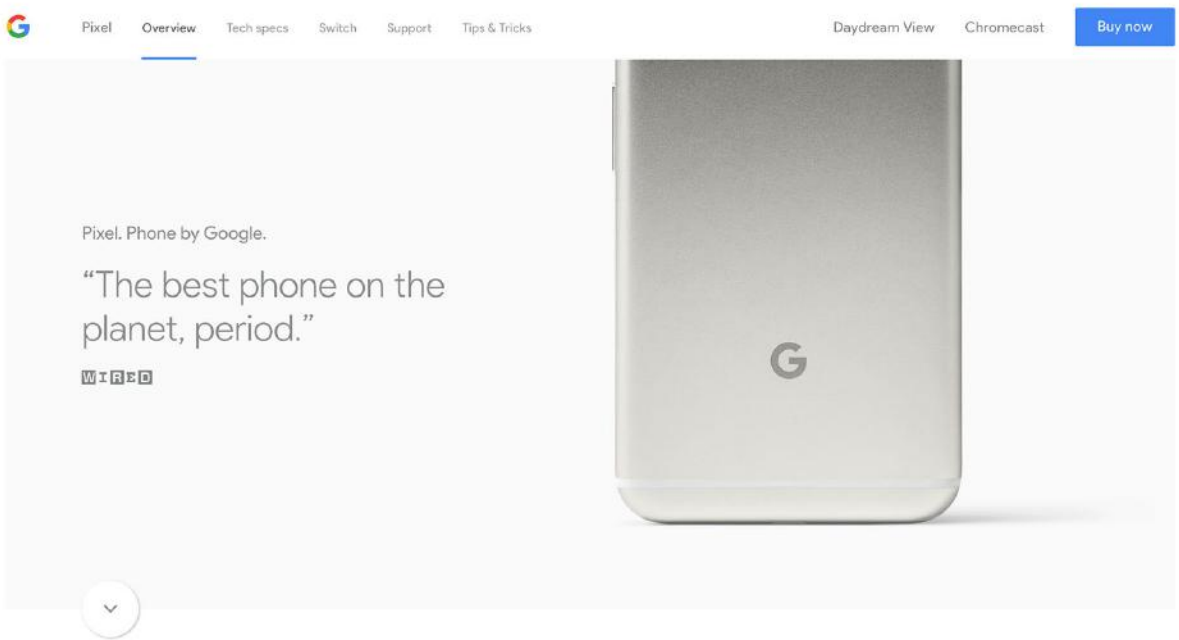
Mimetic desire theory means we want something more if we see that someone else owns it—a designer can harness this by using social proofing.

An example of the "user proof" technique is testimonials. Testimonials work because they come from people who share the user's desires and values. For instance, Foundrmag not only uses the voice of the user but also shows faces, thereby triggering the mirror neuron system.



Foundrmag

Another implementation is “expert social proof,” where your product gets a stamp of approval from a credible expert, such as an industry blogger. This can come in the form of a Twitter mention, a press quote, or even a blog post. Google uses this technique in their latest campaign for the Pixel phone.



Psychology in Design Today and Beyond

It is an exciting time for designers—we have the resources and research to underpin all our work.

Design trends are shifting to touch, voice, virtual reality (VR), augmented reality (AR), mixed reality (MR), and the Internet of Things (IoT); as we move toward these interaction technologies, people will require more intuitive ways to use their interfaces.

We will see many new design opportunities, and psychology in general will play a direct and essential role in these developments.

The next big change will be how we interact with our devices day-to-day—moving from touch to headsets that read our brain waves. This technology is already available and gives people the ability to control their devices directly through thought.

As we get closer to people's actual thoughts, psychology in design—and the designer's moral responsibility—will play an important and ever greater role.

Apart from using analytics, user research, empathy maps and other approaches to help make design decisions and iterate on the product, designers should consider rounding out their “bag of tricks” with the four persuasive design methods mentioned.

Persuasive design isn’t evil. It’s a tool, and like any tool it can be misused. However, with the right research and thoughtful application, it can be a valuable addition to any designer’s toolkit.

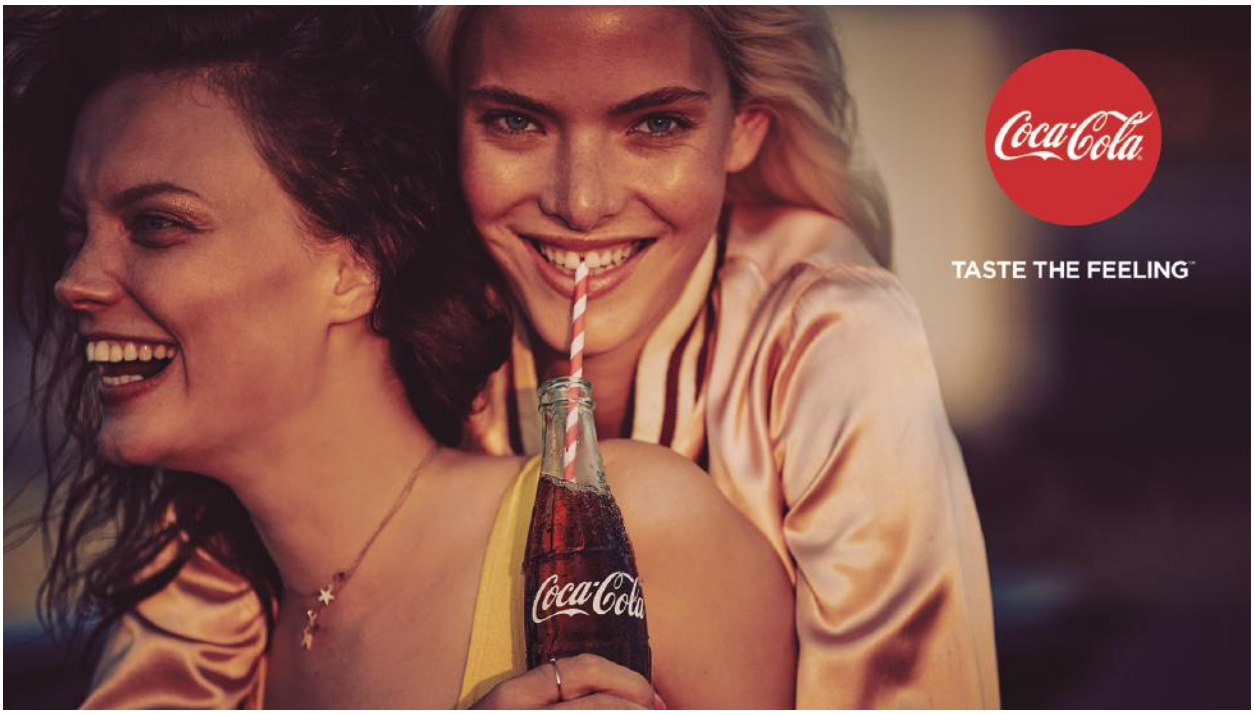
CHAPTER 5

The Ultimate UX Hook – Anticipatory, Persuasive, and Emotional Design in UX

THE NEXT FRONTIER IN UX DESIGN WILL EMBRACE THE SCIENCE OF ADVERTISING AND PERSUASION TO FORGE STRONGER HUMAN CONNECTIONS THAT DRIVE POSITIVE, ENGAGING PRODUCT EXPERIENCES.

Does advertising really work? US companies spend around $170 billion on advertising each year, so they seem to think it does. Successful advertising uses a variety of tricks to influence the consumer. They evoke positive memories and emotions that affect our behavior over time and prompt us to buy something at a later date.

Advertising needs to reach the subconscious levels of the brain in order for it to work. People don't like to think that they're easily influenced by advertising, but they are. For example, advertising uses happy faces and attractive models looking at or using a product or service. Because we have what behavioral scientists call mirror neurons, the prompt is to mimic the expression of the person in the ad and to imagine our better, more successful selves using the same product.

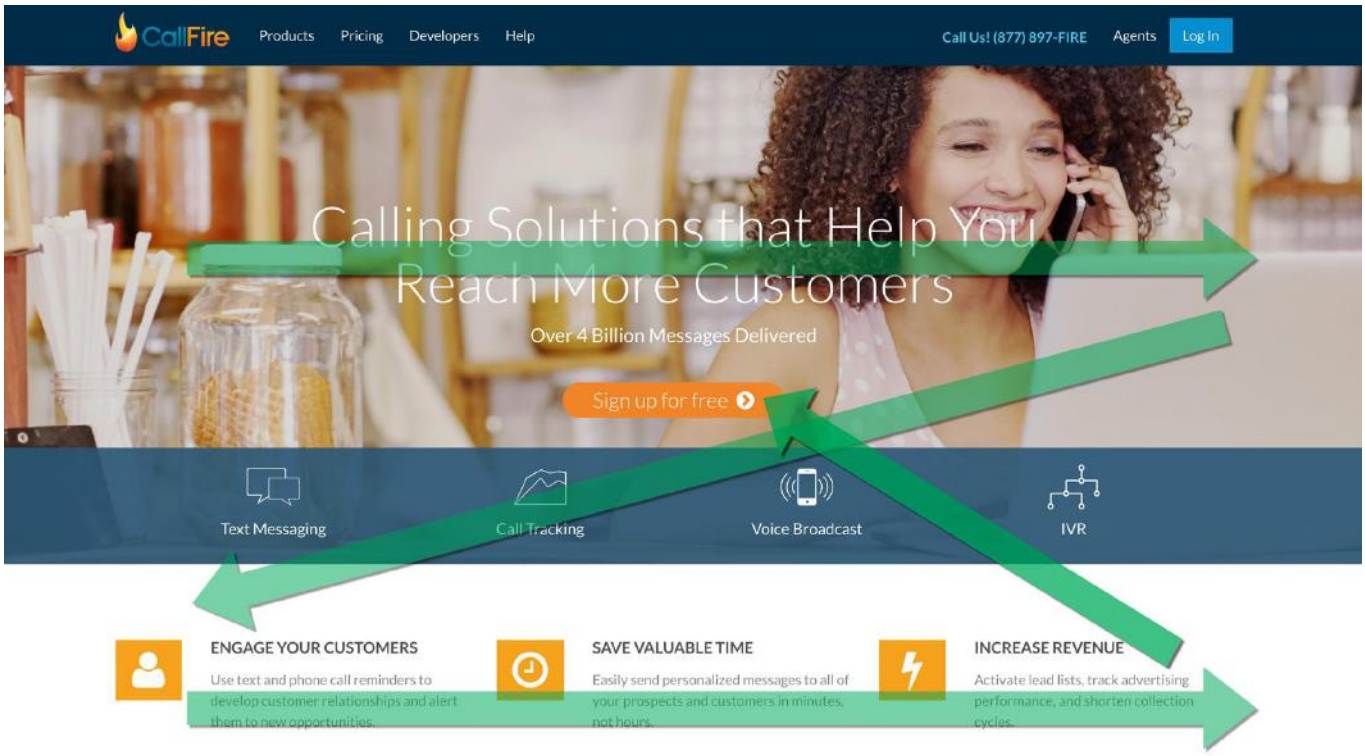


Can designers apply some of the tried-and-true techniques in the science of advertising to product design? Can designers take advantage of some of these behavior influencers to optimize user experiences? Can they leverage anticipatory, emotional, and persuasive design in order to nudge users in a certain direction and provide better UX? Absolutely!

One Size Does Not Fit All

There are many visual tricks designers can employ to lead a user to a certain call to action. Landing page designers are masters of these secrets.

Visual design is very effective, but visual design alone can't always persuade and nudge users down a certain path. Big orange call-to-action buttons, visual leading tricks such as F-patterns and Z-patterns, and others can't always do the trick entirely.



Callfire uses a Z-pattern and a prominent orange CTA button to optimize user engagement.

In this digital age, people desire a deeper connection with brands and products. The combination of anticipatory, emotional, and persuasive design is the next level and goes more deeply to create more customized, personal, and meaningful experiences.

What Is Anticipatory Design?

IT'S OUTPUT, WITHOUT MUCH NEED FOR INPUT.

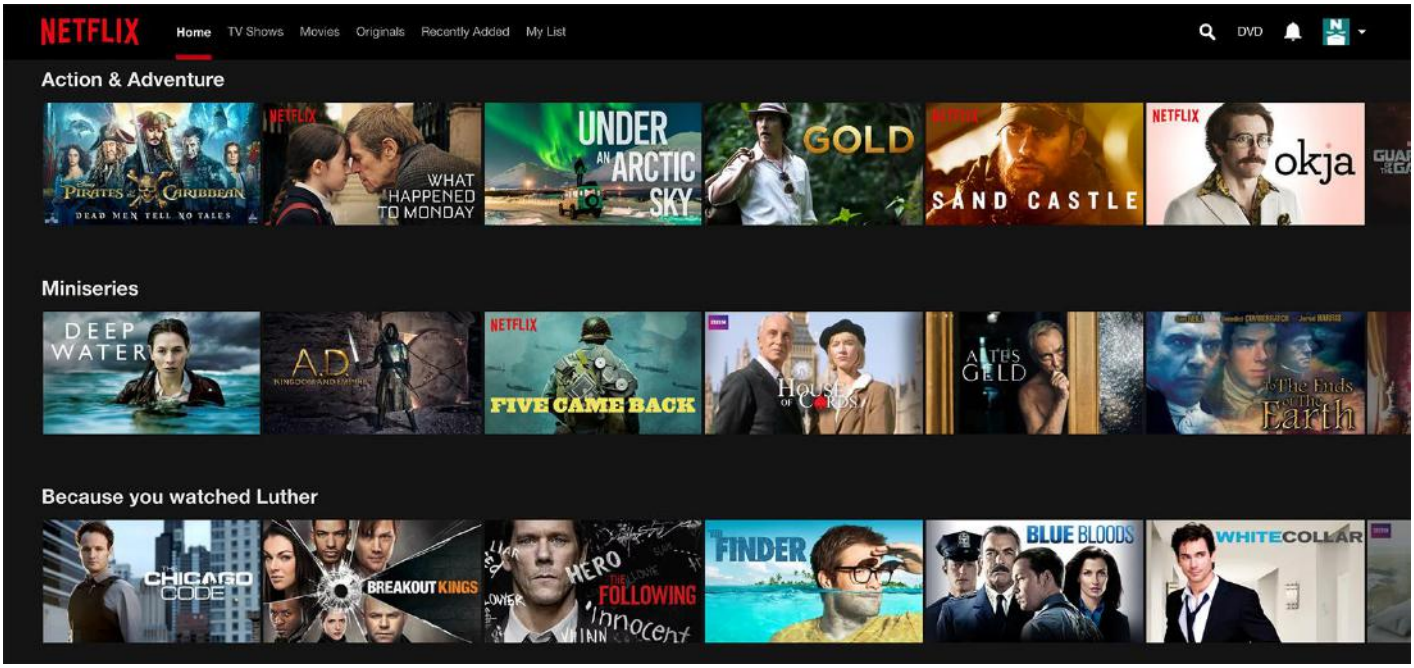
89% of successful businesses acknowledge it is critical to their growth that they anticipate customer needs and provide assistive experiences along the customer journey (Source: Econsultancy/Google).

The application of anticipatory design is more important than ever if digital businesses are to simplify and facilitate the course of our digital lives. Anticipatory design envisions a world where our digital devices are designed with interaction methods optimized for humans, not

Huge's Aaron Shapiro defines anticipatory design as a method of simplifying processes by responding to needs one step ahead of the user's decisions, i.e., responding to as-yet unexpressed user needs.

Anticipatory design in its finest form goes way beyond personalization. It presents a clean, intuitive interface that adjusts itself exactly the way you expect it too.

For example, Netflix's movie display is personalization; it is based on taste preferences and history. Anticipatory design would take the design deeper. With intelligent algorithms (AI and machine learning), the interface would actually change *in the moment* as you're interacting with the app.

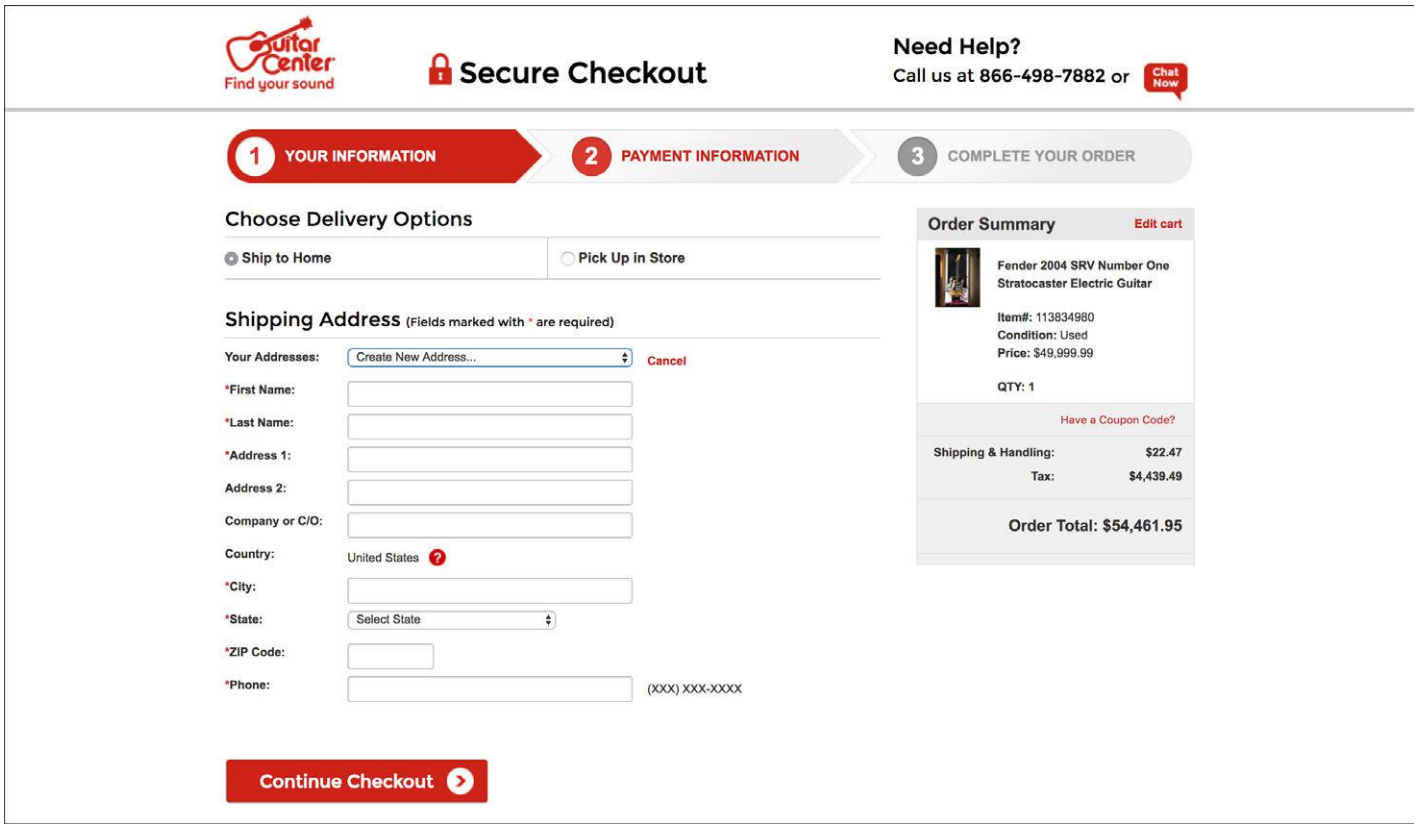


Netflix is an example of personalization—but not anticipatory design.

Anticipatory design would mean—in the case of online shopping, for example—that the system would know you and personalize the experience to the degree that it would feel as if you are being guided by an invisible hand. Data-driven, it would actually change the UI on the fly, eliminate any extraneous information, preselect default options for you, and only present the most relevant content in a timely, minimalist, and seemingly magical manner.

