Navigation & Interaction

U

Imprint

About This Book

The foundations of good UX design lie in transparent navigation and interaction patterns and systems. A solid understanding of the rules is as important as knowing when to break them. How should you set up menus for optimal usability? Does mobile UX design follow different rules? How can you use sound to make your website not just more appealing but also easier to navigate? Such questions should be factored into any decisions considering modern Web design since they tend to influence the level of user satisfaction.

TABLE OF CONTENTS

The Elements Of Navigation

BY PETTER SILFVER ❧

When users look for information, they have a goal and are on a mission. Even before you started to read this article, chances are you did because you either had the implicit goal of checking what's new on Smashing Magazine, or had the explicit goal of finding information about "Navigation Design".

After a couple of seconds of scanning this article, and maybe reading parts of the introduction, you may have started to ask yourself whether the information that you're consuming at the moment is actually relevant to you—the user. Unfortunately (and as certain as death and taxes), if users cannot find the information they are looking for, chances are they will abandon their track, never to return.

Being the compassionate human being that I am, I'll try to explain to you what this article is about, so you can make your choice either to continue reading, or not. This article is *not* about where you should place the menu of your website or mobile application, or about the number of options a menu should contain. It is also *not* about how you visually enforce the perceived affordance of a user-interface element, and why that is so important.

This article is about the tiniest of details that goes into creating the main centerpiece of your digital product—the construction of the elements of your navigation. This is the most important aid you can possibly give to your users as they are constantly seeking a reason to walk out on you.

Words, Words, Words

The first thing I do when I start to sketch out the information architecture of a digital product based on the requirements at hand is to blatantly label stuff. This is nothing unique—I simply need to formulate a label (most of the time accompanied by a short description) of all the possible information entities I discover to be able to reveal taxonomy and relationships between them. You might have a similar approach, using tools like post-its, whiteboards or even some digital application created for this purpose. This can be the inception of small problems that will constantly grow over time if we do not assess them correctly and in a timely manner: **the labels are yours, and yours alone**.

"Locate store" is *your* label of something that enables the users to find physical stores in a mobile application. "Commodities" is *your* label of a view that enlists all the goods your client wants to retail on an e-

commerce site. "Start" is *your* label on the landing-page of a website. From a linguistic point-of-view, you can analyze the meaning of sentences, words and letters in different context for hours on end.

You can look at the structure in terms of morphology, syntax and phonology, or why not look at the meaning in terms of semantics and pragmatics. Fortunately, in most cases you do not have reach as far as asking a linguistic researcher about your labeling—people in your target audience will do just fine.
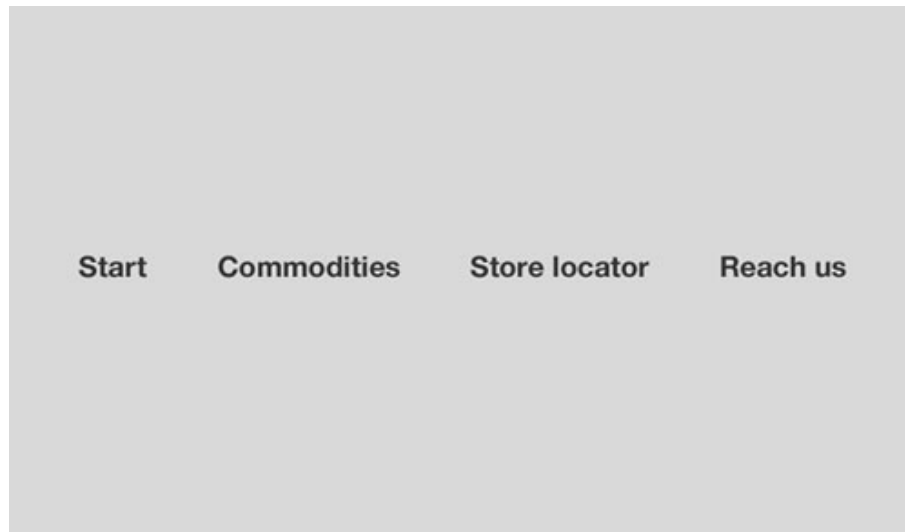
"This might be a good start!"

USER-TESTING LABELS

So what is the easiest way of doing a sanity check of the way you express the information space? A really cheap and well-proven technique is Card Sorting[1]. By using card sorting, you can transform your early taxonomy prognoses into folksonomy[2]. Card sorting not only helps you to create an informed information architecture, it also enables you to get an insight to what keywords users relate to different activities in your product.

Another test is a Word Association[3] game. Take all potential labelings of your navigation design and try them out on users asking them to "say the first thing that comes to mind" (in regard of what they believe to be found beneath such a navigation option—call it "Think-Aloud Protocol"[4] with a twist. For example, you could say "Products" and the participant might respond with "Price, description, information, stock".

---

1. http://www.useit.com/alertbox/20040719.html
2. http://en.wikipedia.org/wiki/Folksonomy
3. http://en.wikipedia.org/wiki/Word_Association
4. http://en.wikipedia.org/wiki/Think_aloud_protocol

Market researchers have used this technique for decades to ensure that the right message is conveyed by their target audience when promoting products.

Two important questions that you need to find to an answer to at this stage are:

1. Can the users relate the labels in the navigation design to their explicit goals of exploring your digital product?

2. Are the meaning of the words metaphorically and visually separated enough not to be confused with each other?

Home   Our Products   Our Stores   Reach us
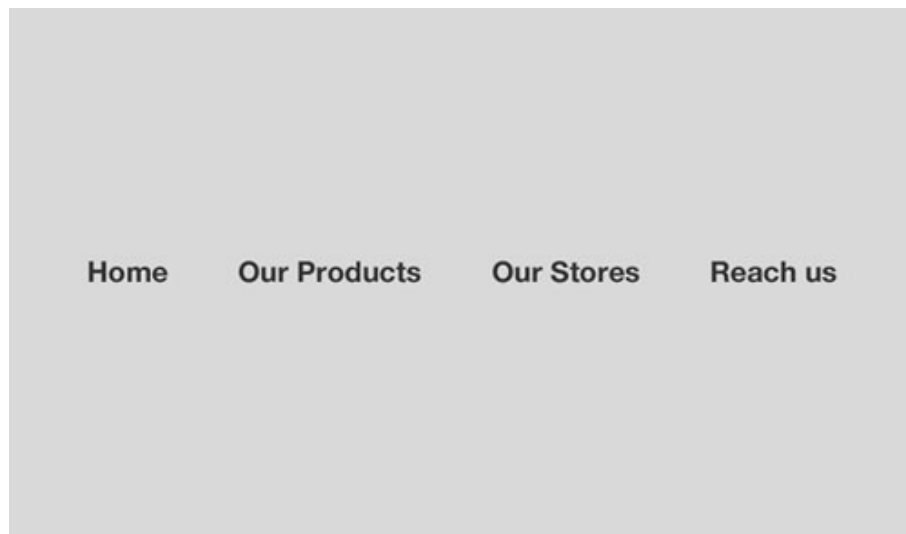
"Ok, so let's change 'Commodities' to 'Our Products' and 'Locate store' to 'Our Stores'."

REMOVING REDUNDANCY AND LOWERING THE REACTION TIME

In his masterpiece "Don't make me think[5]", Steve Krug writes, "When I look at most Web pages, I'm struck by the fact that most of the words I see are just taking up space, because no one is ever going to read them." The more information we cram into our navigation, the harder it becomes for the users to quickly grasp the different options.

In 1935, the American psychologist John Ridley Stroop published "Studies of interference in serial verbal reactions" along with the now renowned "Stroop effect[6]". Stroop had found that given the task of naming the color a word was written in, took longer and was more prone to error if the word itself was the name of a different color (e.g. the word "Blue" written in the color red).

---

5. http://www.amazon.com/Dont-Make-Me-Think-%20Usability/dp/0321344758
6. http://en.wikipedia.org/wiki/Stroop_effect

What we can learn from Stroops discovery is that we have a hard time *not* reading words—even though we are given a task explicitly instructing us not to. Have a quick look at the navigation in your design and ask yourself what can be removed without losing its meaning.
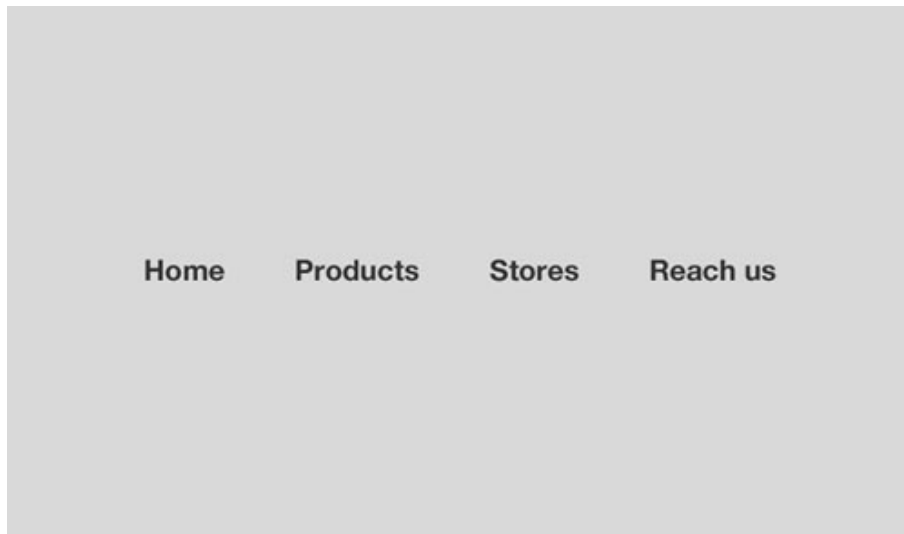
"It seems I really don't need the word 'Our' in front of 'Products' and 'Stores'."

WHAT DID PRODUCT 'A' DO IN SITUATION 'B'?

If you still have not managed to convince your employer that early user testing will pay off in the long run, you should at least have the courtesy to look at the benchmark. In what way have others solved their navigation design? Just spending some time looking at what others have done will help you reach valuable conclusions. This can be really time efficient and a good way to increase product usability, since users will be able to use previously acquired knowledge by simply recognizing similar terminology[7] used in other products.

---

7. http://en.wikiversity.org/wiki/Psycholinguistics/Chronometry#Word_Frequency_Effects
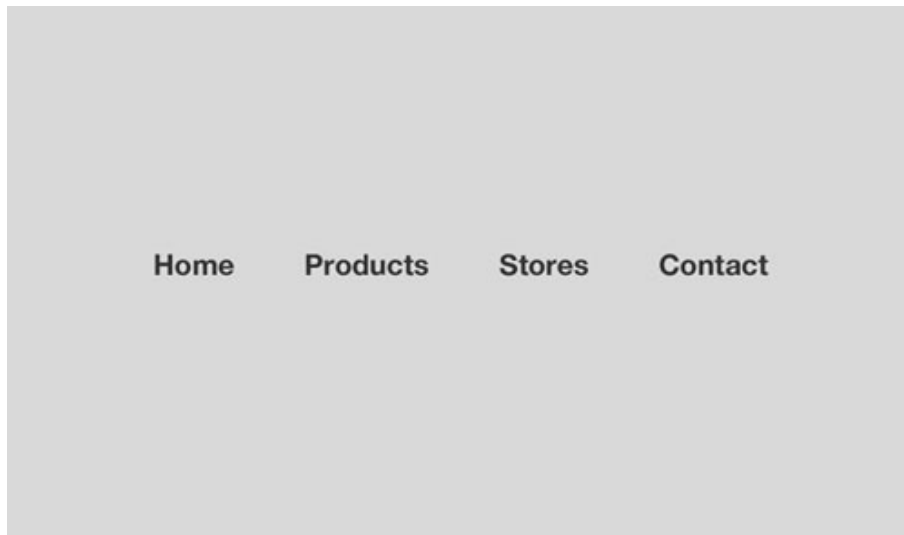
"It does seem like all other websites in our business area have their contact information beneath an option labeled 'Contact'. I better change 'Reach us'."

Symbols, Pictograms & Icons

Symbols, pictograms and icons in digital user interfaces are long gone from luxury to necessity. They contribute to signature, personality, recognition, and abstraction in our visual language. Furthermore, studies have given evidence suggesting that user interfaces have less favorable perceptions of usability and usefulness when only relying on textual expressions.

Why did I willfully write "Symbols, pictograms and icons" and not just "Icons" as we all love to call them? Before I start to use only the word "Icon", I want to make sure we are all on board as to the differences (without digging too deep into the perilous depths of semiotic science[8]).

WHAT IS WHAT

A **symbol** is typically defined as an abstract representation that requires conventional knowledge amongst the users for them to fully understand their meaning. People in some cultures have learnt that the meaning of an octagon shaped sign in a tone of red communicates "Stop." So a symbol earns meaning over time through conventional use.

A **pictogram** on the other hand is usually defined as simplified pictorial representation. Pictograms—or pictographs—are, as far as possible, self-explanatory and most often do not require any deep previous learnings to make any sense. You often see pictograms (and ideograms)

---

8. http://en.wikipedia.org/wiki/Semiotics

on signposts and in environmental design since they are least contingent to produce cultural misunderstandings. For example, a sign with an arrow indicating a direction.

The definition of the word "Icon" can be a bit vague depending on the context of use, but I like to say that an icon can be a sign, symbol, picture or image *that stands for or represents an object in its resemblance as an analogy for it.*

Whether you should use a symbol, a pictogram, an icon or a combination of all three to help you communicate information, all depends on the situation you find yourself in. Disregarding what we use, there is some common knowledge and analysis we can use to make sure that the receivers (i.e. our users) actually understand what we are trying to convey with our design.

USER-TESTING ICONS

There is an abundance of ways to perform user testing and peer reviews of iconography. My two absolute favorites are what I have come to call "tag-that-icon" and "connect-the-dots" mainly because they are quick to perform and they give great insights into users' spontaneous opinions (plus, they are actually quite fun to prepare and execute).

You can perform tag-that-icon in one of two ways:

- **Method 1**:
  Give several icon suggestions to the participants and ask them to tag them with whatever comes to mind within three minutes.

- **Method 2**:
  Randomly show the participants one icon at a time during a day and ask them to come up with tags for each icon during 20-30 seconds.

The latter has most probably proven itself to be really good and better for testing different metaphors for one specific icon when the number of participants are low.

When you have a set of icons and labels that are closing in on finalization, you can then do connect-the-dots testing. All you need to for the test are printouts with one section of all your suggested icons (in a random order) and one section with all your labels (in a different random order). Then, give the printouts to the participants and ask them to draw a line between an icon and the label they think it is coupled with.
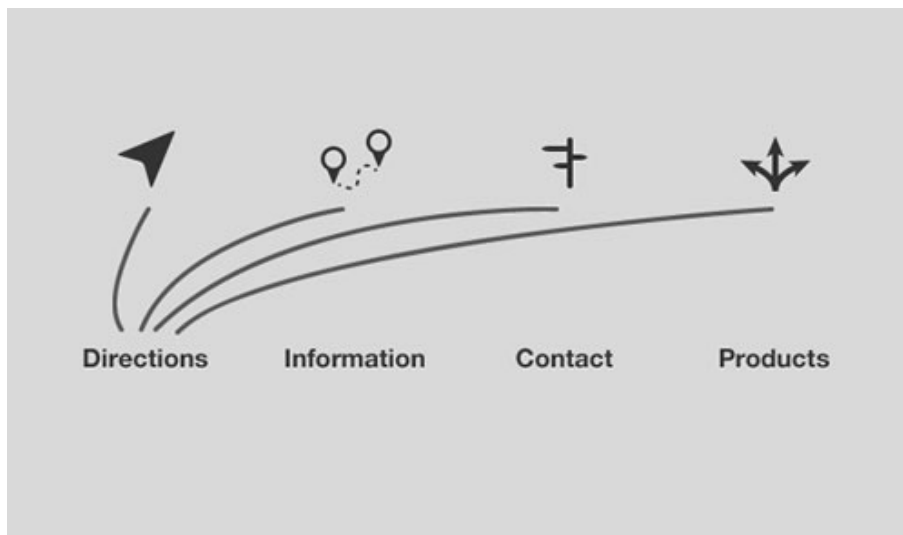
"At least I can be certain that all my suggested icons works for the 'Directions' menu option."