This is not too difficult to accomplish today.

Let's say someone is shopping for an expensive guitar on guitarcenter.com. At checkout, the site would automatically show "Pick Up in Store" as the default choice because it knows by observing the past behavior of other users who bought expensive guitars that they would prefer to pick up their purchase at the nearest brick-and-mortar store.



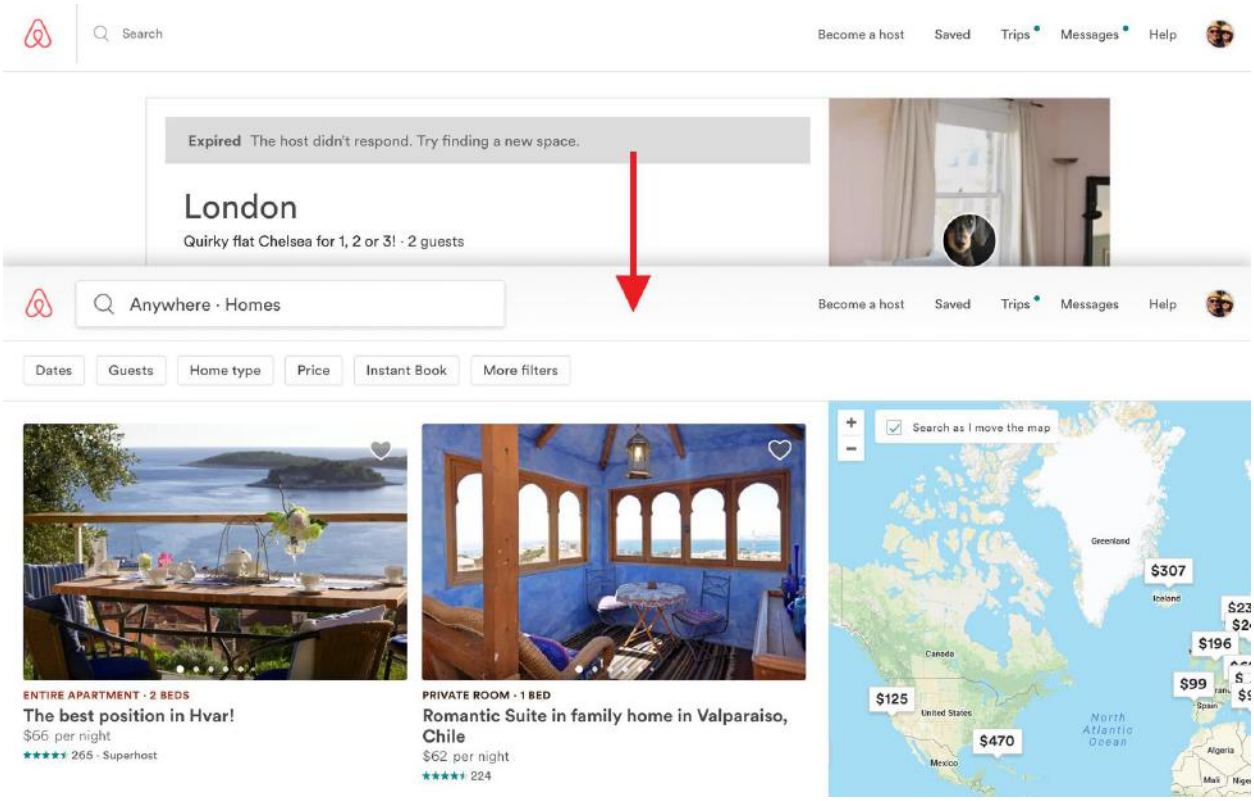
For an expensive guitar, "Pick Up in Store" should be preselected based on past customer behavior.

Interfaces of the Future

When AI becomes more pervasive, a higher degree of data-driven personalization will enable a higher level of anticipatory design.

Based on all kinds of user authorized behavioral tracking—purchase histories, preferences, etc., the system would recognize you and, with a high degree of certainty, predict what your next choice might be. Behind all of this lies the promise of AI and machine learning not only employing predictive algorithms but actually deducing individual interaction needs based on the observation of millions of people's behavior.

Unbelievably, Airbnb fails at even the most basic form of anticipatory design. When a host doesn't respond to a booking request, Airbnb presents users with a link, "The host didn't respond. Try finding a new space" (below). The reasonable expectation is that Airbnb would pre-fill the same location and dates and present users with the results. Seems like plain old common sense, right? Instead, users are taken back to the homepage and have to start their search from scratch.



In contrast, one of the more ambitious evolutions of Google's search software, the Google Now app, is more effective.

The idea is simple—predict what you may want, or need, to know before you know you need or want it, and serve it up in an easy-to-read, card-based format. It's anticipating a user's need for in-the-moment, contextual information.

Google's data mining capabilities are second to none. It not only knows who you are but also has access to billions of other real-time data points it can mine from its vast data vault. It can display cards with personalized, location-aware information, such as calendar events, local weather, news, flights, boarding passes, hotels, restaurants, and more.

If Google doesn't think you need something at the moment, it won't be displayed. It's the embodiment of anticipatory design and will only get better with time.

How Do We Bring Anticipatory Design into Play?

Until they have incredibly sophisticated predictive algorithms, fully developed AI constantly monitoring millions of data points, and machine learning, businesses can mine existing data for anticipatory design opportunities, thereby reducing potential pain points and barriers.

Deeper user research will also tell us a lot—contextual observation, perhaps, or ethnographic studies—where we could observe what users are inclined to do in their flow from moment to moment. We could map these user journeys step by step and design the interaction accordingly.

The ideal outcome of applying such data mining and personalization, coupled with user-centered design methods, would create fluid and seamless anticipatory experiences that would please customers and generate loyalty by having the right things appear at the right time for them to interact with… as if by magic.

Emotional Design

The reward for companies that connect with customers' emotions in a positive way can be substantial. So how can we identify the powerful motivators that lead to making those connections? Emotional design can influence those motivators, paving the way in business to competitive advantage and growth.

As humans, we establish some sort of an emotional connection with all of the products we use. Therefore, we expect some level of human-like feedback when we interact with them. Even though we know the products aren't human and can't feel emotion, we want to believe that they can.

How Is Emotion Connected to Design?

Everything around us has been designed in some way, and all design ultimately produces an emotion because of expectations. When those expectations are met, we experience a positive emotion—when not met, a negative one. We experience an emotional reaction to our environment moment by moment: a like or a dislike, elation, joy, frustration. We *feel* it. It's personal.

There is an old adage in the UX professionals' world: "Interaction with any product produces an experience, whether it had UX design or not." Take industrial design, for example, and you will find its products elicited an emotion from their audience, whether good or bad, pleasing or frustrating.

Interaction → Response → Emotion

Let's reflect on the definition of UX design: "UX design considers how a user interacts with and **responds** to an interface, service, or product." That response can be defined as an **emotion**. User experience designers not only strive to design usable, functional products but to also generate a certain positive emotional effect while people are using that product, often called by the grossly overused term, "customer delight."

When we talk about emotional design, we're talking about how a product's design or an interaction **affects the user**. In the case of digital design, it's a moment-by-moment effect on the user—"in the flow"—and operates on three levels in the brain: visceral, behavioral, and reflective. There is a delay between these levels: first, it's visceral; second, it's behavioral, and lastly; reflective. The experience actually moves from the limbic system ("visceral" brain) to the neocortex (analytical) to the mid-brain (emotion). But more about this later.

An example of classic **visceral design**: James Bond's Aston Martin—sleek, elegant, exciting.

Aesthetics and Perceived Usability

Braun, a very successful design and manufacturing company founded nearly 100 years ago in Germany, was famous for its minimalist, elegant designs that captivated people. They were functional but also simple, refined, good-looking, and consequently a joy to use.

Industrial design by Braun

Utilitarian designs that are simply functional and feature-rich do not usually please people. In this day and age, they don't measure up or satisfy customers.

> "A basic design is always functional but a great one will also say something." – Tinker Hatfield, shoe designer, Nike

Functional *and* attractive things are actually perceived by people to "work better." Products that include a pleasing aesthetic *and* anticipatory design can lead to such a degree of customer satisfaction that people will forgive minor frustrations when encountering imperfections with those products.

Does anyone remember Blackberry and Nokia? Something rings a bell, but they're pretty much history. Contrast their designs with the iPhone or Samsung's people-pleasing slick designs.

Apple and Samsung mobile phones: Smooth, slick, functional, *and* attractive—emotional design.

Emotion and the Brain

Emotions actually change the way the human brain operates. Negative experiences focus the brain on what's wrong; they narrow the thought process and make people anxious and tense. We don't feel free and "in the flow." We feel restricted and frustrated.

If a website or an app is badly designed and doesn't perform to expectations, the feeling can grow into anger. This is known as "computer rage." Our pulse rate goes up, we click away from the site, and we delete the app in frustration. This is an example of "design gone wrong" producing an extreme emotion. Good emotional design elicits pleasure and a sense of security and safety.

Even the ol' potato peeler can be designed for emotion. It's about how it looks, feels, and functions.

“Design Is How It Works” – Steve Jobs

Why is one product more successful than another? There were plenty of beige-box PCs at the time the translucent, candy-colored iMacs were released in 1998, in thirteen “flavors,” no less. The arrival of those iMacs signaled more than a renaissance for Apple; it sparked a widespread industrial design revolution.

"People are seeking out products that are not just simple to use but a joy to use." – Bruce Claxton, Professor, Design Management at Savannah College of Art and Design

Similar to the candy-colored translucent iMacs, the Fiat 500 has a cute, fun design.

From Passive to Interactive

We didn't always have "interactive relationships" with the objects and systems around us. They've been mostly "dumb," passive, one-way machines. A car was for getting us from A to B. Now we expect to talk to our car and it talks back to us.

We're interacting more with products and forming relationships with them, and that gets emotional. This interaction gives rise to anthropomorphism: the tendency to project human traits, emotions, or intentions onto non-human entities.

When people form relationships with things, there is also a potential for a negative emotion to kick in when the thing is not doing what we want. Annoyance and irritation may arise with the possibility of escalation to anger if the aggravation persists. At the other end of the scale, users feel satisfied and altogether enchanted when it puts just what they were looking for at their fingertips, and at the perfectly right moment. UX nirvana.

Positively valenced emotions are evoked by positively valenced events, objects, or situations.

How Do We Deliver Emotional Design That Gives Rise to Positive Emotions?

Customer experience strategies need to include designing for the entire human experience—which includes emotion. Designers should use the power of user research and product testing to effectively set up and gauge the emotional effect of the product on users. Designers should not only strive to eliminate frustrations, but find opportunities that bring customers delight and turn critical moments into positive emotional experiences.

Visceral → Behavioral → Reflective

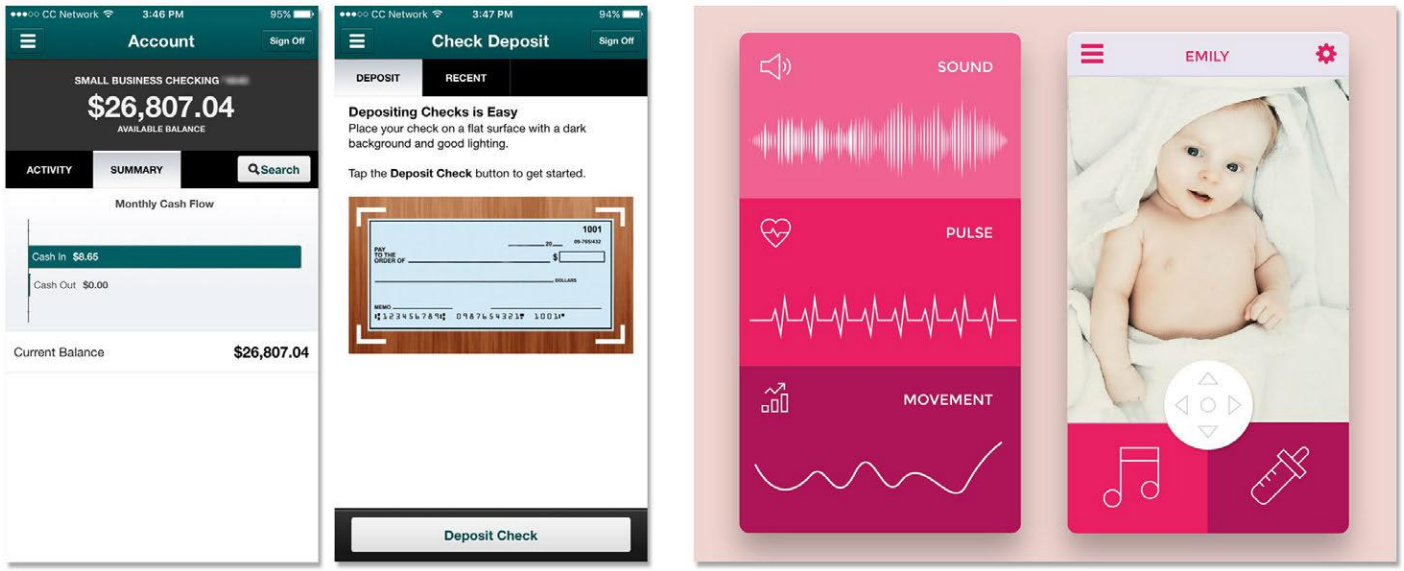
In order to create a successful product, a design needs to work extremely well on the three levels described earlier: visceral, behavioral, and reflective. (Huge nod here to Don Norman's seminal book on emotional design.)

Visceral design: "*I want it. It looks amazing, and so will I.*" This is an immediate, deep-level gut reaction to your product. As they say, "You never get a second chance at making a first impression." Visceral design also affects the perception of your product's credibility, trustworthiness, quality, appeal, and even perceived ease of use.

Visceral design: fun, exciting, fast, uncompromising, intimidating.

Behavioral design: "*I can master it. It makes me feel smart.*" It has to feel good, look good, and perform well. Behavioral design is a concept that focuses on how a structure or system, as viewed by the users, meets their needs and requirements. Good behavioral design is like a lock and key. Customers and their behavior are the lock, and the product is the key. Perfect harmony is achieved when the two work smoothly together.

Reflective design: "*It completes me. I can tell stories about it (and me).*" It's about self-image, personal satisfaction, memories, reflecting back on the experience. Beauty is a desirable feature of the products we buy. Buying and then using a product creates a sense of status in society. People ask: "Is it beautiful? Was it a pleasure to use? Did it make my life easier? How do I look using it, driving it, or wearing it?"



Functional Emotional

Reflective design: The banking app on the left is functional and sufficient, but it doesn't work well as reflective design. In contrast, the baby monitor app's design is appealing and a pleasure to use.

It may seem obvious, but if a product's design is to be emotional, people need to feel an emotional connection using that product. Big brands and their marketers make every effort to form an emotional bond between their brands and consumers, and spend millions every year to renew that connection. Similarly, designers need to strive for the same emotional connection if their products are to be successful.

Functional Beauty and Emotion

It's no longer enough to say: "We are bringing a software driven product together that will push the boundaries of technology and be functional and useful to people." As technology levels the playing field, almost anyone can bring together a team and technology to create functional and feature-rich everyday consumer products.

What is a more difficult task, however, is having a deep understanding of your customer's motivations and behavior. Translating them into effective emotional design that is elegant, beautiful, and truly unique will play a vital role in delivering an ideal customer experience.

Persuasive Design

By utilizing persuasive design, savvy designers can tap into consumers' non-conscious thinking and motivations in order to design better performing products.
The word "persuasion" is often associated with manipulation, trickery, and undue influence. However, we're talking about employing some of these techniques in an ethical manner. Persuasive design can improve user experience by making a product more engaging; the design process understands the psychological triggers and user behaviors and utilizes them for their benefit.

As an increasing number of companies use neuroscience research and theories to optimize their digital content, they have turned what used to be an art into a science in order to drive more engagement and purchasing. That science is the science of persuasion, and it is broken down into six principles. The “science” is part of the work of Dr. Robert Cialdini, a leading researcher in the field, and is a result of years of scientific research on the psychology of influence.

The Six Principles of Persuasion

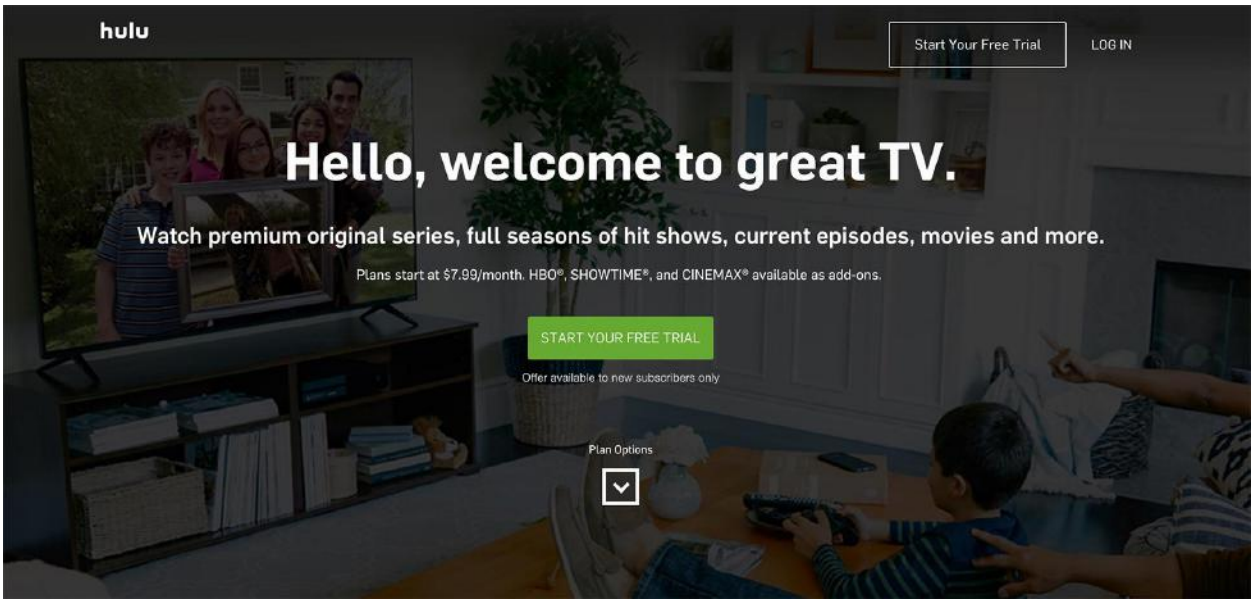
- Reciprocity
- Scarcity
- Authority
- Consistency
- Liking
- Consensus

These six principles provide psychological shortcuts in people’s increasingly overloaded lives as rules of thumb to guide their decision-making.

Reciprocity

Have you ever come across a landing page that offered something for you to download for free? How about a two-week free trial of a service? That is reciprocity in action and is designed to start you down a sales funnel.