REMOVING REDUNDANCY RE-VISITED

Just as with labels, avoiding redundant information in the icons is just as important. This is of course quite a bold statement from a designer, but there are many cases out there in the wild that simply add so many details to an icon that it starts to disrupt the users' ability to interpret and differentiate them. This becomes most evident when you have common shapes in the icons that affects their intergroup saliency[9] (i.e. the quality by which an object stands out relative to its neighbors).
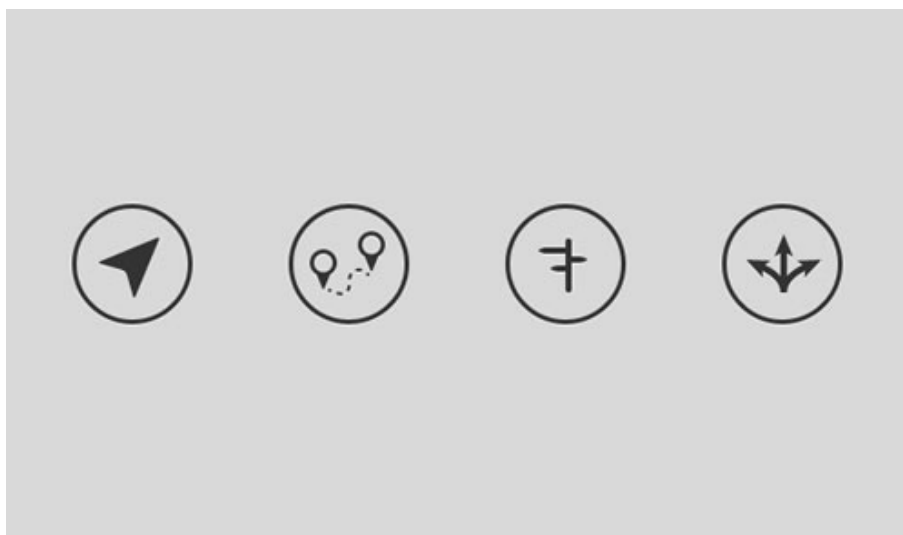
"Do I really need the circles? If I look at them briefly or squint, they all look the same—I better change that!"

---

9. http://en.wikipedia.org/wiki/Salience_(neuroscience)

PICTURE/WORD INTERFERENCE

Given a set of lined drawings of simple objects coupled with distractor words, humans show a clear effect of increased response time in naming the drawn object. This is also known as Picture Word Interference[10] (PWI). What PWI can be interpreted to mean is that when an icon is paired with a label in a way that the user does not connect together, it becomes much harder for them to work out the intended meaning.

For humans, a label with "Banana" coupled with a cucumber icon would be unclear as to what it is. What makes matters even worse for users in a navigation context is; "What should I really follow—your icons or your labels?" Avoid creating distracting stimulus through semantic interference between your icons and labels.

Looking at contextual consistency and standards in regards to iconography can really help you. There are some really great resources out there for finding inspiration, but you can also use them as a source of knowledge in finding trends and standards in iconography. If 9 out of 10 result with the term "Favorites" on Iconfinder.net[11] that contain a star or a heart-shaped icon, then that may probably be a good starting point for your "Favorites" icon as well.
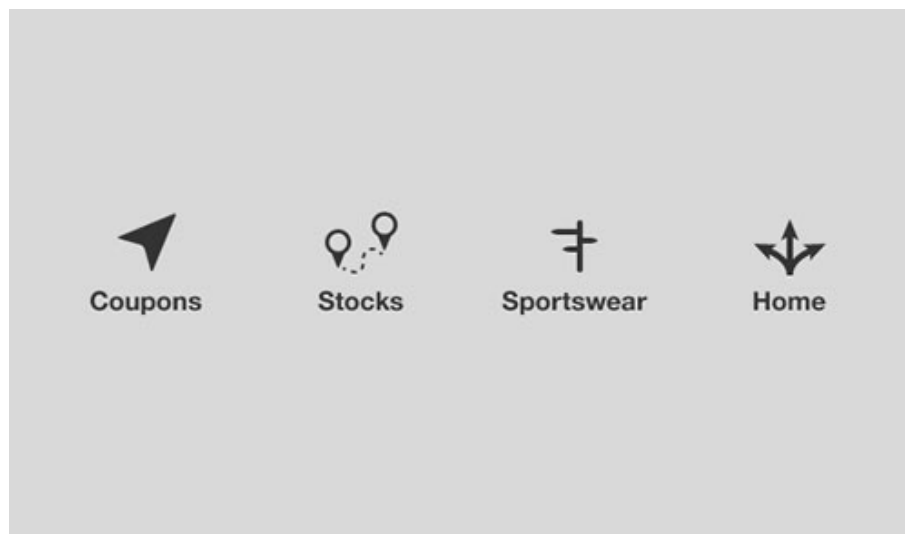
"I have no idea what I was thinking. I think I have to throw away all of these, restart all over again and do some more user testing."

---

10. http://en.wikiversity.org/wiki/Psycholinguistics/Chronome-
    try#Picture.2FWord_Interference_Tasks
11. http://www.iconfinder.net/

Six Navigation Design Guidelines

After reading all of the above, you should have a good foundation to take your navigation design to the next level and place it in its intended environment along with the rest of the design and perform controlled user testing and see how they interplay. Here are 6 navigation design guidelines for you to consider as you embark the journey of designing the navigation of your upcoming project:

- **Clarity**:
Make sure that your navigation has a linguistic and semantic clarity that communicates to your users in an direct, efficient and adequate way.

- **Simplicity**:
Avoid using technical labels and icons that no one recognizes. Speak the language of the user rather than using complex terms and form factors unfamiliar to your users.

- **Saliency**:
Avoid having redundant and repetitive terms and shapes in your labels and icons that affects their intergroup saliency. This can easily influence your users ability to differentiate and interpret them as a whole.

- **Context**:
Look at the consistency and standards for labels and iconography used in the context that you are designing for. It is more efficient for your users to recognize rather than needing to interpret information that is unfamiliar to them.

- **Correlation**:
Avoid creating distracting stimulus through semantic interference between labels and icons. Reduce uncertainty and make sure that they clearly communicates one message as they are put together.

- **Tonality**:
Ensure that the tonality of the message is still consistent at the end of the design work. Colors, typography and form heavily affect the way your audience conceive and interprets the information.

Of course, not all types of navigation design contain both labels and icons. Some just use icons and some just use labels. you have roughly three cues for guiding your users: One factual (the label), one helpful (the icon) and then—the sometimes subliminal—character (color, typography and form). They do not always need to co-exist since differ-

ent context requires different solutions. But your message can easily become blurred the fewer of them you use.

So ask yourself this: Can I afford to be vague in the way I communicate and help my users to reach their goal? (Hint: *No!*) ❧

Sticky Menus Are Quicker To Navigate

BY HYRUM DENNEY ✍

Most designers would agree that navigation is one of the most critical components of a website. Despite this, it is not always easy to use or access. Traditionally, users must scroll back to the top of the website to access the navigation menu. I recently wondered whether sticky menus makes websites quicker to navigate, and I conducted a usability study to find the answer. Let's look at the results of the study, a few implementation techniques and some related challenges.

Sticky Navigation Defined

Sticky, or fixed, navigation is basically a website menu that is locked into place so that it does not disappear when the user scrolls down the page; in other words, it is accessible from anywhere on the website without having to scroll. Although sticky navigation can be applied to any menu, such as the footer or social media buttons, we'll focus on the main (or primary) navigation of a website. The image below shows the difference between standard and sticky navigation on a mobile device.

Nav - Top   Standard Nav - Scrolled   Sticky Nav - Scrolled
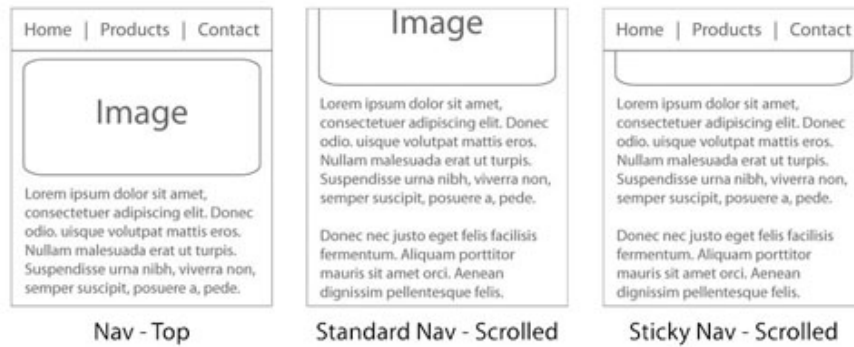
Usability Study

RESEARCH CONDITIONS

For the study, I created two test websites that were nearly identical. The only difference was that one of them had standard navigation and the other had sticky navigation. Forty participants were timed in completing five tasks on the first website. Then they were asked to complete five different tasks on the second website. The order of the tasks was alternated between users to balance out the familiarity factor. The websites were tested on desktop machines, and participants were not told the differences between the websites until the end of their session. Data was not analyzed until the testing was completed. The results of the study yielded two interesting conclusions.

1. STICKY MENUS ARE 22% QUICKER TO NAVIGATE

The data from the study indicated that participants were able to find what they were looking for quicker when they didn't have to scroll back to the top of the page. 22% might not seem like a big number, but it can have a big impact on visitors. According to this data, sticky navigation could cut 36 seconds off of a five-minute visit to a website. Of course, keeping visitors on the page longer is only a benefit if you are enhancing the user experience along with it. Forcing people to dig through a website to find something does not qualify as such.

2. 100% PREFERRED STICKY MENUS WITHOUT KNOWING WHY

At the end of each session, users were asked whether they noticed the difference between the two user interfaces. No one was able to identify it. The changes were subtle, and none of the users caught on because they were focused on completing their tasks. Participants were then asked whether one of the websites felt easier to use. Six of the 40 partic-

ipants had no preference, but of the 34 that did have a preference, 100% of them indicated that the website with the sticky navigation was easier or faster to use. Many comments along this line were made, such as "I don't know how the websites were different, but I felt like I was spending a lot less time clicking with the first one." Such comments indicated overwhelming favor for the sticky navigation.

## Desktop Software Navigation Menus

Imagine typing a document in Microsoft Word and having to scroll up to the top of the first page every time you wanted to bold a word or widen the margins. Just the thought of that sounds frustrating. Most desktop software provides access to the entire navigation menu no matter what you are doing in the application. The Web browser is no different; we would find it ridiculous to have to scroll to the top of a website to access the address bar of a browser.

Some Good Examples

Facebook and Google+ recently adopted sticky navigation, but they are among the minority. Of the 25 most visited websites in the US[12], only 16% currently have sticky navigation. Below are some examples of other websites that do an excellent job of pulling this off.

Fizzy Software[13]
This is a perfect example of horizontal sticky navigation at the very top. Everything feels comfortable while you're using the website.
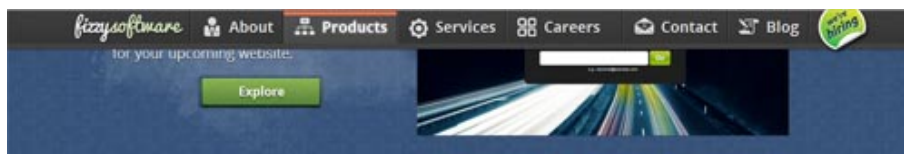
Web Appers[14]
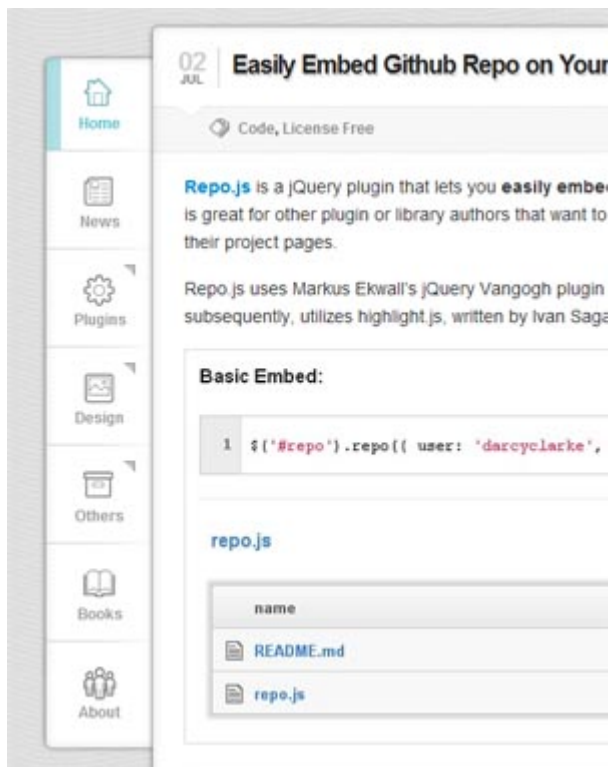The navigation here is vertical and on the left, somewhat resembling Google+'s navigation. The only downside here is that if the screen's height is shorter than 560 pixels, then the bottom portion of the menu could become inaccessible, which was the case when I tested the website on a netbook.

---

12. http://www.alexa.com/topsites/countries/US
13. http://www.fizzysoftware.com/
14. http://www.webappers.com/

MakeBetterApps[15]

Here is another great example. Making the navigation slightly transparent, giving a hint of the content beneath it, is a nice touch.
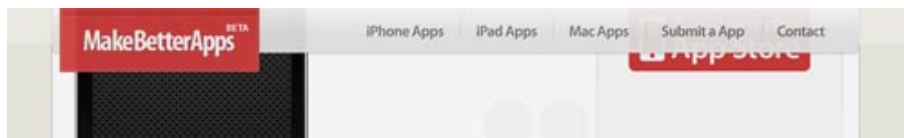
Rodolphe Celestin[16]

This sticky navigation spreads all the way across the top, but when you scroll down the page, the design of the menu changes slightly. Simplifying the design like this can be a good technique, as long as it doesn't feel inconsistent. Also, the designer has taken an increasingly popular approach by making the entire website just one page; the menu links are anchors that bump you down the page. Some nice transitions and hover effects make this website enjoyable to use.