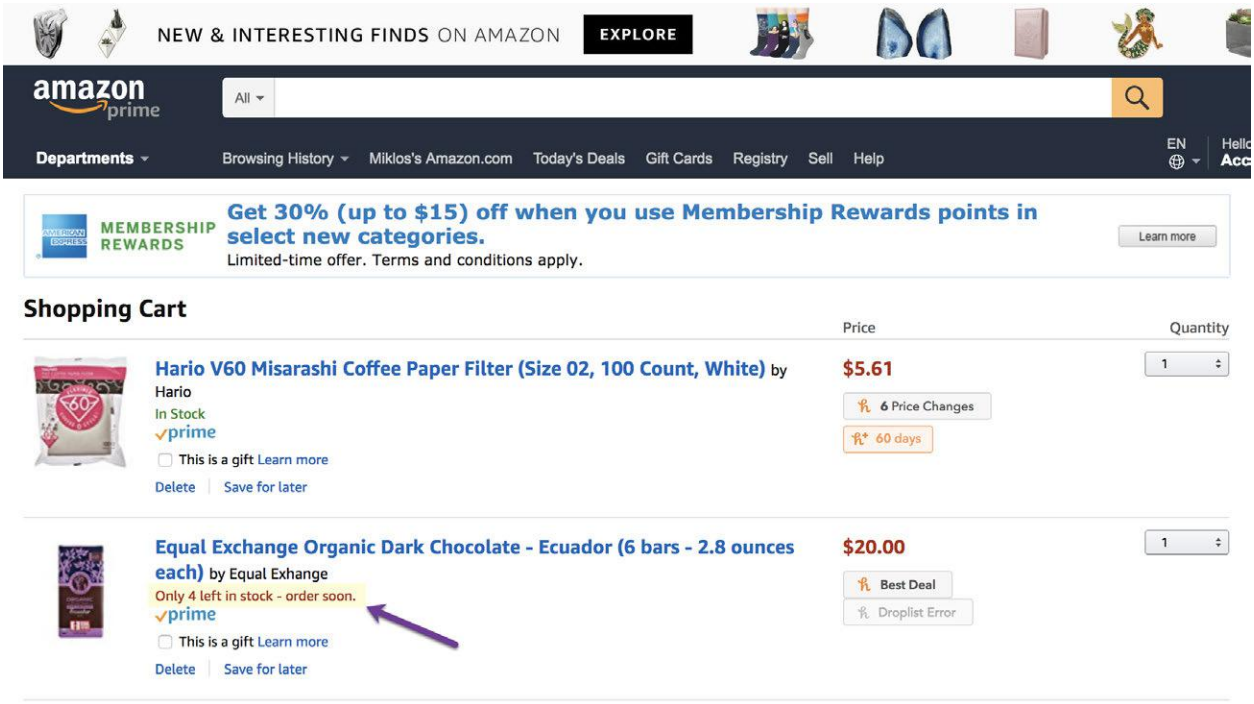
The concept is simple; if we’re given something first in the form of a behavior, gift, or service, we feel obliged to give back. Hulu, Netflix, Amazon Prime, and countless others give people a free trial of their service. On one hand, people get to try the services, but there’s another component bundled into this offer, and it’s psychological: the principle of reciprocity.



Scarcity

The concepts of scarcity and “FOMO” (fear of missing out) are closely tied. They both serve powerful psychological needs. Wikipedia defines FOMO as “a pervasive apprehension that others might be having rewarding experiences from which one is absent.” It’s the bedrock of all addictive aspects of social networking.

On one side, scarcity is tied to survival as a fundamental unconscious trigger mechanism, and on a lighter side, it’s a principle that people want more of those things they perceive as having a limited availability.

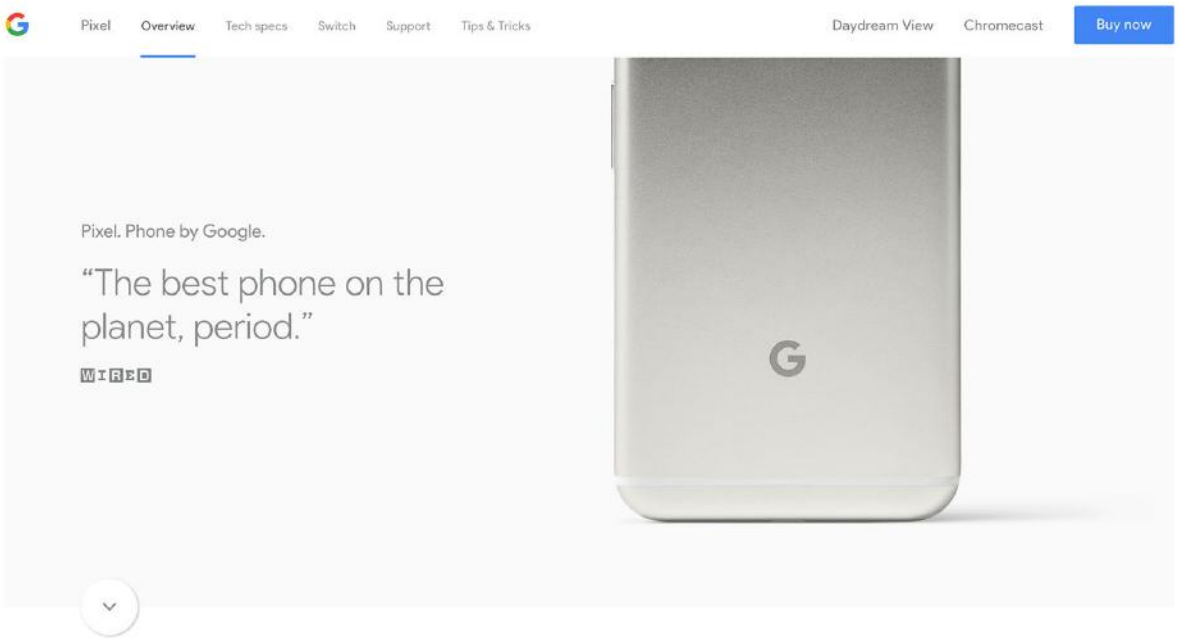


Amazon uses the principle of scarcity effectively by adding a note of urgency to a product in the cart.

Authority

People follow the lead of credible, knowledgeable experts and therefore would be more likely buy a product or service recommended by an expert reviewer. This is why a sponsored camera review, for example, would start with the sentence: “I’m a professional photographer with more than 15 years of experience.”

An article with “experts say” in the title is likely to be read a lot more than one without it because people trust experts and authority. This is why an industry expert or a celebrity gets paid a lot to endorse a product.

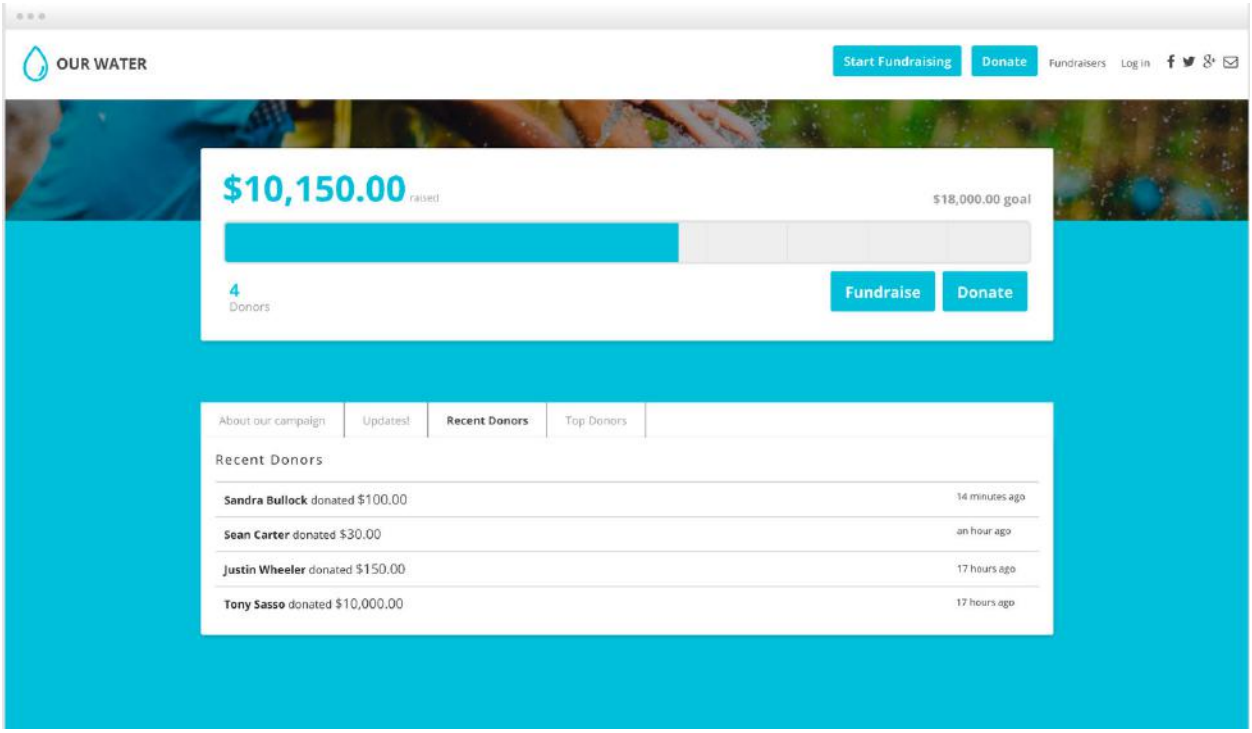


Google's Pixel phone landing page uses Wired magazine as the "authority."

Consistency

The consistency principle states that people are motivated toward cognitive consistency and will change their attitudes, beliefs, perceptions, and actions to achieve it. People like to remain consistent with things they have previously said or done.

Consistency is activated by looking for, and asking for, small initial commitments to be made. For example, once someone has donated to a charitable cause, they more often than not will be asked to donate again, sometimes in a *thank you* email very soon after their initial donation. This persuasive design method is using the principle of consistency.



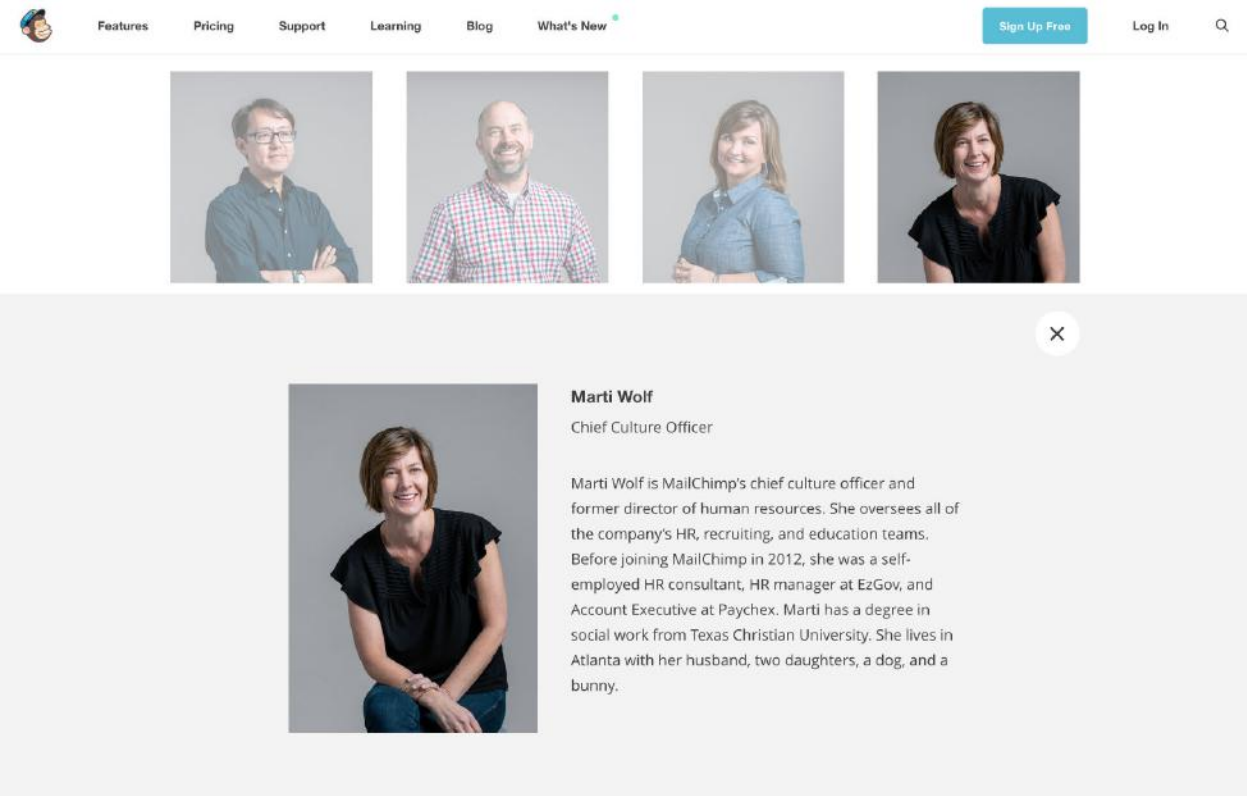
This donation form not only uses the principle of consistency—a thank you email invites the donor to donate again—but also the power of "mimetic desire" showing celebrities who donated.

Liking

One of Cialdini's major elements of persuasion is "liking." (This has nothing to do with Facebook likes.) If I find you likable, I'm more likely to do business with you. Similarity boosts liking. If we seem to be members of the same group or have commonalities, it's even easier to like you.

How do product designers work with this persuasive technique? By designing into the product a human connection and likeability. For example, an "About Us" page that shows visitors warm, friendly faces behind the product or company, or highlighting people behind a charity on their landing page.

Cialdini even suggests using the “About Us” page to become more likable by including individual information and personal interests.



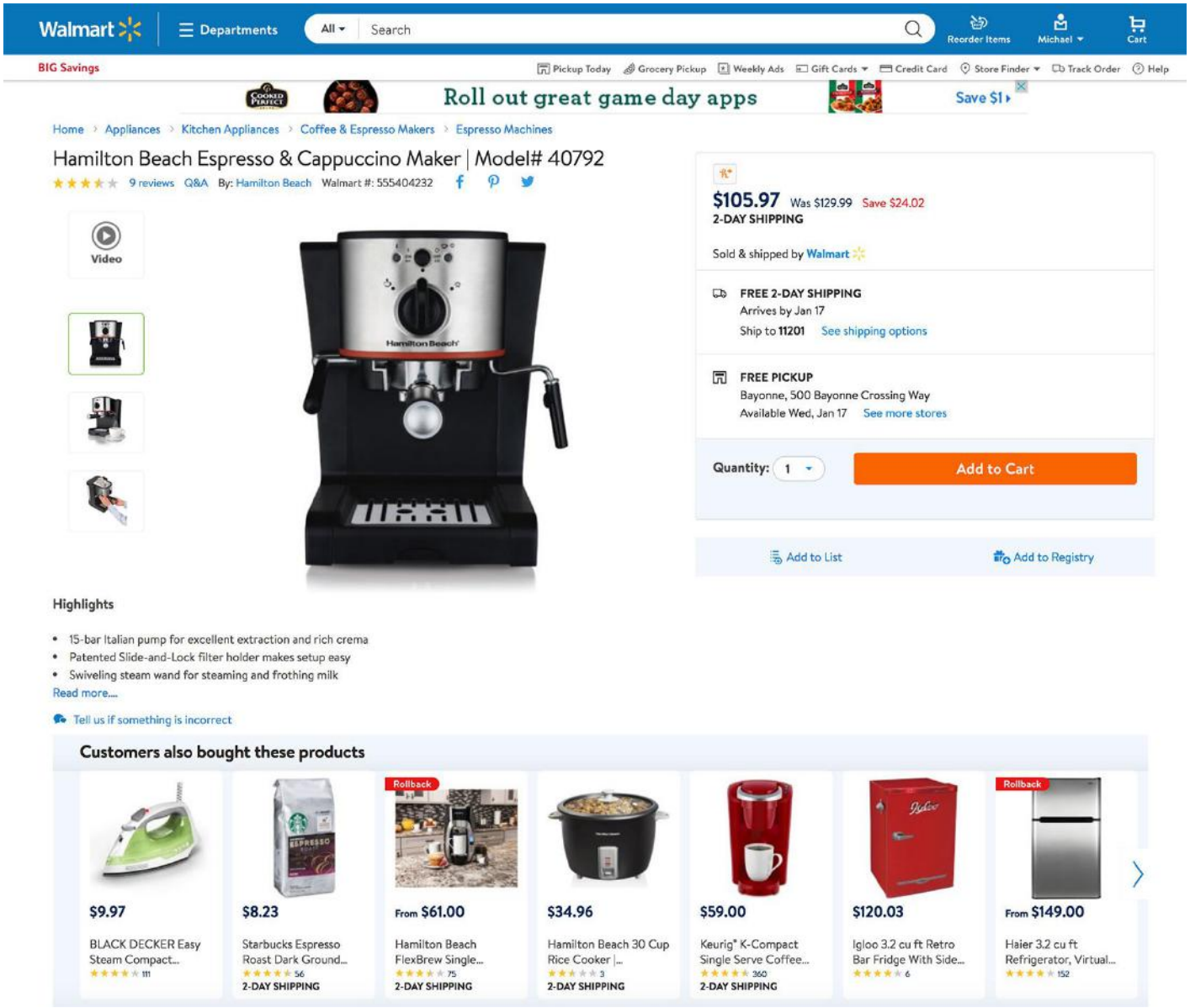
MailChimp does a great job of personifying their team and business while also sharing their story.

Consensus

Especially when they are uncertain, people will look to the actions and behaviors of others to determine their own.

For example, Walmart—like so many eCommerce retailers—persuades users to keep buying more by recommending alternative products and accessories and employing mimetic, persuasive patterns by displaying products also bought by other customers. This is “mimetic

Remember the “mirror neurons” in the science of advertising mentioned at the beginning of this article? It’s the same thing. Neuroscientists are increasingly reporting that our neural structure promotes imitation very proficiently. Walmart takes advantage of this concept.



Walmart utilizes the "consensus effect" by showing "customers also bought these products."

Designing the Ultimate UX Hook Is Within Reach

Customer experience matters more than ever in this digital age. The unrelenting quest to deliver better products and customer experiences should be a good enough reason for businesses and designers to integrate smarter technologies and psychological aspects of design into their day-to-day master plan.

Machine-learning techniques fueled by data are advancing by the day and are being tested in various applications across the digital product spectrum in order to improve user experiences. Artificial intelligence, capable of providing an optimal predictive formula in any scenario anticipating user needs, could also hold the key to optimizing these experiences.

Today, designers have evolved from “visual communicators” to architects of human behavior. We will see many new design opportunities, and the ones that employ deep data mining and consider human psychology in their designs will play a direct and essential role in this evolution.

Those elusive “magical experiences” all UX designers strive for may lie at the intersection where progress in artificial intelligence and machine learning meets the psychological aspects and behavioral impacts of design.

Going forward, every designer worth their salt ought to consider rounding out their toolbox with insights from data mining along with anticipatory, emotional, and persuasive design to create useful, efficient, desirable, and long-lasting products.

CHAPTER 6

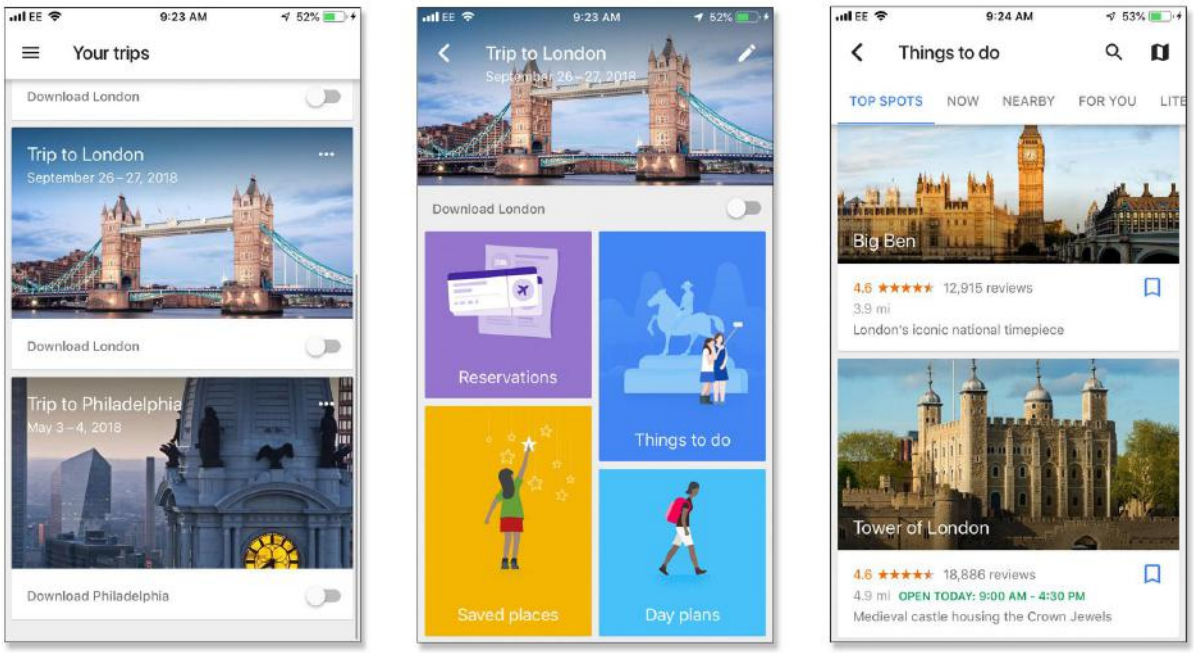
Personalized UX and the Power of Design and Emotion

In an age of increasing digitalization, where user data mining is the new gold rush, there is a movement emerging for wider personalization in design.

Large corporations like Google and Facebook have been able to collect millions of data points on all (un)registered users. This data is used to present close and distant friendships, agenda appointments, and can even predict if and when an employee will quit.

Through this data, (enterprise) companies can provide useful advice on upcoming appointments (e.g. automatically add planned flights from Google Mail to Google Calendar) and give people the latest news on the topics they prefer. These personalizations, when done right, create the sense that these products have the best interests of the user in mind —whether that's true or not.

However, is this preferred? What is the overall emotional impact these personalized changes have on people's lives? And what responsibility do these companies and their UX designers have in how personalization impacts design and emotion?



The Google Trips app personalizes trip recommendations after automatically pulling in travel data from Gmail.

Personalization in Design

When taking a closer look at the aspect of personalization in design, multiple patterns that are currently used in products and services are recognizable.

Take the example of Google Inbox. To provide the user with intelligent data based on the emails that he or she receives (e.g. tagging messages as personal, social, or newsletter), Google needs to implement user personalization to determine the right data to show to the right person.

Another example is how Facebook and LinkedIn provide a list of new contacts based on your existing contact list and your personal or professional preferences (e.g. your favorite movies or your current and past job roles).

An important aspect here is how to present this to the user in a visual way that doesn't create negative emotions (e.g. distrust or fear). Companies achieve this by presenting personalized data as a secondary visual element, and by using copy that focuses on guiding the user toward efficiently completing their conscious or unconscious goals. Of course, this is generally all done with the overarching goal of collecting more data to build out a digital fingerprint for every user, thereby increasing the business value of the company.

A first look at how personalized design will grow over the coming years shows that it will expand in the direction of IoT (internet of things) hardware. Google Nest learns a user's preferred temperature, and Amazon's Alexa uses natural language processing (NLP) to better recognize voice commands and minimize mistakes.

Amazon's Echo devices are designed to blend into a variety of environments.

In both examples, personalized design isn't limited to a digital screen, but carries over into the audio and visual aspects of physical, IoT objects.

In the example of Alexa, that among others can play a user's preferred music or advise them on new recipes, it's important that the digital voice appeals to the user. This is why companies like Amazon and Apple spend so many resources on making sure that the voice experience of their smart speakers is as pleasing as possible for the user.

Simultaneously, the physical object should have a pleasant feel to it and should be able to blend into a variety of environments, from homes to offices. This is why many smart speaker manufacturers create their products in a range of colors and materials (e.g. Sonos, Bower & Wilkins, JBL).

Design and Emotion

In 2003, Don Norman coined the term *Emotional Design* in his book of the same title. While early editions of the book focused largely on the importance of emotion in physical objects, later editions focused more on the importance of emotional impact in digital designs.

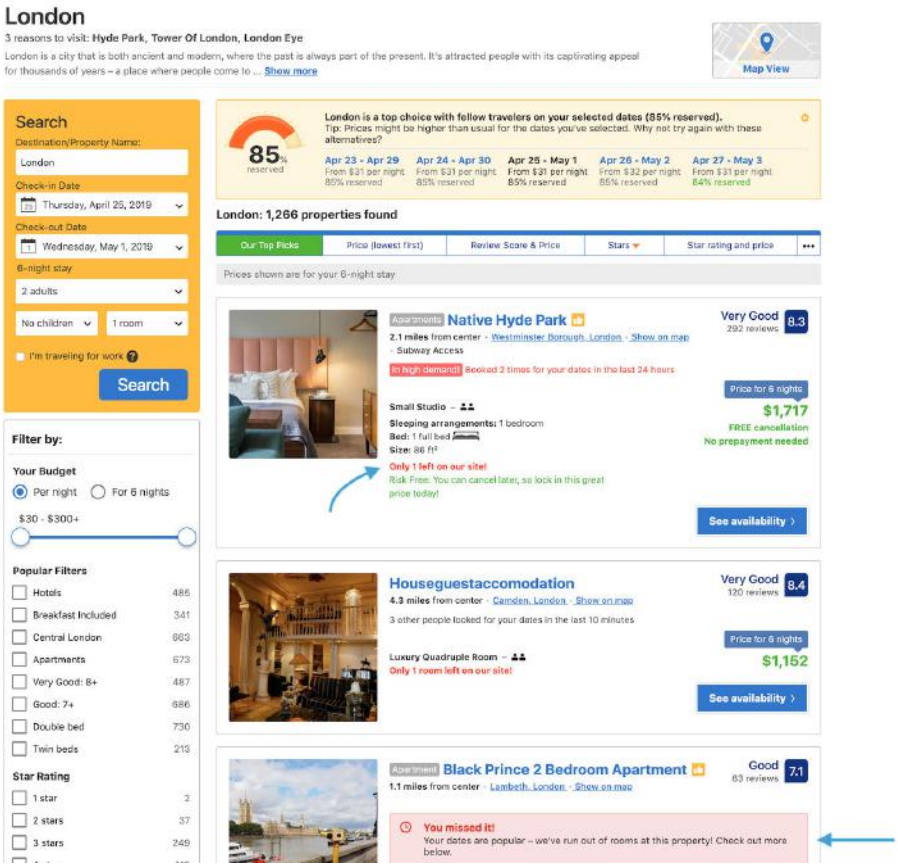
Norman believes that good emotional design works on three levels: visceral, behavioral, and reflective. In short, the visceral level concerns itself with the aesthetic or attractiveness of an object. The behavioral level considers the function and usability of the product. And the reflective level takes into account prestige and value; this is often influenced by the branding of a product.

Norman strongly emphasizes that technology should bring experiences of pleasure and joy to the user. It's important to be aware of this, as it sets the stage for implementing emotional design into new products and services.

To implement emotional design into a digital product, designers need to be aware of the effect certain design decisions have on a user's short and long term emotions. Especially when focused on branding, where affinity, loyalty, and advocacy play a considerable role in the success of a business.

To achieve this level of emotional bonding with an audience, designers can take Don Norman's three principles, and add to that the decision a business needs to make in terms of how they want to be perceived.

While some companies use positive emotional triggers, others use specific negative UX and psychological triggers to generate the user actions they want. Booking.com, for example, does this through a variety of patterns. They create a sense of urgency in users by showing when there are a limited number of rooms left, which also creates anxiety over missing out on a great deal: "I have to book now as there is only one room left."



Booking.com uses real-time personalization and negative emotional triggers to encourage people to make purchases quickly.

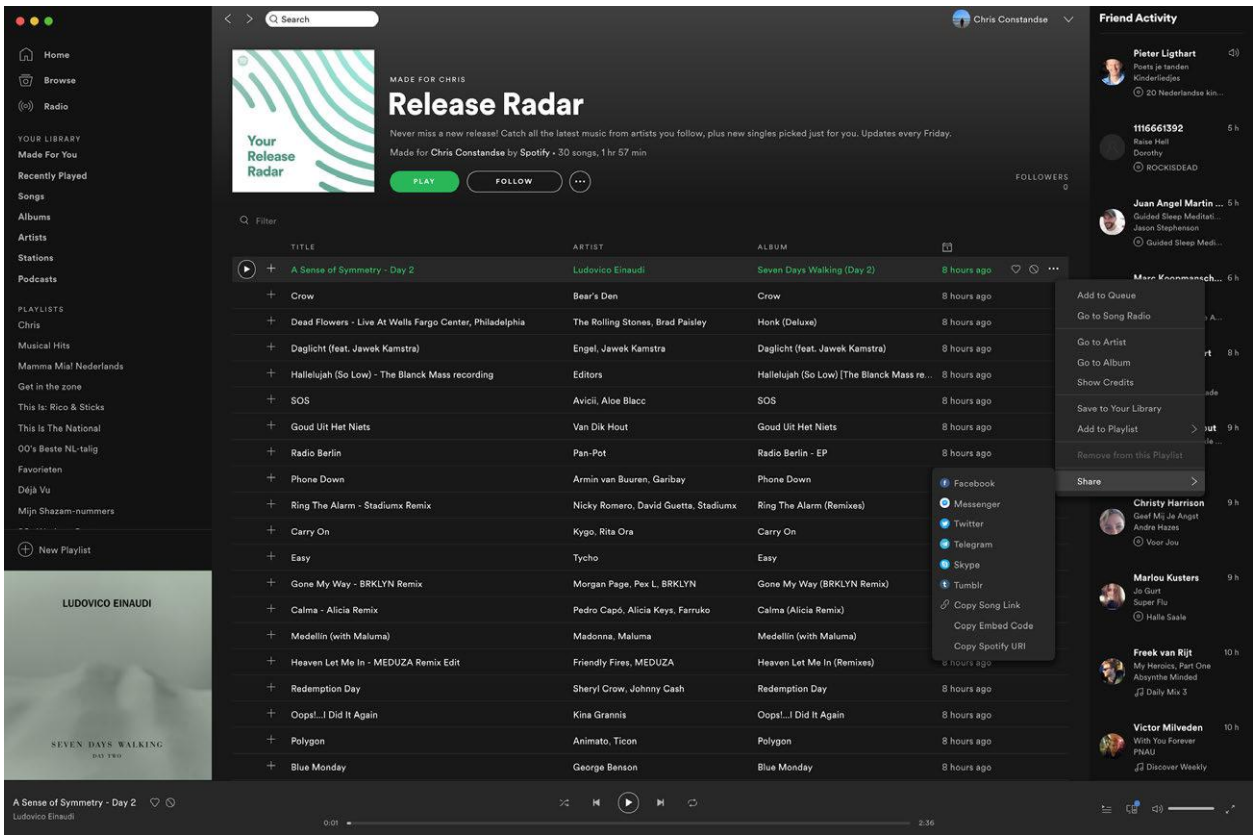
They also create a sense of scarcity by showing hotels that are already sold out, complete with a timer showing how long ago the last room was booked. That can also create feelings of sadness for the user, as well as adding to their sense of urgency: “The room I wanted is already booked. I better hurry up and book my next choice before that’s gone, too.”

Negative emotional triggers aren’t necessarily a bad thing. There are plenty of things people do in life because they want to avoid negative repercussions if they don’t do them (e.g., people pay their utility bills because not paying them results in services being shut off, not because it makes them feel good directly). But if an organization wants to remain on the right side of business ethics, they need to use negative emotional triggers responsibly.

While negative psychological triggers can be very effective, so can positive emotional triggers that aim to enrich a user’s life instead of scaring or stressing them into action.

Combining a user experience based on actual research with an aesthetically appealing user interface lays a solid basis for using positive emotional triggers. Understanding the target audience is vital to creating triggers that will effectively elicit the desired action.

Spotify is an excellent example of a company that uses positive emotional triggers in their product. Their mobile and web content personalization features can delight users, especially their custom mixes based on a user’s recently listened-to tracks. They’re also sensitive to user needs on things like push notifications, which are only sent when something that a user would be really interested in happens, like when one of their favorite artists drops a new album.



Spotify personalizes the entire experience for their users, while also making it easy for people to share the content they love.

Spotify's interface is also appealing to a large swath of potential users since their audience potentially includes anyone who listens to music—which is most people. It's easy to use and makes things like sharing via social media intuitive and simple.

Understanding core motivations, both positive and negative, is vital to creating any kind of emotional trigger in UX design. User research can reveal to designers what their specific audience desires as well as what they choose to avoid. Using this information, designers can then decide whether negative or positive triggers will be most useful in getting people to the actions desired. Creating personas and archetypes can also be useful in this process.

Combining Personalization with Emotional Design

Combining the personal and the emotional is where the real magic happens. Personalization in design is all about visually communicating a message that is aimed directly at the individual user. Emotional design focuses on the overall emotional impact design choices have, including those that involve personalization.

To create a personalized product that appeals emotionally, it is important for designers to be aware of the how and why before they begin communicating a particular message to the user. The reasoning here is that in order to establish a positive emotional relationship with a user, a business needs to create a sense of trust with their customers.

Before embarking on a new design project, designers should make sure they know the answers to these questions:

- What is the purpose of this product?
- What are the goals of this product?
- How should this product be perceived by its users?
- What kind of emotional reaction should it achieve?

Once these questions have been answered, a designer can then decide what types of personalization would serve users in context, and figure out how to create an optimal user experience. This can be done in many ways:

- Push notifications should never be intrusive, but should instead enrich UX. Messages should be personalized according to the user's needs and preferences.

- When assisting the user with specific automated actions (e.g. adding a restaurant reservation directly to their calendar), provide them with the option to accept or decline this type of automation (give the user control).

- When urgent action is required, due to something like a breach of sensitive information (e.g. password data has been stolen), make the user aware of the situation through authoritative copy and a personalized message (a confident sense of urgency should be created).

Equally important are Norman's visceral, behavioral, and reflective levels. When creating a personalized design that should appeal to the emotional side of the user, consideration of these principles is vital.

One thing designers should note is that personalization can carry privacy concerns for many users. It's important for a brand to build a level of trust that's appropriate for the level of personalization being offered. Without trust, personalization can feel like an invasion of privacy and turn users off, which creates a negative emotional reaction.

Conclusion

When looking to the near future, we can expect that personalization in design will play a more significant role in our digital landscape. With the goal of creating more extensive user profiles and, as a logical consequence, an increase in revenue, the analysis and mining of user data will become more extensive and valuable.

However, what's especially interesting to keep an eye on is how companies will handle the emotional effects triggered by their apps and services. With more options to choose from than ever, customers now have the ability to make their decisions based on feelings. For example, Apple Music, Spotify, and Deezer all have huge music libraries with millions of songs, for approximately the same monthly subscription cost ($10). How enterprises large and small will implement emotional triggers to create products people love to use, that simultaneously trigger positive emotions will be vital to their success in the 21st century.

In the future, design will continue to play a huge role in the emotional perception of products, services, and brands. It will only be a matter of time until the role of an "emotional engagement designer" will become a separate specialty aside from the user experience designer. Their entire job will be to create a design that will appeal to the exact user group being targeted, and create a delightful experience before, during, and after their use.

> "Good design is making something intelligible and memorable. Great design is making something memorable and meaningful." — Dieter Rams

CHAPTER 7

Emotional Branding for Sustainable Product Design

Product design is a creative discipline that challenges designers to build an aesthetic, functional, and marketable product. As the discipline matures alongside rapid technological innovation, product, brand, and user experience designers are finding new ways to connect emotionally with their users and customers, consequently creating opportunities for more sustained engagement. What is emotional branding? How does the brand or product bring meaning to the users' lives?

Creating emotional brand connections to your target market can translate into conversions and sales as well as online and offline interactions. Great emotional design that connects with the user on multiple levels is a huge part of this process.

There is more to effective brand design than choosing a logo or a brand color based on design trends and best practices. Successful brands use branding techniques that don't just get attention—they sustain interest and loyalty.

How do designers create emotional branding that really sticks with users?

The Emotional Levels of Brand Design

In the business world, the term unique value proposition is a clear statement that communicates to potential customers how a product or service can fulfill a specific function more effectively than anything else in its market niche.

Instead of focusing on just the unique value proposition, designers should familiarize themselves with the concept of the **emotional value proposition**. The difference between the two is that the latter is based on narratives or personality while the former often focuses primarily on functionality. Emotional value comes from storytelling that drives the brand image.

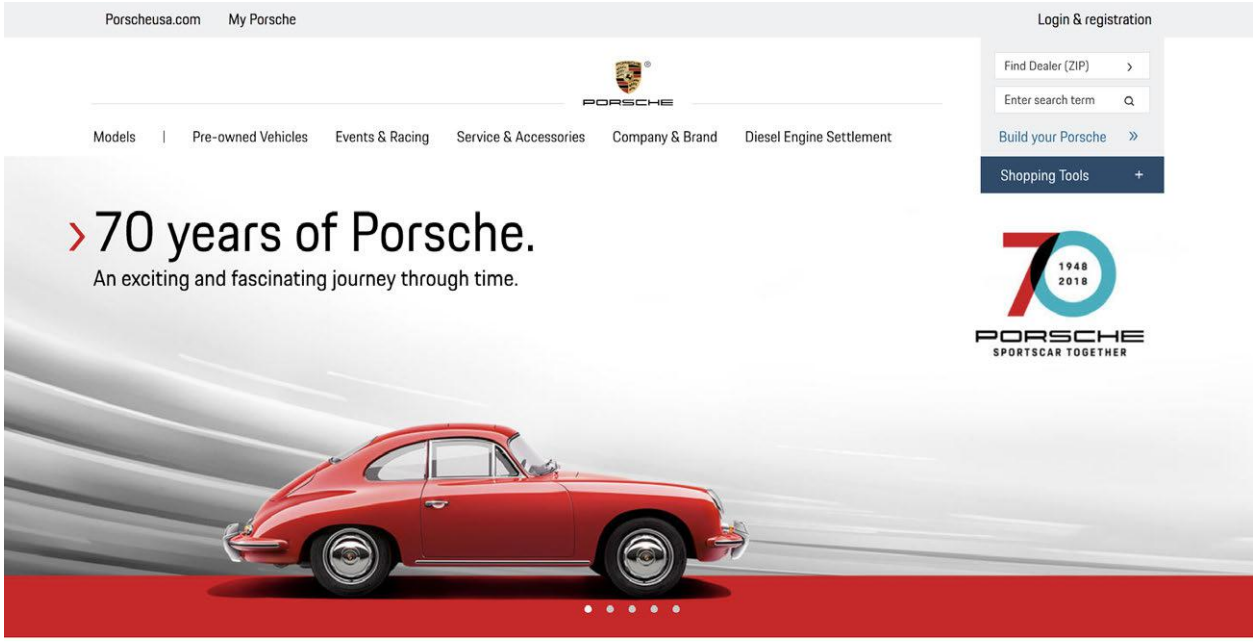
Author of several seminal UX design books Donald Norman offers a simple breakdown of a concept he describes as the three fundamental levels of processing in the brain—how human beings process and react to stimuli. Understanding these three levels of human processing is integral to human-centered product design.

The Visceral

The first emotional level is visceral—usually outside of our conscious control and directly related to our physical senses. The visceral is an automatic, "prewired" level of emotion. It comes first (before the other two levels), and it's immediate.

When experiencing visceral emotions, humans make rapid judgments that are largely biologically determined. The need to quickly categorize experiences as good or bad, safe or dangerous is dominated by our reptilian, or primal, brain.

In emotional design, UI designers consider how the user interface influences the user's emotional response at a **visceral level**. Too many competing elements on a website can induce panic, whereas a clean, clutter-free interface will promote a reflexive calm in the user. Whatever visceral emotion the designer is trying to evoke should inform the "first impression" of the UI.



Porsche creates a visceral feeling of calm and control with its first impression.

Ling's Cars overloads the user with sight and sound, bravely risking a visceral panic in order to set a playful, irreverent mood.