---

15. http://www.makebetterapps.com/
16. http://www.rodolphecelestin.com/

Ryan Scherf[17]

The navigation on this website is vertical and only icons. The creativity here is impressive.
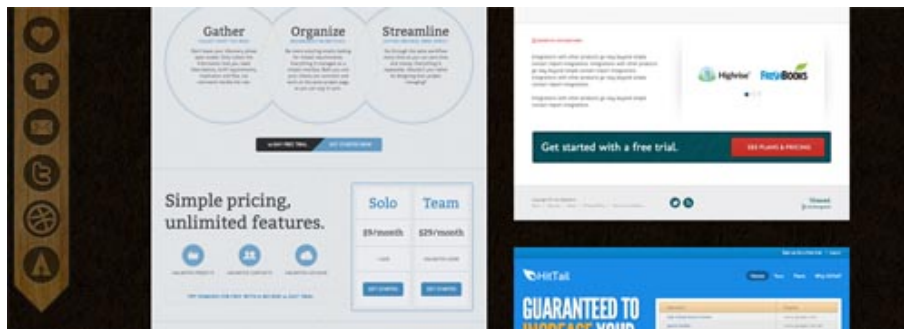
Web Designer Wall[18]

The sticky vertical navigation works well on this website because the menu has only four items. This works well enough for blogs that I wonder why others don't adopt this approach.

While sticky menus aren't the most popular form of navigation, more and more examples[19] are popping up all the time.

Getting Started

AVOID IFRAMES

This might seem like a straightforward way to implement sticky navigation, but avoid this method. iFrames cause more problems than they

---

17. http://ryanscherf.net/
18. http://webdesignerwall.com/
19. http://designbeep.com/2012/01/04/50-great-examples-of-websites-using-fixed-position-navigation-menu/

solve, particularly with cross-browser compatibility, security and search engine optimization. iFrames have their place, but they shouldn't be a major part of your HTML layout.

CSS

CSS is a great way to implement sticky navigation. It also seems to be the most straightforward, most lightweight and quickest to code. The three things to pay attention to are `position`, `margin-top` and `z-index`. Setting the menu's `position` to `fixed` disables the element from scrolling with the rest of the page. This will likely throw off your margins if your navigation is horizontal, so you'll want to adjust for that. Finally, use `z-index` with a horizontal menu to make sure the navigation sits on top of everything; this will make the other content slide underneath the navigation as you scroll. Here is the general idea:

```
#navigation {
    position: fixed;
    z-index: 10;
}


#header {
    margin-top: 50px;
}
```

You will have to play around with the CSS to make this technique work right for your website. Additional information can be found on the W3C's website[20].

---

20. http://www.w3.org/Style/Examples/007/menus.en.html

JQUERY AND JAVASCRIPT

The Simple Smart Sticky Navigation Bar is one of many good JavaScript implementations.

If you would prefer a jQuery or JavaScript solution to a CSS one, then you could try out one of the following options:

- jScroll[21]

- Simple Smart Sticky Navigation Bar[22]

- jQuery Waypoints[23]

- Sticky MenuBar[24]

Many other solutions and scripts are out there. Please include your favorites in the comments below.

21. http://www.wduffy.co.uk/blog/keep-element-in-view-while-scrolling-using-jquery
22. http://www.jay-han.com/2011/11/10/simple-smart-sticky-navigation-bar-with-jquery/
23. http://webdesign.tutsplus.com/tutorials/javascript-tutorials/create-a-sticky-navigation-header-using-jquery-waypoints/
24. http://codecanyon.net/item/jquery-css3-sticky-mega-menu-bar/239093

What's The Bad News?

There are many opinions[25] on this topic, and some would argue that sticky navigation isn't worth it. Here are some things to be aware of.

DESIGN LIMITATIONS

Going with sticky navigation could rule out some design choices that your team might not be willing to give up. For example, the most logical place for horizontal sticky navigation would be at the very top of the page, above everything else. While easy to implement, it might not be what your users need.

DISTRACTING AND INTRUSIVE

If not done carefully, sticky navigation can be distracting. Some sticky elements get delayed when bouncing back into position as the user scrolls down the page. Others are so tall or wide that they dominate the layout and impede access to the content. Navigation should be easily accessible but should not compete with the content for attention.

MOBILE COMPATIBILITY

Fixed-position CSS and certain JavaScript implementations lack support in some mobile browsers, which is a cause for concern among some developers. The article "Organizing Mobile[26]" by Luke Wroblews-

---

25. http://martymoo.com/blog/2011/11/01/the-trouble-with-sticky-headers/
26. http://www.alistapart.com/articles/organizing-mobile/

ki has some great principles to keep in mind when creating navigation for mobile devices. Responsive design techniques also offer some solutions[27] for adjusting the navigation based on the size of the screen.

Be aware of the level of support offered by each device. Knowing compatibility issues beforehand will save you time in the end. When Can I Use?[28] has some interesting information on support for `position: fixed`. Brad Frost has also done some of his own testing and analysis[29], providing some interesting insight in his accompanying video[30].

Conclusion

Why do we Web designers and developers continually force our users to scroll up and down the page in search of the navigation? This is not a problem in desktop software, and we now have the statistics to show the benefits of sticky menus. Navigation on 84% of the top 25 most visited US websites[31] could be made quicker by implementing sticky navigation.

Of course, it's not appropriate in every situation, especially when real estate is tight. But do seriously consider sticky navigation, while always accounting for usability and the overall user experience. ❧

27. http://mobile.smashingmagazine.com/2012/06/28/responsive-menus-enhancing-navigation-on-mobile-websites/
28. http://caniuse.com/css-fixed
29. http://bradfrostweb.com/blog/mobile/fixed-position/
30. http://vimeo.com/31894069
31. http://www.alexa.com/topsites/countries/US

Design Patterns: When Breaking The Rules Is OK

BY RIAN VAN DER MERWE ☙

We'd like to believe that we use established design patterns for common elements on the Web. We know what buttons should look like, how they should behave and how to design the Web forms that rely on those buttons.

And yet, broken forms, buttons that look nothing like buttons, confusing navigation elements and more are rampant on the Web. It's a boulevard of broken patterns out there.

This got me thinking about the history and purpose of design patterns and when they should and should not be used. Most interestingly, I started wondering when **breaking a pattern in favor of something different or better** might actually be OK. We all recognize and are quick to call out when patterns are misused. But are there circumstances in which breaking the rules is OK? To answer this question properly, let's go back to the beginning.

The History of Design Patterns

In 1977, the architect Christopher Alexander cowrote a book named *A Pattern Language: Towns, Buildings, Construction*[32], introducing the concept of pattern language as "a structured method of describing good design practices within a field of expertise." The goal of the book was to give ordinary people—not just architects and governments—a blueprint for improving their own towns and communities. In Alexander's own words:

> At the core… is the idea that people should design for themselves their own houses, streets and communities. This idea… comes simply from the observation that most of the wonderful places of the world were not made by architects but by the people.

---

[32]. http://en.wikipedia.org/wiki/A_Pattern_Language

Street cafe in San Diego (Image credit: shanputnam[33])

A pattern—whether in architecture, Web design or another field—always has two components: first, it **describes a common problem**; secondly, it **offers a standard solution** to that problem. For example, pattern 88 in *A Pattern Language* deals with the problem of identity and how public places can be introduced to encourage mixing in public. One of the proposed solutions is street cafes:

> *The street cafe provides a unique setting, special to cities: a place where people can sit lazily, legitimately, be on view, and watch the world go by. Therefore: encourage local cafes to spring up in each neighborhood. Make them intimate places, with several rooms, open to a busy path, where people can sit with coffee or a drink and watch the world go by. Build the front of the cafe so that a set of tables stretch out of the cafe, right into the street. The most humane cities are always full of street cafes.*

For those interested in going further down the pattern 88 rabbit hole, there is even a Flickr group[34] dedicated to examples of this pattern.

The jump from architecture to the Web was quite natural because the situation is similar: we have many common interaction problems that deserve standard solutions. One such example is Yahoo's "Navigation Tabs[35]" pattern. The problem:

---

33. http://www.flickr.com/photos/shanputnam/5968678086/sizes/l/in/photostream/
34. http://www.flickr.com/photos/freshelectrons/galleries/72157622294041311/
35. http://developer.yahoo.com/ypatterns/navigation/tabs/navtabs.html

The user needs to navigate through a site to locate content and features and have clear indication of their current location in the site.

And the solution:

Presenting a persistent single-line row of tabs in a horizontal bar below the site branding and header is a way to provide a high level navigation for the website when the number of categories is not likely to change often. The element should span across the entire width of the page using limited as well as short and predictable titles with the current selected tab clearly highlighted to maintain the metaphor of file folders.

This is all very nice, but we need to dig deeper to understand the benefits of using such a pattern in digital product design.

The Benefits Of Design Patterns

Patterns are particularly useful in design for two main reasons:

- **Patterns save time** because we don't have to solve a problem that's already been solved. If done right, we can apply the principles behind each pattern to solve other common design problems.

- **Patterns make the Web easier to use** because, as adoption increases among designers, users get used to how things work, which in turn reduces their cognitive load when encountering common design elements. To put it in academic terms, when patterns reach high adoption rates, they become mental models—sets of beliefs in the user's mind about how a system should work.

Perhaps the strongest case for using existing design patterns instead of making up new ones comes (once again) from architecture. In the article "The Value of Unoriginality[36]," Dmitry Fadeyev quotes Owen Jones, an architect and influential design theorist of the 19th century, from his book *The Grammar of Ornament*:

To attempt to build up theories of art, or to form a style, independently of the past, would be an act of supreme folly. It would be at once to reject the experiences and accumulated knowledge of thousands of years. On the contrary, we should regard as our inheritance all the

---

36. http://fadeyev.net/2012/03/31/the-value-of-unoriginality/

successful labours of the past, not blindly following them, but employ-
ing them simply as guides to find the true path.

That last sentence is key. **Patterns aren't excuses to blindly copy what others have done**, but they do provide blueprints for design that can be extremely useful to designers and users. And so we do need to stand on the shoulders of designers who have come before us—for the good of the Web and users' sanity. Many have tried to document the most common Web design patterns, with varying levels of success. In addition to the Yahoo Design Pattern Library[37], there's Peter Morville's Design Patterns[38], Welie.com[39] and, my personal favorite, UI-Patterns.com[40].

When Patterns Attack

Here's the "but" to everything we've discussed up to now. There is a **dark side to patterns** that we don't talk about enough. One doesn't simply copy a pattern library from a bunch of random places, put it on an internal wiki and then wait for the magic to happen. Integrating and maintaining an internal design pattern library is hard work, and if we don't take this work seriously, bad things will happen. Stephen Turbek sums up the main issues with pattern libraries in his article "Are Design Patterns an Anti-Pattern?[41]":

- Design patterns are not effective training tools.

- Design patterns don't replace UX expertise.

- Completeness and learn-ability are in conflict.

- Design patterns take a lot of investment.

- Design patterns should help non–UX people first.

This article isn't meant to discuss these issues in detail, so I highly recommend reading Turbek's post.

For the purpose of this article, let's assume we've done everything right. We have a published and well-known pattern library that enjoys wide adoption within our organization. We treat the libraries as guidelines and blueprints, not laws to be followed without thinking about the

---

37. http://developer.yahoo.com/ypatterns/
38. http://www.flickr.com/photos/morville/collections/72157623007335402/
39. http://www.welie.com/patterns/
40. http://ui-patterns.com/
41. http://www.boxesandarrows.com/view/are-design-patterns

problem at hand. The question I'm particularly interested in is, **when is it OK to break a widely adopted design pattern and guide users to adopt a new way of solving a problem?**

When We Attack Patterns

Despite all of their benefits, most of the Web seems to have little respect for patterns. The most glaring examples of broken design patterns are found in Web forms. Based on years of research, we *know* how to design usable forms. From Luke Wroblewski's book *Web Form Design*[42] to countless articles on things like multiple-column layouts[43] and positioning of labels[44], we don't have to guess any more. The patterns are there, and they're well established. And yet, we see so many barely usable forms online.

As an example of a broken form pattern, look at the registration form for Expotel[45] below:

Notice the small input fields; the left-aligned labels, with the miles of space between them and the input fields; the placement and design of the "Close" and "Register" buttons, which actually emphasize "Close" more. Oh, and what is a "Welcome Message"? Where will it be used? We can all agree that this is not good form design and is *not* a good way to break a pattern.

But passing judgment on a broken pattern is not always as easy as it is with the example above. Google's recent decision to remove the "+" from the button to open a new tab in Chrome came under a bit of fire recently[46]. It breaks a pattern that has been included in most browsers

---

42. http://www.amazon.com/Web-Form-Design-Filling-Blanks/dp/1933820241
43. http://baymard.com/blog/avoid-multi-column-forms
44. http://uxmovement.com/forms/faster-with-top-aligned-labels/
45. http://booking.expotel.com/userregistration.do?preSession=false

that have tab-based browsing as a feature, and yet Google claims that it did user research before making this change[47]. Was this the right decision?
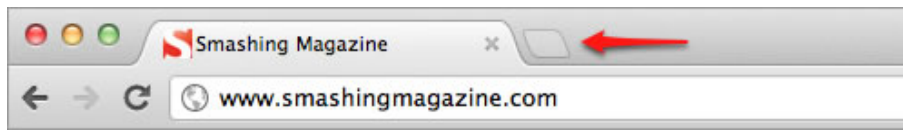
And then there are UIs that we might not know *what* to make of. iOS apps such as Clear and Path introduce new interactions that we haven't seen before—to much praise as well as negative feedback. A step forward in design or failed experiments?

As with most design decisions, the answers are rarely clear or black and white. A tension exists between patterns and new solutions that cannot be resolved with a formula. Users are familiar with the established way of doing things, yet a new solution to the problem might be better and even more natural and logical. So, when is changing something familiar to something different OK? There are **two scenarios** in which we should consider breaking a design pattern.

THE NEW WAY EMPIRICALLY IMPROVES USABILITY

One of the dangers of iterating on an existing design is what is known as the "local maximum[48]." As Joshua Porter explains:

> *The local maximum is a point at which you've hit the limit of the current design… It is as effective as it's ever going to be in its current incarnation. Even if you make 100 tweaks, you can only get so much improvement; it is as effective as it's ever going to be on its current structural foundation.*

With patterns, it could happen that we continue to improve an existing solution even while a better one exists. This is one of the pitfalls of A/B testing: it does a great job of finding the local maximum, but not for finding those new and innovative solutions.

We gain much from incremental innovation, but sometimes a pattern is ripe for radical innovation[49]. We need to go into every design problem with our eyes wide open, eager to find new solutions, and

46. http://blog.zachwaugh.com/post/17375802400/chrome-and-the-blank-new-tab-button
47. http://code.google.com/p/chromium/issues/detail?id=98264#c60
48. http://52weeksofux.com/post/694598769/the-local-maximum
49. http://intenseminimalism.com/2012/incremental-and-radical-innovation-can-user-centered-design-help/

ready to *test* those solutions to make sure that we're not following bad intuition. As Paul Scrivens points out in "Designing Ideas[50]":

> *You will never be first with a new idea. You will be first with a new way to present the idea or a new way to combine that idea with another. Ideas are nothing more than mashups of the past. Once you can embrace that, your imagination opens up a bit more and you start to look elsewhere for inspiration.*

This is what the Chromium team claims to have done with the "+" button in Chrome. It believes it has found a better solution, and it's tested it.