Compare the intended effect on one's visceral response in emotional branding examples like the Porsche homepage to a website like Ling's Cars above. These initial, visceral reactions shape our immediate experience of a product or brand and cue us into the designer's intent. Successful emotional branding strategy takes this into account.

Behavioral

The behavioral emotional level mostly involves higher functioning cognitive processing within the mind. The behavioral is the interaction between your product or service and the consumer over time. This level occurs as the user moves through the cognitive process of planning, expecting, and learning within your product, similar to how the design world quantifies usability.

How seamlessly is the consumer interacting with the brand or product? How does the experience measure up to the five principle qualities of usability: learnability, efficiency, memorability, error-handling, and satisfaction? By crafting a product experience that is not only usable but culminates in the user's satisfaction when completing their task, UX and branding designers are creating a positive behavioral response.

Every aspect of the customer journey contributes to the emotional experience of users.

Look at the brand and product experience across the entire customer journey from the user perspective. Consider whether the emotional journey for a user fosters a behavioral pattern of enjoyment and repeat use. When users begin to associate a brand and its products with an emotional response of trust, conversion and retention rates are improved as brand loyalty strengthens.

Reflective

The third emotional level is reflective—it comes down to how users receive and digest the central message. The reflective level refers back to the user's behavioral experience and visceral reaction to the user interface, and it adds meaning to the interaction. The reflective stage is when the user makes a connection between the experience and their own sense of self.

“This is the highest level of emotional design,” according to Norman’s Three Levels of Emotional Design, “representing the conscious thought layer, where we consciously approach a design; weighing up its pros and cons, judging it according to our more nuanced and rational side, and extracting information to determine what it means to us as an individual.”

How can the power of branding design elements provoke multi-faceted emotion within users?

The meaning assigned to an experience will be contingent on a range of variables, including demographic factors, the user's culture, past experiences, and the context in which they find themselves when interacting with a given product or emotional advertisements.

The reflective state is the most conscious of the three levels of emotion, observing and judging the impact of both the visceral and behavioral levels, and assigning a dimension of value. The functionality of the product or service in question isn't quite as important as the emotional impact it has on users.

It's about self-image, personal satisfaction, memories, and reflecting back on the experience. Successful brand design pays special attention to this level of experience because one bad experience has a negative, long-lasting effect on the brand.

Successful brands create an emotional impact for their users through careful design.

Addressing Cognitive Levels in Product Design

In order to build emotional ties with a brand and its customers, the designer needs to know their market and establish empathy. Understanding the beliefs, values, and priorities of the target user demographics is vital for a brand's emotional design strategy and durability.

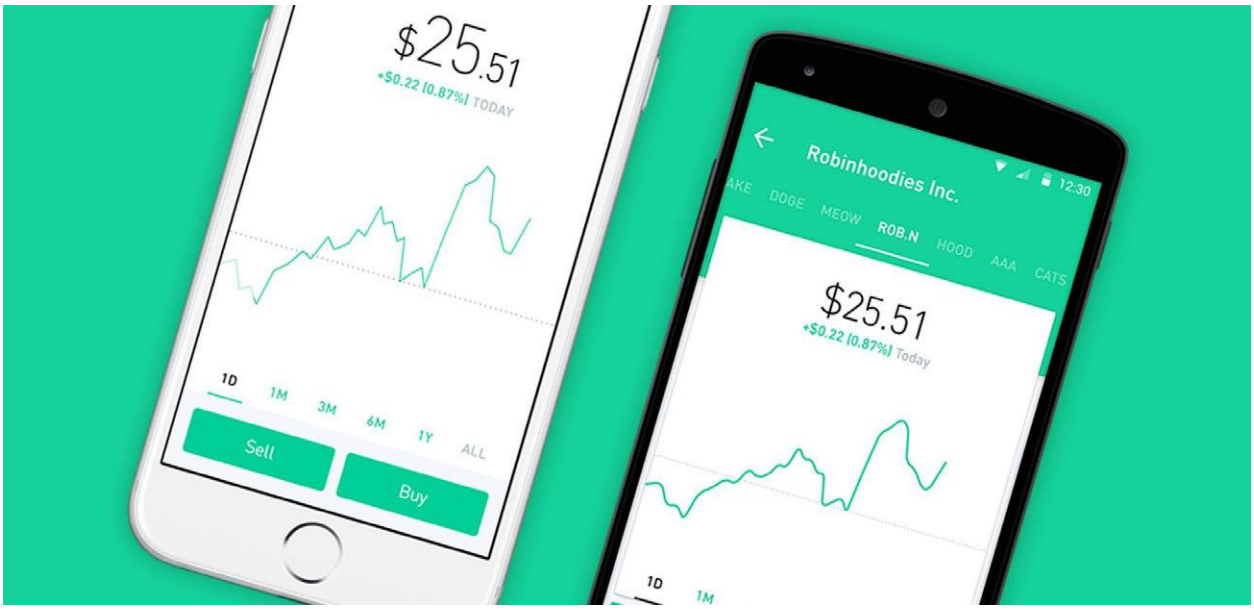
Identify Your Market, and Be Specific

Target market selection is a very important decision for all product companies. Identifying the target market starts by looking at the problem the product is trying to solve and how it fits into the life and habits of the target user.

It is imperative to tailor not only the product design process but also the emotional marketing and sales efforts in order to reach the specific segment of the population that is most likely to feel a resonance with the brand.

Good emotional branding strategy relies on understanding what makes your target users unique.

An example of a highly successful mobile app carefully designed around its target audience is the stock trading app Robinhood. The brokerage app is laser-focused on attracting a specific audience of millennials who are likely to be new to investing and trading. Robinhood targets those who are at the right age to begin investing, but for whom the market may be intimidating and off-putting.



The Robinhood app uses emotional design to make its target users feel calmer and more confident in otherwise intimidating industry. (image via Policy Genius)

The mobile-only app attracts and retains these users by presenting simplified data and clear, intuitive functionality in a clean, friendly interface that eases users into trading in a way that fits into their daily lives. Robinhood's product design solutions and emotional marketing strategies are making it a remarkable success and setting it up to compete with well-known institutions.

Empathy is central to their success. By learning how their target audience looked at existing solutions, and by empathizing with users' feelings of being intimidated when using traditional broker solutions, Robinhood geared their product design and brand positioning to fill potential customers' specific needs.

Don’t Create User Stories; Listen to Them

After identifying your target market, listen to them. Successful brands have a clear sense of what kind of users they are attracting and engaging. While making some assumptions about a target audience is a natural starting point while developing a product, emotional design requires real data found through user research.

Qualitative user research is a method focused on understanding user behaviors and the motives behind them. User interviews, focus groups, and user testing are a great source of data for building emotional empathy with target users, and revealing where they experience frustration as well as moments of emotional satisfaction.

Emotional branding techniques require engaging with and listening to target users to understand their unique needs, concerns, and pain points.

Renata Tesch, a qualitative researcher, outlines three major approaches to qualitative research to apply to product or brand design.

Ethnography

The ethnographic approach, in regards to qualitative research, is largely based on the understanding of culture and its influences on a potential customer's or user's behavior. Earlier in the history of interactive product design, designers would assume concepts of culture around ethnicity and geographic location.

As more research deepens empathy in the design community, the concept of culture has become richer, taking into account diverse cultural groups, urban and rural lifestyles, cross-cultural communication, sexuality, and much more. This makes targeting a specific audience even more important.

Understanding users in their specific context and how their environment affects their behavior is key to emotional strategies of design.

Design researchers will often conduct ethnographic research in the field, building data points of understanding through direct observation. Qualitative field data will then be synthesized with quantitative demographic data to inform emotional design decisions.

Phenomenology

Phenomenology is the focus on the individual and their understanding of the world. This research method focuses on the individual's subjective experience and personal interpretation of the world as well as how technology changes common social dynamics.

One great example where better phenomenology research may have benefitted product design was with the initial release of Google Glass. While the product was intended as a consumer product for continuous, everyday use, wearers were met by others around them with suspicion and discomfort. The device ultimately failed to achieve widespread success because its very use caused a rift between how users felt about themselves and their interactions in the social world.

Design to build tools that improve the way people feel about themselves and their place in the world.

Emotional branding should be designed with triggers connected to frequent scenarios in life and their associated emotions. Successful brands work to understand how their products make users feel and improve the way they interact with the world. Phenomenological research helps designers understand a collective ideology of a specific market through individuals.

Emotional Branding Strategies

Create a Personality

A brand personality can be defined as a set of human characteristics associated with a brand. To illustrate, GoPro personifies itself as an adventurous, sporty, young, and creative brand through its product design, ads, and social media.

Brands that are resonating emotionally with millennials, who are coming into huge buying power, are faring better than older brands that aren't meeting that audience's demand for more meaning. Consumers can easily relate to a brand if they can project their identity onto the values of the product.

Successful brands have relatable personality that connects with potential users.

People begin to build personas of brands based on the employees, the CEO, brand endorsements, and perceived shared values.

Brand personalities are further reinforced by brand name, logo, advertising and price points. A luxe brand personality like Coach is formed through a respect for its high-fashion New York origins and its higher pricing; a brand like Herschel crafts a more down-to-earth, hipper face with its choice of materials and more economical pricing. Both companies are known for their bags, but each has a very different customer and emotional branding strategy.

Coach tells its brand history through its products and emotional marketing. (image via Coach, Inc.)

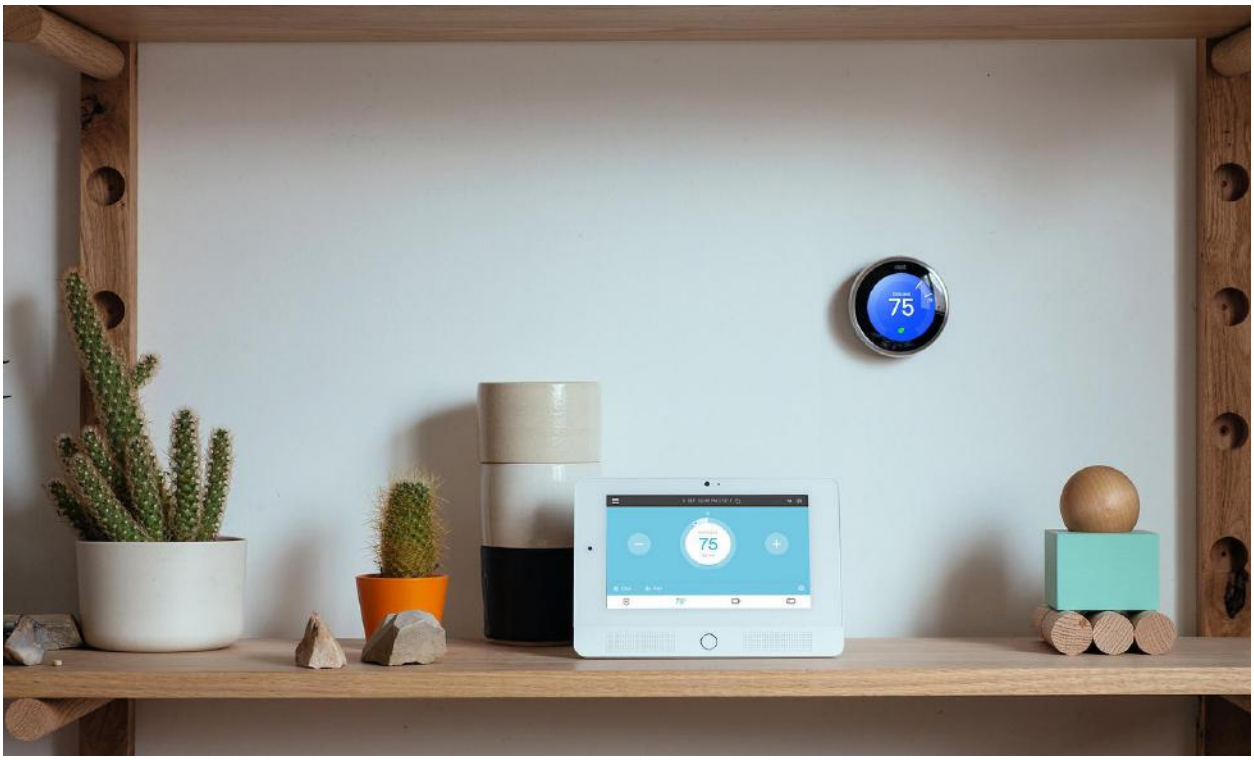
Herschel's marketing strategies give it a hipper, younger vibe, (image via Herschel co.)

There is more to emotional branding strategies than a great logo and a set of brand colors. The following are key qualities to keep in mind when developing a brand personality and emotional marketing that appeals to the right customers.

Attributes

These are distinctive features that concisely characterize the product or brand name. The feature can be intrinsic, relating to product performance, features, and the unique abilities of a product.

For example, the line of home monitoring products offered by Nest relates directly to its promise of helping users keep an eye on their homes. The name works with the basic device features to give users an emotional sense of trust and protection.



Nest's name and product features work together to create a sense of security at home.

In contrast, the attribute can be extrinsic and relate to the personality or history of your brand or product. Converse has a brand personality that is largely attributed to its users—brand loyalists whose support has helped take a relatively cheap basketball sneaker and turn it into an icon of effortless cool and artistic culture.

The Converse brand personality evolved through its fans to embody the image it has today. (image via Spin magazine)

User Value

The benefits outline the individual value the consumer has attached to a product's attributes. For example, the iPhone is known and loved for its easy-to-use interface, which for many users is its primary appeal. There are many less expensive smartphones on the market, but the iPhone's loyal users find other features that provide additional value.

The iPhone creates value for its users by being known for its ease of use, allowing a wider audience of all ages to participate.

How does its usability create value for the user and relate to their sense of self? A user who does not struggle to use their device is more confident. The device's inherent usability means that everyone in the family is more likely to adopt its use, regardless of their technical skills. That adds value to the user because of the way they feel about their own abilities as well as helping them maintain connections with their family.

Experiences

One often-overlooked aspect of emotional branding is the experience a user has when interacting with the brand. An experience of a brand can occur at purchase, contemplation of purchase, and during consumption. These experiences shape a brand's narrative—if the purchasing experience is difficult, your product and brand identity could be interpreted less positively.

For many years, Apple created a strong brand identity through its stores. Based on highly researched customer behavior patterns, Apple designed its stores to be carefully curated experiences in order to create a positive emotional journey for their customers.

Optimize for the Emotional Journey

Identifying a customer's desire to buy a product or engage with a service begins with understanding what value can be provided to the customer—anticipating their needs and behaviors to provoke positive emotions. Understanding the value a product offers goes beyond a set of "features." A feature is a default characteristic of your product or service, but it does not tell the whole story.

Establish authentic empathy with target users. Understand their unique needs and how to connect with them by creating a journey through emotional branding techniques and sustainable product design—use insights from research to connect to consumer values that translate into consumer preferences. Understanding the "why" behind your target market's behavior will help you build a strong emotional brand.

CHAPTER 8

Design Talks: Emotionally Intelligent Design with Pamela Pavliscak

Welcome to the first discussion in our brand new Design Talks series dedicated to sharing the insights of thought leaders and top designers from around the world. We interview experts who work with design in different contexts, with different purposes, and through different approaches. We hope to provide intellectual and creative inspiration to all of our readers.

Our first guest is Pamela Pavliscak, a “futurist researcher” who studies our conflicted emotional relationship with technology.

Her work is part deep dive research, part data science. As a researcher, she creates experiments that challenge us to see technology—and ourselves—in new ways. Whether documenting new internet emotions or asking people to confront their digital alter egos, Pamela’s work is aimed at understanding how technology can help us be human.

Pamela advises designers, developers, and decision-makers from organizations like IKEA, Virgin, KLM, and Capital One on how to create technologies with feeling. She is faculty at Pratt Institute in NYC, is leading the development of a next-generation research platform, SoundingBox, has spoken at SXSW and TEDx, and has written a book called Emotionally Intelligent Design.

Hello Pamela, thank you for joining us on the Toptal Design Blog.

Could you tell us... what *is* emotionally intelligent design?

I think we've paid a lot of attention to the functional layer of technology. Emotionally intelligent design is privileging the emotional layer of design. Not simply evoking emotion, but also looking at emotion in all its forms as we experience technology.

From your research on happiness in technology, what do you see as the leading causes of unhappiness, such as addictions, etc.?

What keeps coming up over and over again is that people feel like certain emotions are amplified when they're using technology. We all tend to talk about our experience with technology in terms of attention. "It's taking up too much time." "It's distracting me." "It's pulling me away from other things that I might want to be doing." But when you move past that layer, underneath are the negative emotions that we feel. And a lot of times, they aren't subtle. They can be really strong, negative emotions, like anger, frustration or depression.

I think the mental health toll that technology is taking is a real one, and something we need to begin paying more attention to as designers.

How does living with technology affect our well being? Can we use technology to make us happier? “Happiness” being a relative term, of course...

When we talk about happiness in terms of design, we often focus on that peak moment—a little pop of delight or a moment of joy. Those are great when they happen, but as humans, we have these natural adaptations that cause us to get used to things—then they’re no longer exciting, or enjoyable, or simply as delightful anymore. It’s called hedonic adaptation.

But we certainly have big picture moments of happiness with technology—those moments that strike awe into us. It happens at the connection between people, or at the immensity of an experience. It’s those moments of communion where everyone feels like they’re together.

An example is the solar eclipse of 2017 when communities were formed that brought together really positive feelings. So the potential is certainly there, and it goes beyond, say, making things convenient, efficient, or productive.

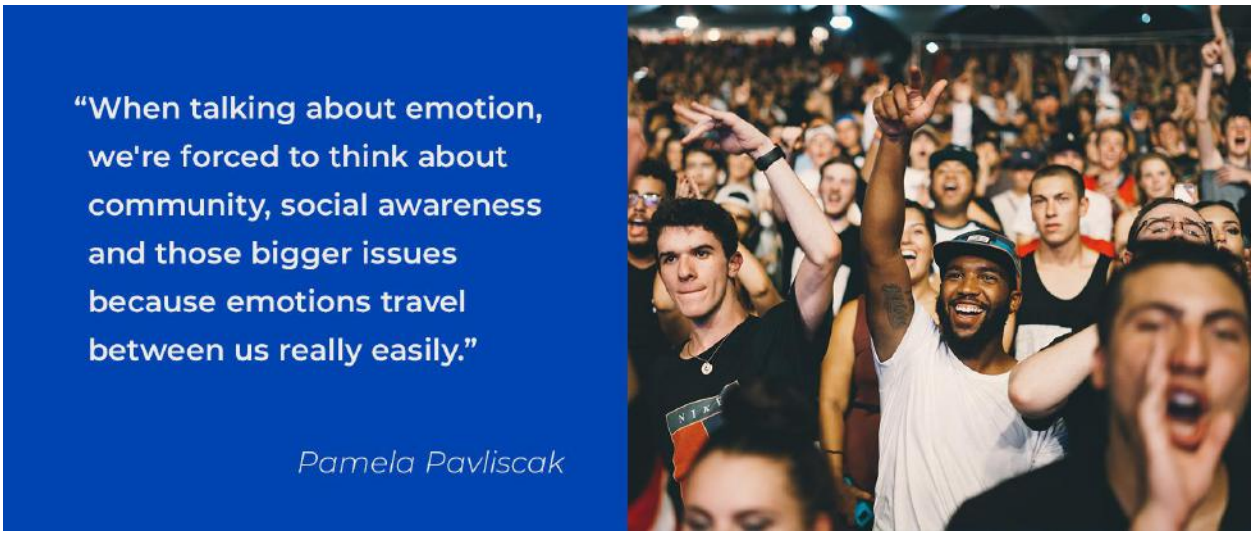
So it’s really about connecting and sharing joyful moments with people where we could use technology to make us happier?