THE ESTABLISHED WAY BECOMES OUTDATED

Think of the icon for the "save" action in most applications. When was the last time you saw a floppy drive? Exactly. Sometimes the world shifts beneath us, and we have to adjust. Failing to do so, we could get stuck in dangerous ruts, as Twyla Tharp attests (quoted[51] by Yesenia Perez-Cruz):

> *More often than not, I've found a rut is the consequence of sticking to tried and tested methods that don't take into account how you or the world has changed.*

The publishing industry knows this better than most. Stewart Curry has this to say in "The Trope Must Die[52]":

> *Design patterns can be very useful, but when we're making a big shift in media, they can sometimes hold progress back. If we look at the evolution of digital publications, it's been a slow and steady movement from (in the most part) a printed page to reproducing that printed page on a digital device. It's steady, linear, and not very imaginative, where "it worked in print, so it will work in digital" seems to be the mindset.*

This is where the developers of apps such as Clear and Path are doing the bold, right thing. They realize that we're at beginning of a period of rapid innovation in gesture-based interfaces[53], and they want to be at the forefront of that. Some ideas will fail and some will succeed, but it's

---

50. http://drawar.com/d/designing-ideas/
51. http://cognition.happycog.com/article/rut-roh-im-in-a-design-rut
52. http://blog.woop.ie/post/19239600763/the-trope-must-die
53. http://www.getfinch.com/2012/01/what-will-our-future-interfaces-feel-like/

important that our design patterns respond to the new touch-based world we're a part of.

Our design patterns have to adjust not only to a shift in our interaction metaphors, but to a significant shift in technology usage in general. Tammy Erickson did some research on what she calls the "Re-Generation" (i.e. post-Generation Y) and discusses some of her findings in "How Mobile Technologies Are Shaping a New Generation[54]":

> *Connectivity is the basic assumption and natural fabric of everyday life for the Re-Generation. Technology connections are how people meet, express ideas, define identities, and understand each other. Older generations have, for the most part, used technology to improve productivity—to do things we've always done, faster, easier, more cheaply. For the Re-Generation, being wired is a way of life.*

Expectations of apps and services change when everything is always on and accessible. We become less tolerant of slow transitions and flows that are perceived to be too complex. We are being forced to rethink sign-up forms and payment flows in an environment where time and attention have become scarcer than ever. We don't have to reinvent the wheel, but we do need to find better ways to keep it rolling.

The Informed Decision Is The Right Decision

Design patterns bring many benefits, as well as some drawbacks to watch out for. But we'd be foolish to ignore these helpful guidelines. There is no formula for what we need to do; rather, we need to **operate**

---

54. http://blogs.hbr.org/erickson/2012/04/the_mobile_re-generation.html

within certain boundaries to ensure we're creating great design solutions without alienating users. Here is what we need to do:

- **Study design patterns that are relevant** to the applications we are working on. We need to know them by heart—and know why they exist—so that we can use them as loose blueprints for our own work.

- Approach each new project with a mind open enough to **discover better ways** to solve recurring problems.

- Stay up to date on our industry (as well as adjacent ones) so that we recognize external changes that require us to **rethink solutions that currently work quite well but might be outdated soon**.

In short, we can neither follow nor ignore design patterns completely. Instead, we need a deep understanding of the rules of human-computer interaction, so that we know when breaking them is OK. ❧

Navigation Patterns: Exploration Of Single-Page Websites

BY STEVEN BRADLEY ❧

We tend to think of navigating a website as clicking from page-to-page via some kind of global navigation that's always visible. When it comes to a single page, we often think scrolling is the one and only way to move from one end to the next.

Sometimes global navigation and scrolling are the best, most appropriate ways to move about, (however, they aren't the only ways).

The websites in this article let you scroll, but they also provide **alternative ways of finding cues and means for getting around**. In several cases the designs encourage exploration, which is both more engaging and also teaches you how to navigate at the same time.

Jess and Russ
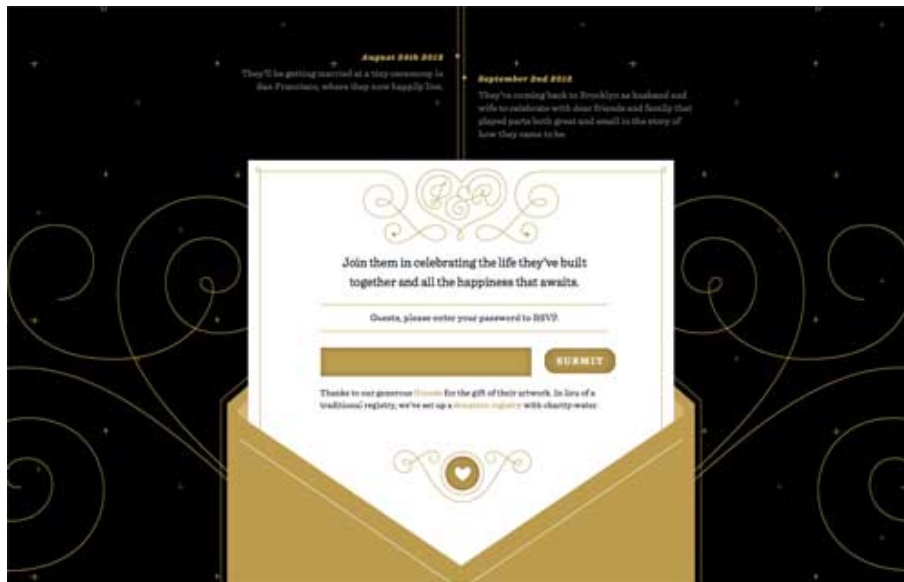
The Jess and Russ's website[55] is a wedding invitation, though it's also something more. As it says at the top of the page, it is the story of Jess and Russ leading up to this moment. It's a narrative that begins with a few details before they had met, leads to their meeting and falling in love, and culminates with the invitation (complete with RSVP form).

---

55. http://jessandruss.us/

How do you navigate a story that's told linearly through time? Sure, there are flashbacks and other narrative devices, but for the most part you tell the story from beginning to end. You move through it in a straight line and so here the navigation is simply scrolling through the page. Nothing more is needed.

I started this post suggesting we could provide more than scrolling. This example shows that, at times, scrolling is the most appropriate way to navigate. Jess and Russ's website could easily have been broken up into several pages (navigated through the "next" and "previous" links at the bottom and top of each page). That would still keep things moving linearly, though each click would momentarily disrupt the narrative. In this case scrolling was the better choice.

Fortunately the website makes us want to scroll. Along the way we get an engaging story, filled with wonderful artwork and with interesting parallax effects[56]. With this website you won't get bored scrolling—instead, you'll be looking forward to the next part of the story and how it will be told.

---

56. http://richardshepherd.com/smashing/parallax/background.html

The story your design is telling may not be as linear as this one, though it's likely parts of it will be. The lesson from Jess and Russ is that when you're **designing the linear parts of a website** and you want people to move through it in a single direction, scrolling is possibly the best option. You also may want to consider a single, longer page as opposed to several shorter ones that are connected by links.

Ballantyne

Ballantyne[57] creates luxury knitwear from cashmere. The website itself contains different types of information. There is the standard "About Us" and "Contact" information, as a start. Beyond that there are product images and chunks of text to go along with the images. It's easy to imagine yourself thumbing through the pages of a catalog when browsing through this website.

As with *Jess and Russ*, this website is entirely on a single page, and as such, scrolling is once again a predominant way to navigate. It's not the only way this time, though it's perhaps the more interesting method.

---

57. http://www.ballantyne.it/

On the landing section for the domain there are links that read "Established 1921″ and "Contacts". Clicking the former scrolls the page up to see the "Who We Are" section (the "About Us" info) above. The latter scrolls you through all the images and text to the bottom of the page as well as the contact information.

When arriving at either of these ends of the website you're also presented with **additional ways to navigate**. The "Who We Are" part of the page contains an "X" to close it, though this information doesn't actually open or close—it just scrolls you back to the main landing section for the page, which you can also do yourself.

At the top of the contact section of the page a header drops down containing the company name and the links for "Who We Are" and "Contacts". Unfortunately, the company name isn't clickable, which is conventional for navigating back to a home location.