Yes, I think there’s a sense of communion and community—that we’re in it together. Creativity is where I see a lot of happiness for people. And I mean everyday creativity, like remixing other people’s ideas, putting together an awesome playlist, or making something to share with somebody else.

That’s where a lot of that happiness comes in, and where we could try to cultivate more of it. It’s more authentic participation than just going through the motions and getting stuff done.

So technology... More like an enabler?

Exactly.



Could you talk about the distinction between emotionally intelligent design and design that could be called "manipulative" under the banner of "persuasive design"?

That's a really interesting question because what we've seen in the past few years is the popularity of persuasive design, and a lot of it operates on emotion, right?

You start with a negative emotion. Sometimes it's not that bad of a negative emotion—maybe it's not anger, maybe it's just boredom. Then you solve that emotion or make it better for a little while, but you use variable rewards.

You never know when it's going to get better, and that's what keeps people coming back. What happens is people start feeling terrible because they don't want to be caught in that loop. Maybe it's not even "manipulation" at that point. Maybe it's simply feeling awful, feeling out of control, or feeling like your emotions are getting away from you.

Then I think there's a second level of manipulation where you're actually trying to evoke or support emotions that people aren't likely to want to feel or to cultivate on their own, or that only benefit the business, rather than the person. This is a tension we have throughout product design—finding that balance.

How do we balance what the business is trying to do—their goals—with these human goals? The tension is even more pronounced when we're talking about emotion because it's so primal and personal. It's something we really need to take a lot of caution and care with.

In other words, tread carefully. It's a very fine line, and it's about balancing business needs without coming across as manipulative, or "creepy."

Yes, and I think it's almost bigger than that. We've always thought about individual needs because we talk about "the user." But that's usually singular. When talking about emotion, we're forced to think about community, social awareness, and broader issues because emotions travel between us really easily. My emotion can affect somebody else's, and then, given the network effect of a lot of our platforms and applications, that emotion can grow exponentially. In a way, it leads us to really think about the effects of technology on people as *human beings*.

> **"One really simple thing we can all do is start paying attention to emotion when we're doing our research."**
>
> *Pamela Pavliscak*

Switching gears a little bit—for today's designers, what are some of the practical tips for applying emotional design in order to better connect with people?

One model that I'm shifting to in my work is looking at the design of any technology, not as an experience, but more as a relationship. What do I mean by that? I mean that a relationship evolves gradually over time, and continues to grow and build. I think that's something we're not used to doing, and part of it is simply the limitations that we have. We're very constrained in our design process by time, by budget, or by teams that are distributed. It's hard, but I think we need to be looking at it as we do a relationship.

In a relationship, we have a period where we're just starting to notice each other or getting to know each other, and then there's building trust, and then there's developing shared interests or shared ways of being together. Until, finally, there's more of a give and take, and an integration where it becomes part of your life.

There are a lot of models of relationships in psychology and sociology—I think that's something we can draw on. When we do that, it shifts the mental model we have of design in a lot of ways.

Wow. Interesting.

You didn't know you were in a relationship with your technology, did you?

No. It's something to keep in mind! Are there research methods and/or approaches that designers could employ while designing for emotion?

I think so. A lot of times, when I'm meeting with a team or giving a talk, people come up to me afterward and say, "You know how often we talk about emotion in our design process?" I'll say, "Well, I'm not sure." They say, "Never. We never do."

One really simple thing we can all do is to start paying attention to emotion when we're doing our research—whether that means developing a tool to capture it, or using some of the tools that are already on the market that can help you capture some of the emotional signals. I think that can be a first step in making that conscious effort.

Once we get out of research and into the design process I tend to have people go back to those relationship ideas and model a design on milestones in a relationship: big moments, moments of change, or big shifts that might occur over time. Think about how a product is getting to know you. It might be through a time when something goes wrong and then it recovers, or it might be a time when you are going through a big change and the technology is there.

Help people think in metaphors. What's the analogy for that relationship? Is it a coach? Is it a trainer? Is it a doctor? Or is it something that grows out of one role and into another? They're all techniques that we can easily use within our current range in design thinking techniques to build a more emotionally intelligent experience.

As designers then, how do we convince clients that emotionally intelligent design and connecting with people positively is important?

I think this is an easy one in a lot of ways, though it doesn't seem like it would be because you think to yourself—the horror of talking to clients about emotions—really uncomfortable, right?

But I guarantee that designers already have a whole unit in their organization that is charged with thinking about emotion—marketing. The marketing and branding folks are already speaking this language. They're already speaking about the brand personality and about the emotion the product conveys. We're just taking it to the next step as product designers.

That's a lot of responsibility on the shoulders of designers.

Well, it won't be designers alone. I see more teams developing past designers. They'll collaborate with psychologists, behavioral economists, sociologists, and all kinds of other specialties so that we're sure it's not falling too much onto one role.

As designers, are we going to have to collaborate with a wider, broader team in the future?

Absolutely. I see this already coming as a trend in the design community and with a lot of bigger organizations. I think most of that movement is happening in the discussion around ethics, and the call for humanists being involved in the field. We have to put a stronger emphasis on psychology, sociology, and cultural studies because those are all huge components of our emotional experience in everyday life. Technology is all tangled up with that now. There's no way around it.

Last, but not least, what is the one thing you'd like designers to know about designing products that help us live "happily" with technology?

We have a real responsibility to our communities because design silently scripts our lives and everything we do. You just need to look around you right now, wherever you are, and you'll see that everything's been designed. And the way it's designed not only affects our outer world, but it affects our inner world—how we conceptualize things, how we think, and how we feel.

More about Pamela Pavliscak:

Twitter: https://twitter.com/paminthelab

LinkedIn: https://www.linkedin.com/in/pamelapavliscak

Web: https://soundingbox.com

Her Book: Emotionally Intelligent Design: Rethinking How We Create Products

Tedx Talk: How to Live Happily in the Digital Age

CHAPTER 9

Influence with Design – A Guide to Color and Emotions

Seeing red. Feeling blue. Green with envy.

Popular idioms show that people have long associated colors with the emotions they evoke. People associate red with anger (or lust), blue with depression, and since at least Shakespeare's day, green with jealousy. (He referenced the color green in relation to jealousy at least three times in his works.)

UX designers can utilize color to great effect in order to influence people's emotions as well as their actual behavior. Color has the single greatest effect on how people perceive designs, yet too many designers do not spend the necessary time and effort to properly create color palettes for their projects.

That results in a lot of wasted effort and color palettes that aren't necessarily influencing a desirable response to a product. And in a worst case scenario, colors can turn people off even when everything else about a design is optimized.

Are There Positive and Negative Colors?

There's a common idea out there that some colors are inherently positive or negative. Most often, warm colors (yellow, red, and orange) are considered to be positive, while cool colors (blue, green, and purple) are considered to be negative.

Still, those associations aren't hard and fast rules. For example, red (a warm color), can evoke feelings of rage or danger (consider Holly Golightly's monologue about the "mean reds" in *Breakfast at Tiffany's*), while green (a cool color) can evoke feelings of growth and new beginnings. This is one reason why color psychology and color theory is so complex. There are seemingly endless factors that can influence how a color is perceived and how it affects human behavior and thought.

Cultural differences can also have a profound effect on color meanings. In many western cultures, white is largely associated with purity and peace, and yet in some Asian countries, white is associated with death and mourning.

It's vital that designers pay attention to how the colors in their palettes work in harmony with each other, and how each color influences the others around it.

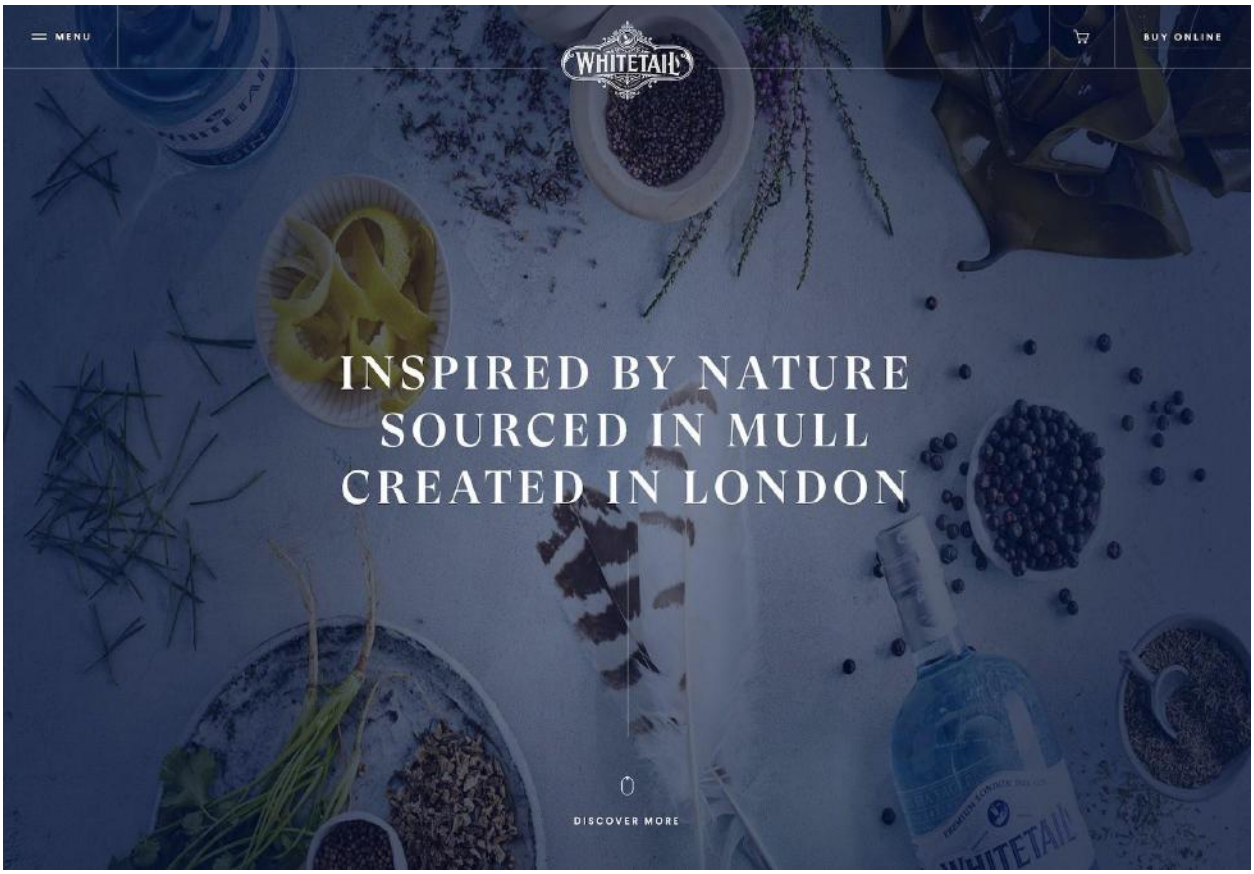
Psychological Effects of Colors

Warm colors tend to be invigorating and lively. They are typically energizing and can add life to a design. Rather than blending into the background, warm colors "pop" on the screen or page and tend towards being in the forefront of a design.

The red and warm beige color palette on the Hourly app's home page generates energy and urgency that a cool color palette would not create.

One interesting thing to note with warm colors is that two of the three primary colors (red and yellow) are warm, with orange, a secondary color, being a combination of the two. This means that for the most part, warm colors are purely warm, i.e., primary, and cannot be mixed from other colors.

Cool colors are more likely than warm colors to be perceived as calm. That’s not always the case, though, especially since green and purple, which are secondary colors, are created by combining a primary cool color (blue) with a warm color (yellow to create green and red to create purple). This means that while those hues are considered “cool,” they can take on some of the characteristics of their warm aspects.



The calming blue of the Whitetail gin website gives an impression of relaxation.

Green, particularly lighter and brighter versions, can be associated with life and positive energy. Purple, especially when it's brighter (like fuchsia) or lighter (like lavender), can be a very lively color.

Brighter values (such as the bright purple and fuchsia) give cool colors more energy.

Neutral colors (brown, tan, gray, white, and black) tend to take on the characteristics of the colors they are combined with, though they can also subdue or enhance those effects. For example, combining warm colors with white can create a design that appears lighter (in terms of weight, not just in terms of overall vibrancy) and carefree. Combining those same warm colors with black can make them appear more intense and dramatic. Combining cool colors with black can make them more mysterious, while combining them with white can make them more calming and relaxed.

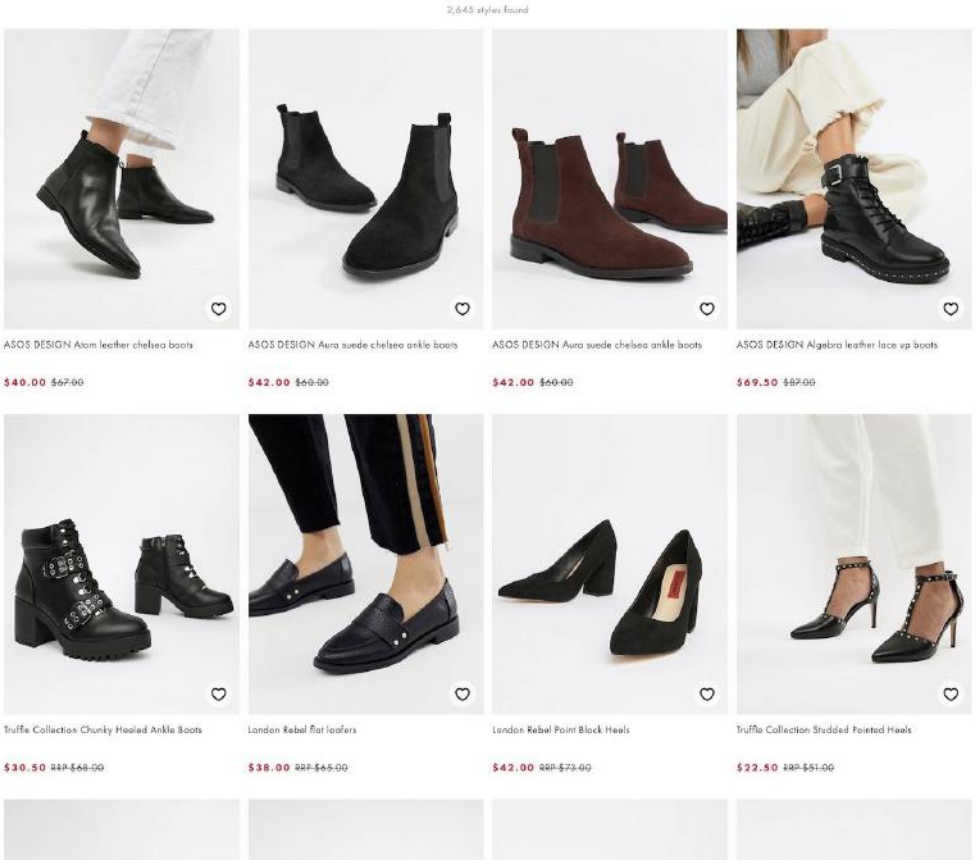
Effect of Color on Consumer Behavior

Color can affect a person's mood or thoughts, but can it also affect their behavior?

Yes, absolutely.

Marketers have long relied on color to influence consumers to take certain actions. It’s why signs in shop windows meant to grab passerby attention are often yellow, and sale prices are often denoted in red.

Many of these choices are based more on tradition than hard science, but that in turn has created an expectation among consumers. When they see a red price, they assume that whatever they’re looking at is on sale or clearance. When they see a yellow sign in a window, they take a moment to read it because they expect it will include pertinent information (yellow is one of the colors most visible to the human eye, so it naturally draws attention).



The Asos website uses red to denote sale prices, signaling to customers that they're getting a good deal.

Here's a brief rundown of how each hue affects consumer behavior (more detailed information on the use of color for marketing can be found in this infographic from Suyati).

- Red is strongly associated with buying and sales. If used too heavily, it can turn some customers away.
- Orange can be used for calls to action but can also be irritating if overused. This is why it's not often seen outside of logos or accent colors.
- Yellow attracts focus and grabs the attention of consumers.
- Green is easily processed by the human eye, and is therefore often used to create a sense of relaxation. It's also strongly associated with money and luck.
- Blue is the world's favorite color, so it's no surprise that it's used extensively in communications of all kinds. It's also strongly associated with loyalty, honesty, and power, making it a popular choice for large corporations and businesses in more conservative industries (like banking and insurance).
- Purple is used heavily in the beauty products industry, although it's also seen associated with luxury goods (like Asprey, which even named its signature perfume Purple Water).
- Black is generally sophisticated and elegant when used in marketing. It's used extensively in communications across most industries.
- White is often associated with cleanliness, and is therefore popular in the healthcare industry. It's also used in the tech industry because of its association with simplicity.
- Gray is also associated with simplicity, and is often used by marketers to calm and soothe consumers.

Again, the effect each individual color has on consumer behavior is influenced heavily by the way in which it's used as well as the context of the content.

Creating Emotionally Powerful Color Palettes

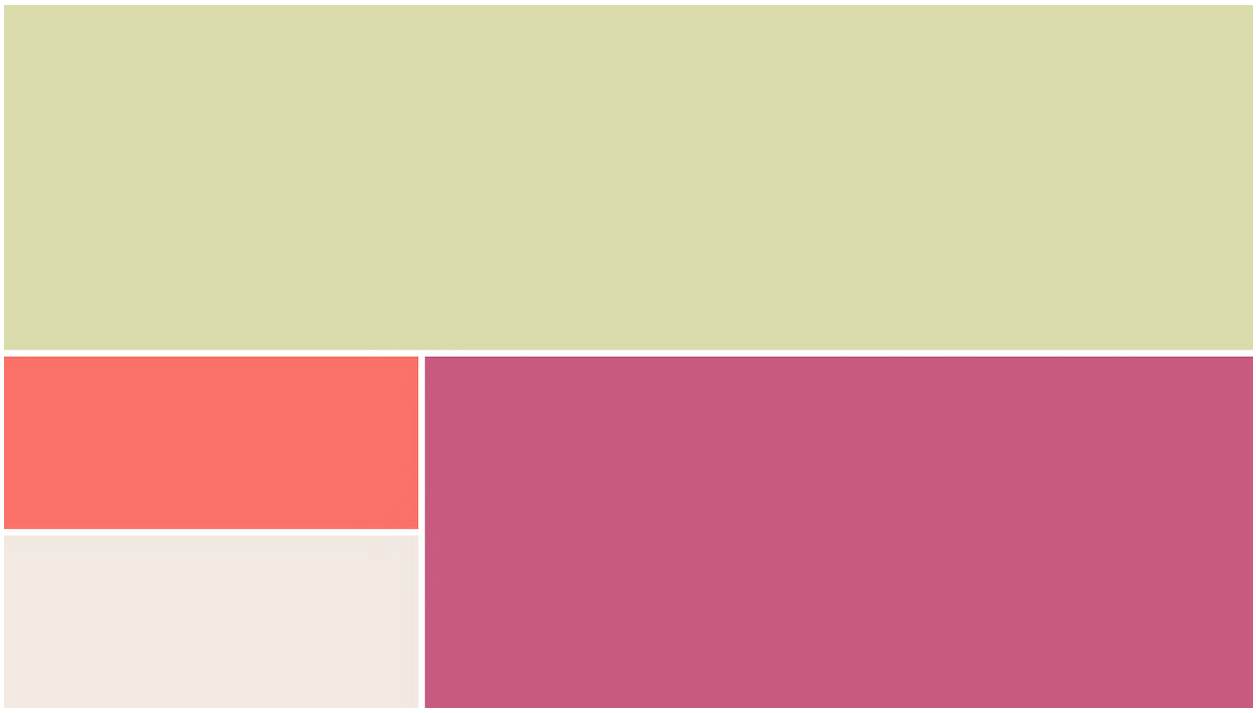
Many UX designers think that certain colors “can’t” be used in certain situations. That kind of thinking is outdated and has no place in modern design.

Let’s look at Pantone’s Color of the Year for 2019: Living Coral. This is a strong hue, and one that many designers might shy away from using for a lot of projects. (Note: I’m not advocating jumping on this particular bandwagon just for the sake of following trends, but it’s a good starting point for an experiment.)

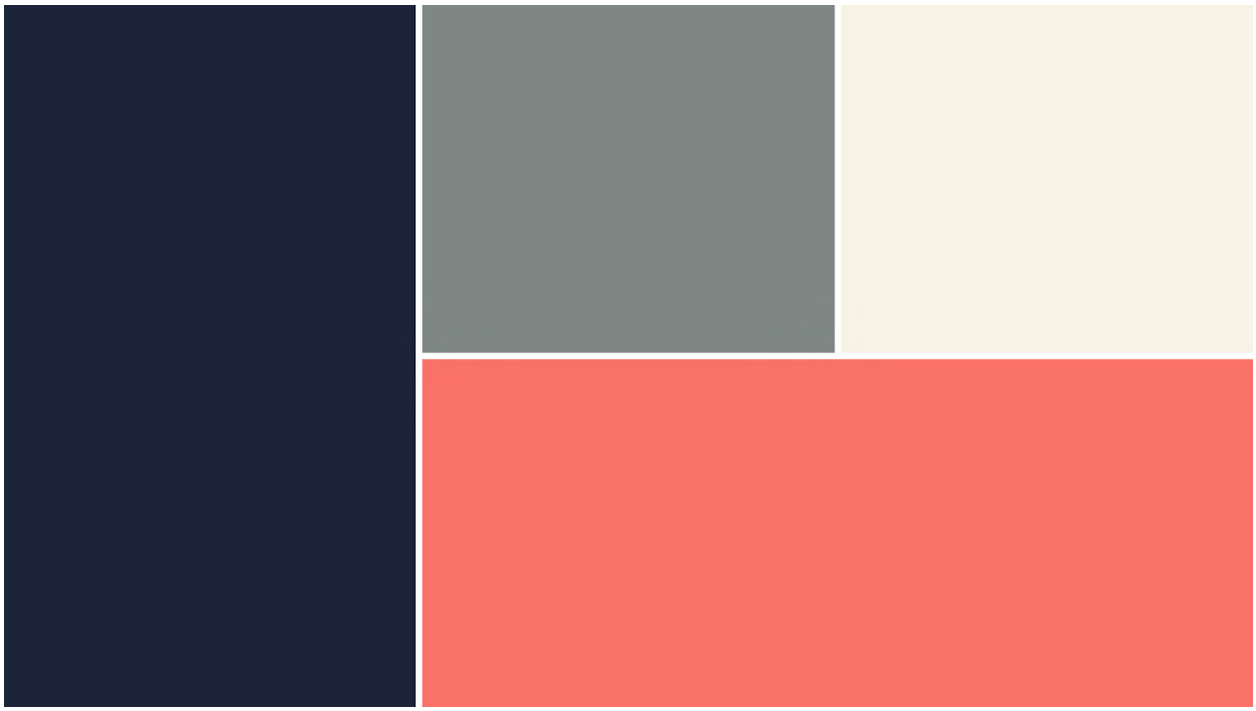
After all, what place does Living Coral have on something like a banking website or a website selling men’s suits (although props to the men out there who can rock a coral suit)? But here are color palettes that could be used for a variety of industries that incorporate Living Coral, just to prove that almost any color can be used for any project a designer wants when used in the right context.

Not sure how this is helpful? Think about clients who come to a designer with a project and insist that a particular “brand color” be used, even though that color is hideous.

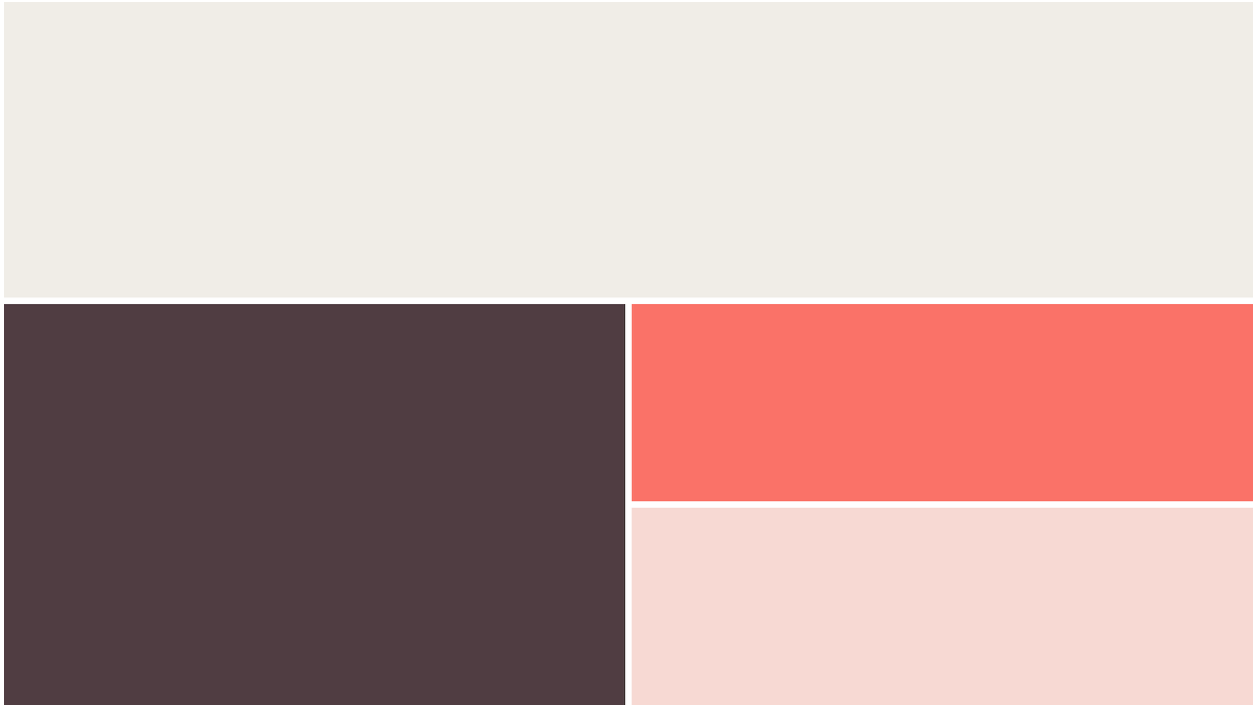
Here are four examples of color palettes that incorporate Living Coral, suitable for a variety of industries.



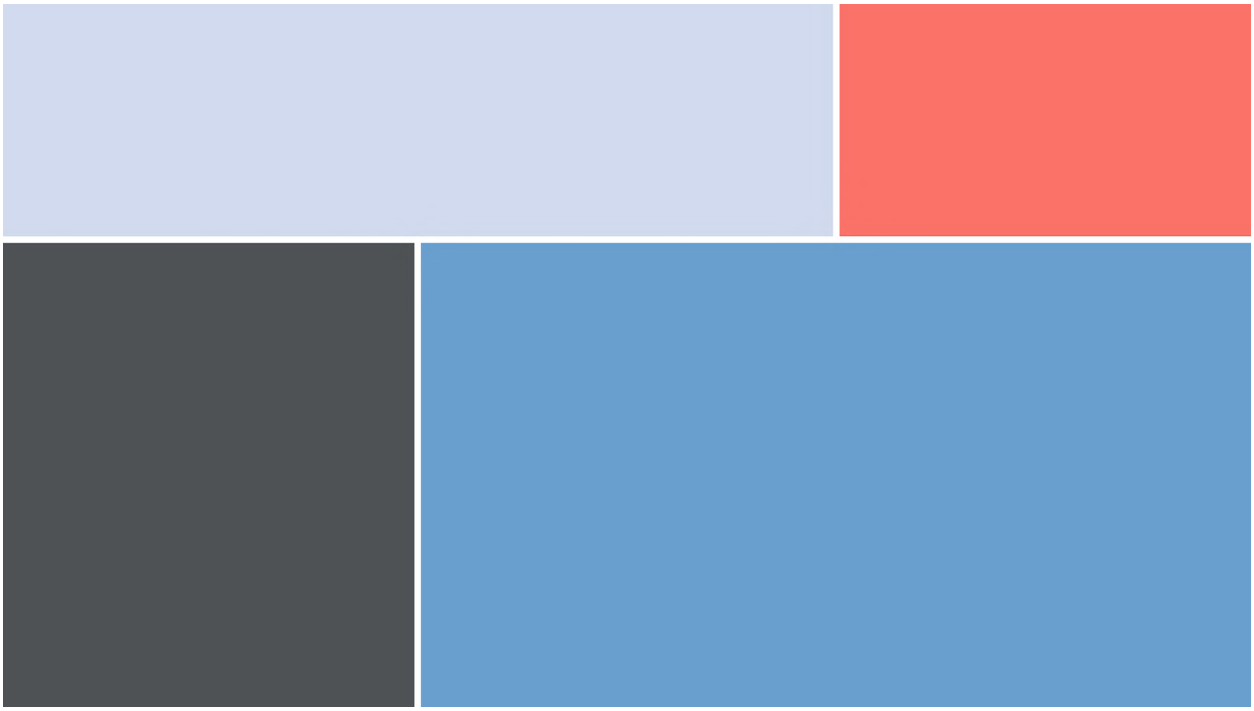
This color palette is fun and funky. It would be great for a site aimed at kids or creative pursuits.



This is a great palette for a traditional industry like law, banking, or insurance, but the addition of Living Coral gives it a more accessible feeling and could help it appeal to younger audiences.



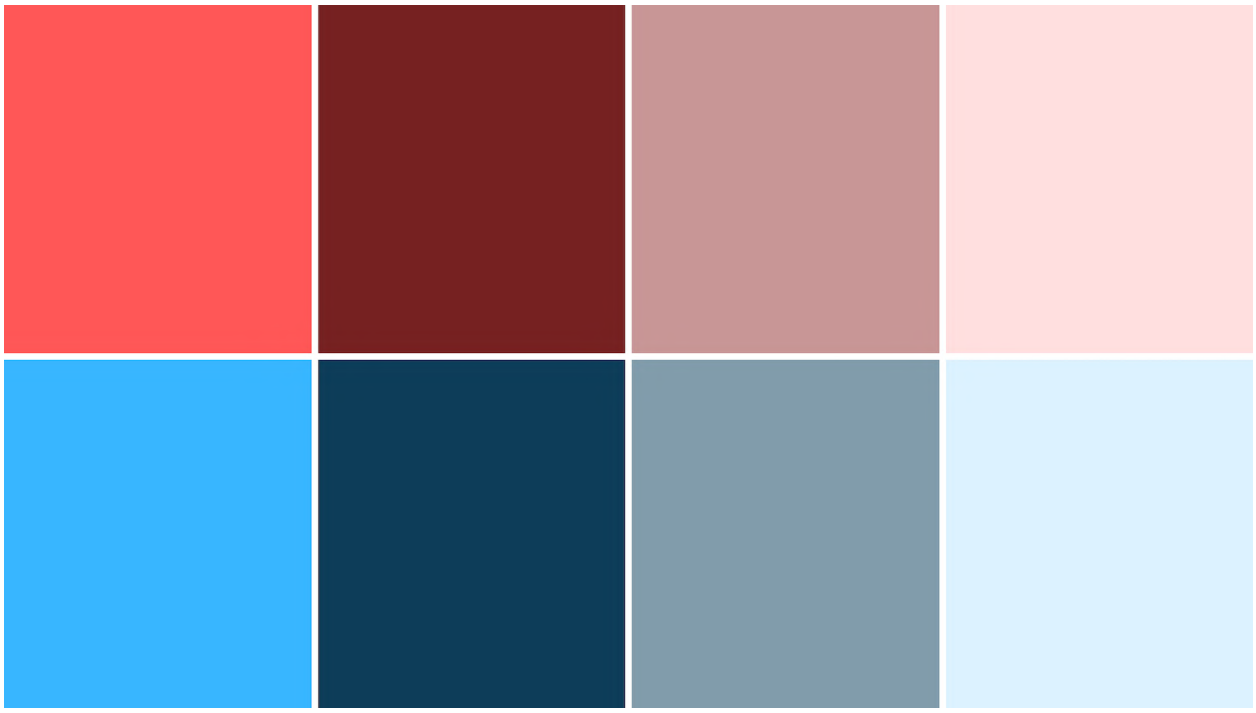
This palette is more muted and would be fantastic for a clothing company or other site where the content should stand out more than the design elements.



This palette feels traditional (think summers on Cape Cod) while also feeling fresh and relaxed.

Four different palettes, four entirely different feelings. The same type of experiment could be done around virtually any color.

Another way to incorporate seemingly inharmonious colors in a design is to change the value of the hue by adding either black, gray, or white to it.



The bright colors on the left can have their emotional impact changed by adding (from left to right) black, gray, or white.

Creating a color that is more muted (adding gray) will make it feel more relaxed. Adding black to darken a color gives it a more traditional or conservative feeling. Adding white to lighten colors gives them a more innocent and peaceful feeling.

One of the most overlooked parts of color theory is a designer's ability to trust their instincts. Color is highly subjective and, while there are certain guidelines, it's still a relatively unstudied area of design.

Designers should follow their instincts in trying out various color palettes and ideas, and then do user testing to prove whether their instincts were correct or not. User testing, A/B testing, and other methods of gathering data about the efficacy of various color palettes are invaluable in creating final designs.

Conclusion

The relationship between color and emotion is one of the most important aspects of good UX design. The right color palette encourages people to take actions on a site or with an app that designers want them to take, while the wrong palette can turn visitors away before they take any action at all.

Choosing the right color palette is part art and part science. When it comes to designing an initial palette, designers should follow their instincts along with available research, and then test and retest to guarantee the color palette is reinforcing the overall purpose of the design.

CHAPTER 10

Cause and Effect – Exploring Color Psychology

Colors and emotions are intricately linked in ways that digital designers are only beginning to understand and take advantage of, which makes sense when you consider that color in design (particularly newspapers and magazines) has really only become widespread in the last half-century or so.

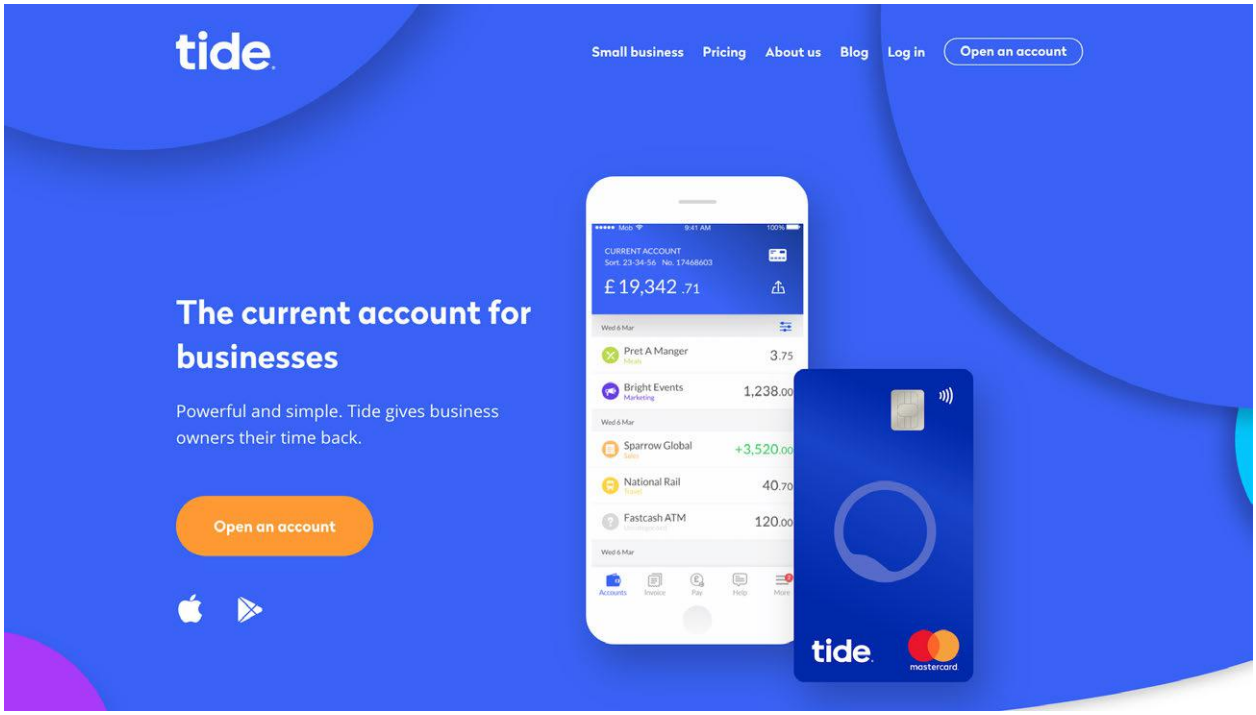
And yet, the psychological impact of color on user behavior is significant. Something as simple as changing the color of a button can increase desired behavior by double, even triple-digit percentages. Overlooking this vital component of user experience design is a huge mistake and one that's easily avoided with a little education and research.

Good Housekeeping, one of the most iconic American magazines started using color around a hundred years ago. (Source)

What is Color Psychology?

There has been little rigorous scientific study on the psychological effects of color. Yet color psychology is an important focus of branding and other design disciplines. Most studies on the effects of color have been done for practical reasons and primarily consist of anecdotal evidence and case studies from individual companies and designers.

Ask designers, however, if they consider the psychological effects of color on human behavior and the vast majority of them will affirm that they do. Overlooking color psychology is a quick way to ensure poor user experience and reduce the conversion rate of a website or app.



Tide's choice of blue as their main color makes sense for a company catering to other businesses.

Why Color Affects Emotion

Why colors affect the way people feel isn't straightforward. There are a number of elements that can influence the way a person feels when exposed to a certain color. One important factor is the personal association with a color. If a person's favorite stuffed animal as a child was blue, for example, then they may have a preference for blue throughout their life. Or, at the opposite end of the spectrum, if they were hit by a blue car as a child, they might have a strong negative emotional reaction to the color blue.

However, because of universal human experiences, it's possible to predict how the *majority* of people will respond to a given color. For examples, green is often associated with nature and growth because most people have witnessed plants growing. Blue is almost universally calming because it's associated with things like the sky and water.

Other effects are cultural. Purple, for example, is still associated with luxury due to the fact that purple dye was prohibitively expensive and rare in many ancient cultures, and therefore only used by royalty. It's not a natural association, per se, but it was a significant part of the cultural zeitgeist for long enough that it's become a part of the human psyche.

Purple continued to be associated with royalty well into the 18th century, as evidenced by this portrait of Russia's Catherine the Great.

Color's Effect on Performance

It's not just mood and emotions that color can affect. It can also affect performance in very real ways.

For example, in a study published in the Journal of Experimental Psychology, researchers found that the color red negatively affected performance on a test. When participants were given a red participant number (rather than green or black), they performed 20% worse on tests than their peers. That's a significant difference and one that can be used to influence user experience.

That doesn't mean red will always hinder performance. In a study of athletic performance, red uniforms appear to give an advantage. During the 2004 Olympics, athletes competing in four different sports (Greco-Roman wrestling, freestyle wrestling, boxing, and taekwondo) were randomly given either blue or red uniforms or protective gear. The red-clad athletes won in 19 of the 29 weight classes. And similar studies among soccer matches showed a similar advantage to the teams wearing red uniforms.

The power of color is shown in how red uniforms can affect athletic performance.

This could be explained by red's historical connotations with aggression and anger. Either the red uniforms are making their wearers feel more aggressive or, alternatively, the red uniforms are more intimidating to their opponents and therefore negatively affect their performance. Either way, the results are significant.

Color Meanings

Every color is associated with different emotions. The use of color in design can affect the emotions and moods of the people viewing those color palettes. Using colors wisely can improve user experience and increase desired behaviors (including conversion rates) in significant ways.

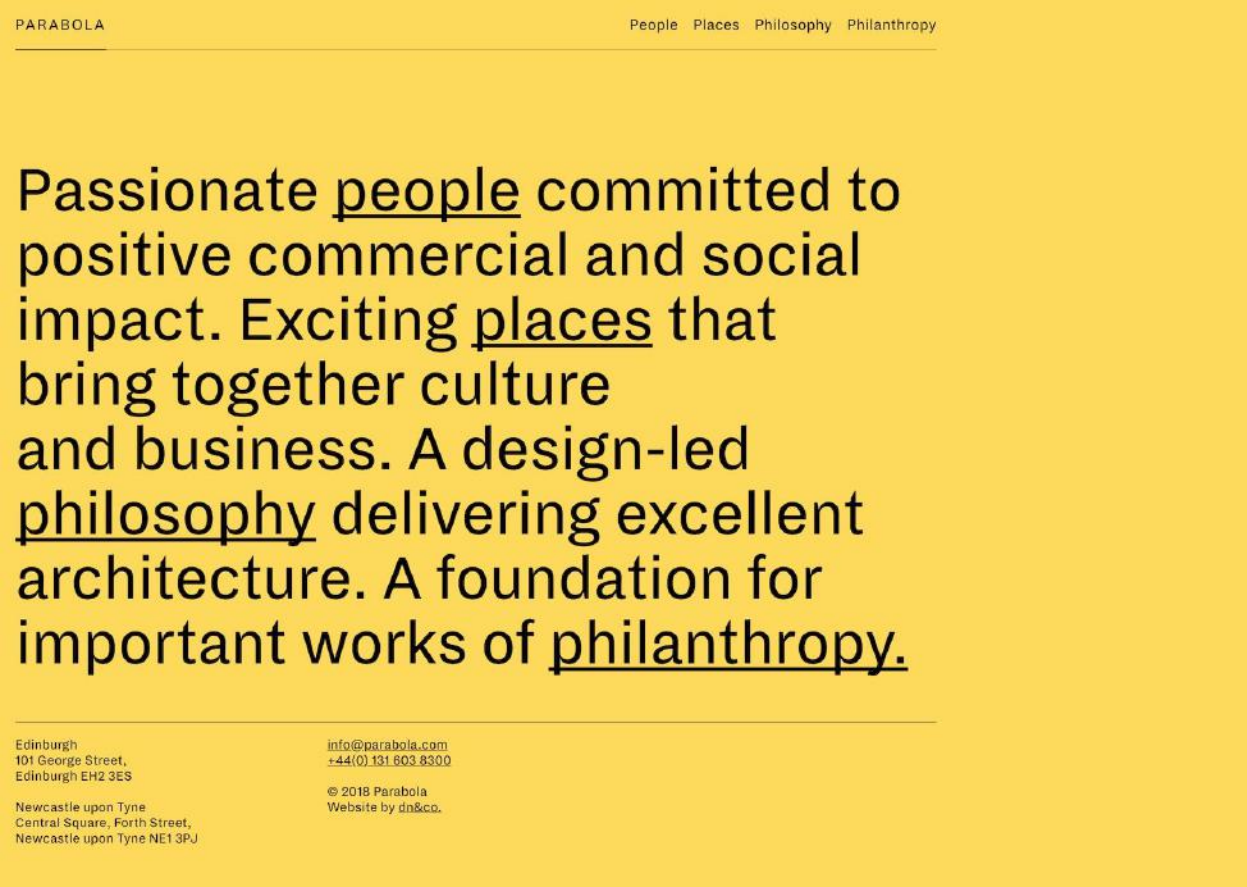
Warm Colors

Warm colors include shades of red, orange, and yellow. In general, these colors are energetic and active, with relatively positive connotations.

Red: Red is associated with passion, love, and lust. It can also be associated with warnings and danger, or even with anger (hence the term “seeing red”). Red can have a physiological impact on people, too, including raising respiration and heart rate.

Orange: Orange is energetic and positive. It’s association with autumn leaves and seasonal transitions can also make people think of change when they see it. Orange is also associated with warnings, though less strongly than red.

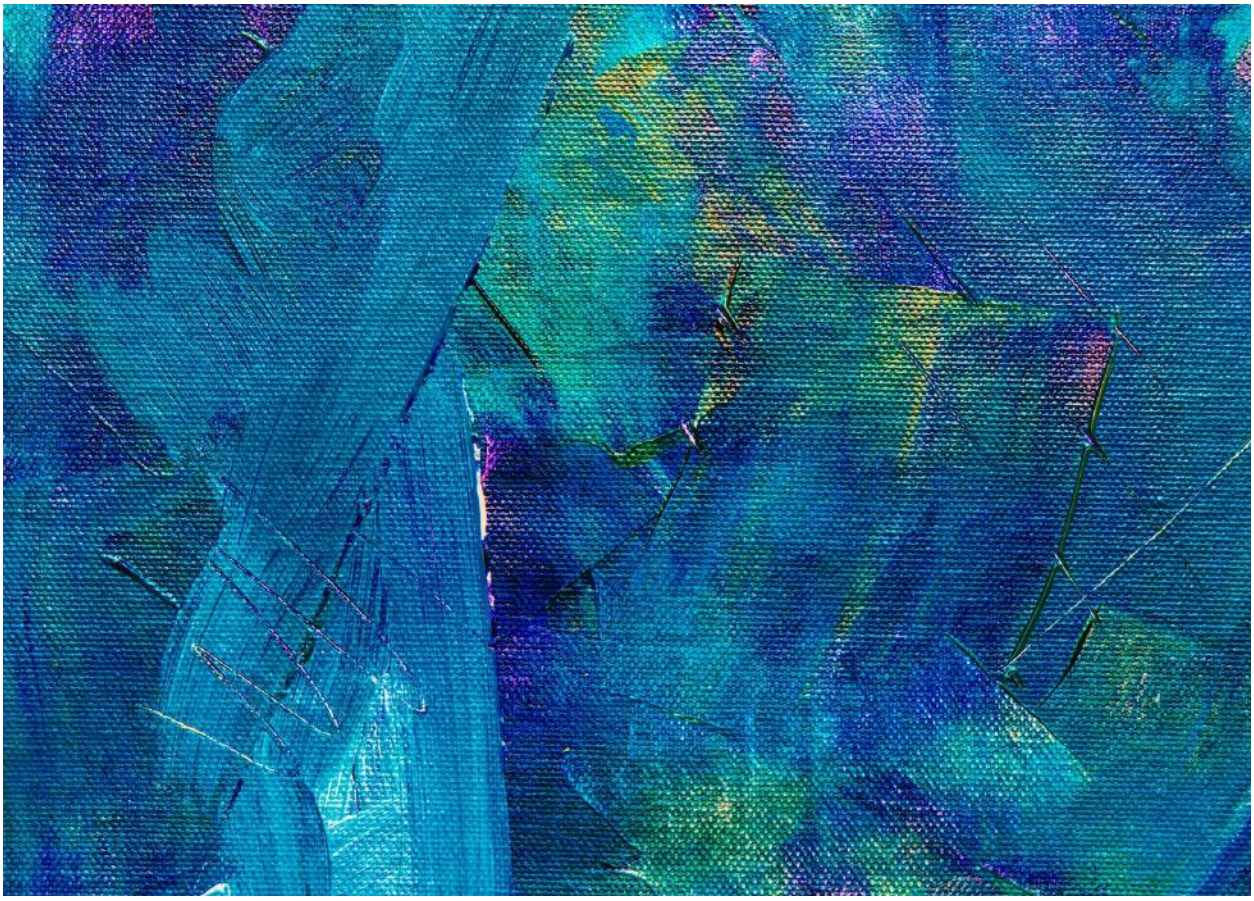
Yellow: Yellow is considered the happiest hue in the color spectrum and is closely associated with sunshine and with hope. It can also be linked with caution and cowardice, though.



Parabola's choice of yellow as their main background color is immediately uplifting to visitors.

Cool Colors

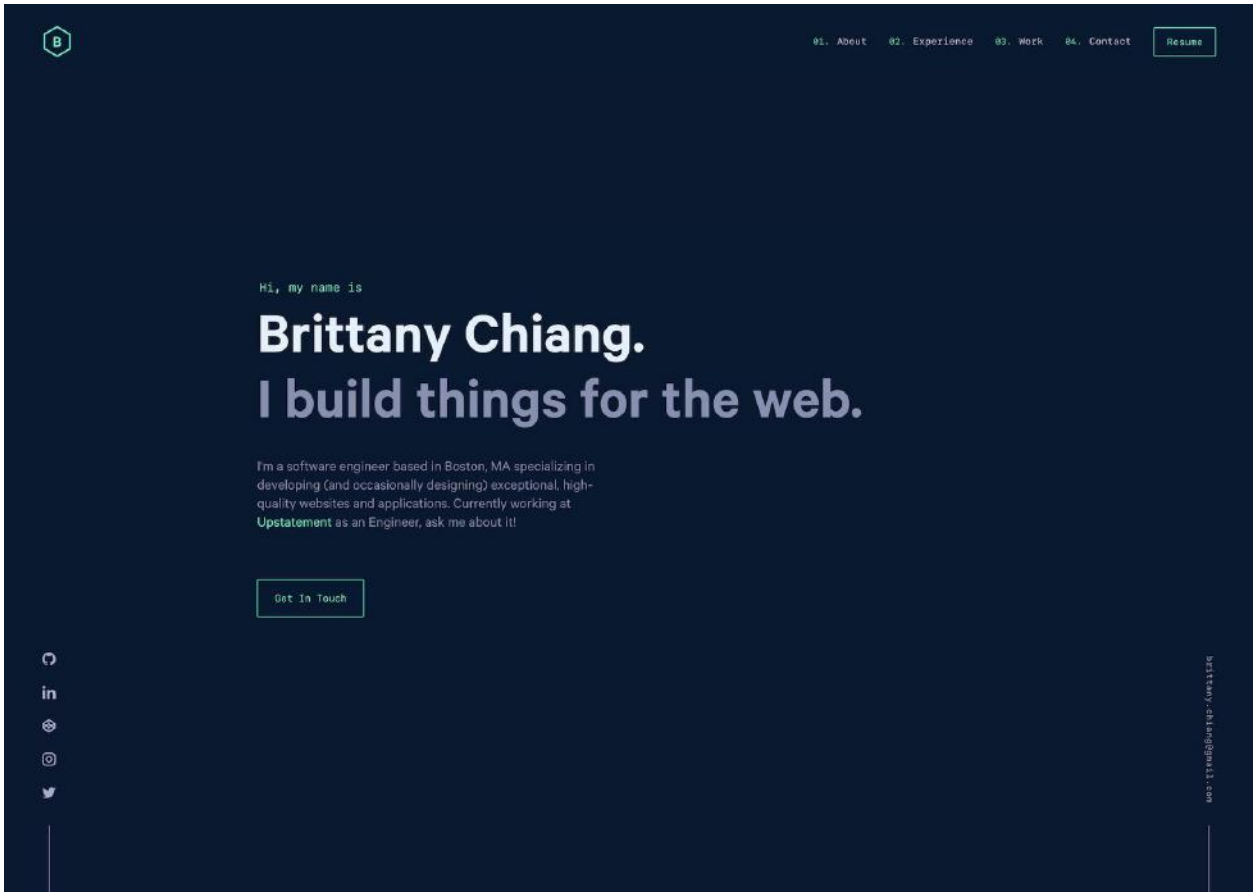
Cool colors include shades of blue, green, and purple. Generally speaking, cool colors are more calm and relaxed than warm colors, though specific hues can have different properties.



Blue: Blue is calming and also represents honesty and loyalty (hence its popularity in so many corporate branding color schemes). Blue can be associated with sadness and loss, depending on context. It's also linked to peace and even spirituality.

Green: Green can represent new beginnings and growth, as well as nature. It has some of the energizing properties of yellow, while also carrying over some of blue's calming effects. Green is associated with affluence, money, and stability, particularly in darker shades.

Purple: Purple has long been associated with luxury and royalty, but also with mystery and the occult. Lighter purples, such as lavender, are more romantic and associated with spring.



Brittany Chiang's use of blues and greens gives an impression of trustworthiness and growth.

Neutrals

Neutral colors often take on characteristics of the other colors in a palette and can be used to reinforce those influences. The basic neutrals include black, white, gray, brown, and beige.

Black: Black is elegant and sophisticated, but can also be sad and representative of death and mourning.

White: White is pure and innocent, and often linked to cleanliness. Although in some cultures it can also be associated with death.

Gray: Gray can be seen as sophisticated and powerful, but can also come across as boring if used the wrong way. It's one of the most flexible neutrals, as it can be seen as warm or cool, traditional or modern.

Brown: Brown is solid and dependable, and can be associated with nature depending on the context in which it is used.

Beige: Beige can be warm or cool depending on the colors used around it. It's generally conservative and can take on the warmth of brown or the coolness of white. It takes on the meaning of the colors around it and often fades into the background, adding little psychological influence on its own.

Cultural Differences

One area where designers need to be particularly careful in their work is in considering cultural differences in color meaning. For example, in most western cultures, white is associated with innocence and black is associated with death and mourning. But in other cultures, particularly China, Japan, Korea, and other Asian countries, white is associated with death and mourning, and even bad luck.

The psychological effects of color on human behavior vary by culture.
(via Open Source Studio)

It’s important to consider where the users of a product are coming from. If the majority of users for a particular site are coming from Indonesia, for example, then using green would be a bad idea. But if they’re coming from the Middle East, then green is associated with luck, wealth, and fertility, which might be exactly the kind of message desired.

Taking time to research the exact cultural meanings of colors before committing to a color palette is an important step in the UX design process and one that can’t be overlooked. Not just because of cultural differences, but also because of the significant effects color can have on user behavior.

Subtle Changes Have a Huge Impact

Making even subtle changes to an exact hue can have a big impact on how users perceive that color. For example, navy blue is considered loyal and traditional while bright blue can be modern and energetic and light blue can be calming and peaceful. They’re all “blue” but the effect of adding black or white to change the specific color is very significant.

The same goes for how colors are combined. Red and green are complementary colors on the color wheel, and using them right next to each other can create a vibrating effect that’s very unpleasing to the eye. But if you lighten the red to pink and make the green more of a jewel tone, it becomes a striking and unexpected color palette that’s immediately memorable and visually appealing.

Pink and green are a modern take on the traditional red and green complementary color scheme. (via hafid lhachmi for YFF Office)

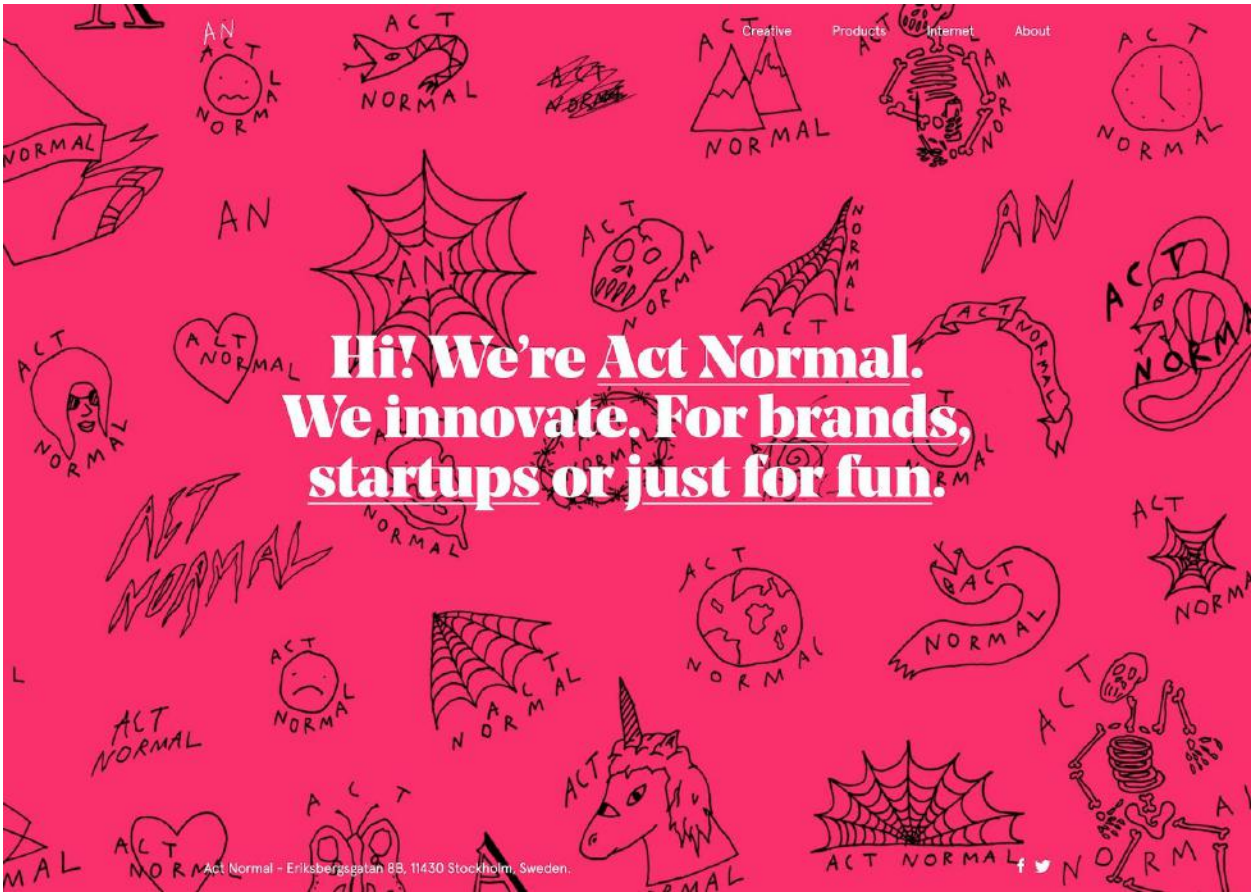
How Color Affects Consumer Behavior

Color can affect performance, as already mentioned, but it can also affect overall behavior among users. Countless case studies have been done comparing the effectiveness of different color choices on things like calls to action.

HubSpot ran a case study on the effect of switching a button color from green to red on Performable's website and got some very conclusive results. A designer's gut reaction might be that green would perform better, as it's associated with "go" while red is associated with "stop" and might make people pause before clicking. But the results said the opposite: the red button outperformed the green by 21%. In other case studies, green significantly outperforms yellow or orange, though.

Logo design is another area where color choice is incredibly important. Brands pay specialists thousands (and sometimes millions) of dollars to find *exactly*the right hue for their brand, one that evokes the correct feelings and actions from their customers while also standing out just the right amount from competitors in their industry (and the “right” amount is often dependent on the specific industry).

Fake at Science Gallery uses a hot pink and bright purple color palette to create a memorable impression.



Act Normal's bright pink background is visually appealing and memorable, incorporating the passion of bright red without being aggressive.

Kennard Lilly's use of a traditional dark blue color with bright accents creates a modern brand that still comes across as trustworthy and honest.

The key takeaway here is that the color used in a design *does* have a significant effect on user behavior but the context in which the color is used is a major factor in this. Buttons, for example, should stand out from the surrounding design elements without clashing with them (one area where using a complementary color is a great idea, such as using a red button when much of the design includes green).

Conclusion

The main takeaways from all of this are that color is a vital part of creating positive user experiences and that there is no single *right* color palette for a given application. This is why testing designs with real users is such a vital part of creating a color palette optimized for the specific use cases it will be enduring. A green button might convert great compared to a yellow button in one context, but a red button might outperform them both in another.

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