You can equally scroll through these two end sections of the page. As you do, there's a nice parallax effect. The outer two columns scroll as you'd expect, while the middle column **scrolls in the opposite direction**. The effect creates additional interest beyond simple scrolling as more information and imagery pass through your view. The two header links along with the company name are also present as soon as you scroll below the root landing spot.

As with *Jess and Russ*, the Ballantyne website is more enjoyable to scroll than most. Here we're also given an alternative means of navigation in addition to scrolling. There are a few problems, though:

• No link is provided to navigate back to the original landing location. You have to scroll to get there, or first go to the Who We Are section and close it. This seems odd.

• Clicking to either "Who We Are" or "Contacts" isn't quite a smooth experience.

• There's no way to scroll up to the "Who We Are" section.

• The link at the landing location to "Who We Are" reads "Established 1921″ and isn't clear where it leads.

Another minor complaint is while scrolling, the images don't always align where you'd like them to—you see a full image in one column, but not the others. This might have been done on purpose to get you to scroll slowly through the website, but I kept wanting things to align better. While it won't affect your experience of the website, it can be a little jarring.

Even though the above items could be improved, they hardly cause problems when navigating the website. We're talking about a limited amount of content, and within a moment or two, you've figured out where everything is. While clicking to the end locations isn't the smoothest experience, seeing everything scroll from one end to the other does show you quickly how to navigate the entire website. In fact, it's this behavior that cues you in if you didn't immediately realize to scroll.

The lesson here is that even if your page will most likely be scrolled, you can still provide alternate options to navigate and help people understand what's located on the page.

Cadillac ATS vs The World

Unlike the two websites above, Cadillac[58] is a website with a couple of separate pages. Here we'll look at one section of the website, specifically one page within that section. One of the ways Cadillac is promoting the ATS is as a vehicle that can take you anywhere and exhilarate you as it does.

The designers have set up a section of the website[59] where you can explore four interesting locations around the world that you might not ordinarily get to see. It's these location pages that we will consider here.

A **navigation bar remains fixed at the top** of each of these pages making it easy to get back to the main section page, or switch to one of the other three locations. If you hover over the Cadillac logo, the global navigation appears and allows you to get to any part of the website.

We're here to explore though, and there's an immediate cue for how to go about it. An **animation of a series of arrows pointing down** suggest that's where we look. They direct your eye to another downward pointing shape with the words "watch the video". Shape and words are a link.

---

58. http://ats-vs-world.cadillac.com/
59. http://ats-vs-world.cadillac.com/#!/home
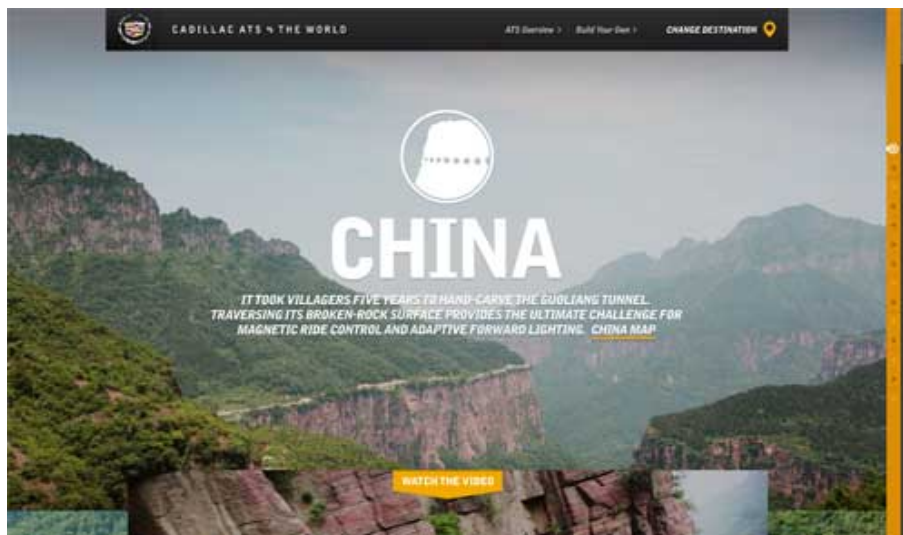
Clicking scrolls a video from below into place. Below the video is another now familiar downward pointing shape with the words "ATS vs The Wind". Clicking once again scrolls content from below, this time complete with a change of background image and parallax effect.

Each subsequent click scrolls to a new part of the page. You can navigate the entire page by clicking one shape after another until you reach the end, where you can check in (share on FaceBook, Twitter, or Google+) or visit one of the other three locations.

You could, of course, scroll through the entire page instead of clicking at each stop—you'll experience the parallax effect a little more, but otherwise navigating the page will be the same until you want to move back up the page (as there are no upward pointing shapes to click).

There are two additional ways to navigate, both located along the right edge of the page. At the very edge is a scroll bar, though not the default one that comes with the browser. It works exactly as you would expect and provides an immediate cue that there's more on the page than on the screen.

Just inside this scrollbar is a long thin column with a series of lighter and darker dots. Clicking on any dot will take you to a specific section within the page. The dots also offer additional clues about the page.

Lighter dots mark the start of a section. Darker dots take you to a location within each section. Each section is further reinforced by a line separator.

Clicking any dot scrolls the page to the given section or sub-section. Hovering brings up a tool tip pointing to the light dot and containing the heading for each section.
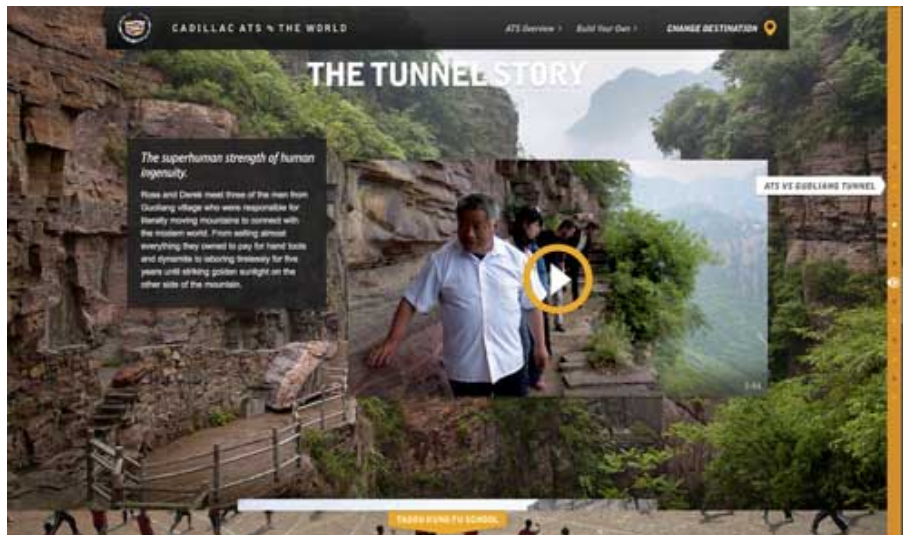
As with the websites above, everything here works well—the content is limited, and it won't take long to work out the organization. You're also encouraged to explore each location in each section, and cues are provided to help in your exploration.

- The downward pointing shapes invite you to click and get started.

- Content scrolling into place after a click suggests you can scroll the page on your own.

- The scroll bar along the right edge further suggests scrolling and provides another mechanism to do so

- The chapter/timeline feature might be the last thing you discover, but it's ultimately the quickest way to navigate the page.

Each location is a new destination to explore—both literally (as a new page) and figuratively (with the content each contains). It's part of the fun, and puts you in discovery mode from the start.

Aside: The main Cadillac website[60] has more conventional navigation (a horizontal navigation bar with drop-downs), though it's very nicely done and worth a look. The drop-downs present quite a bit of useful information.

The lesson here is that you can provide several ways to navigate for different types of visitors. You should provide immediate cues for how to begin navigation and let more advanced users discover other means to navigate as they explore.

---

60. http://www.cadillac.com/flash.html

Bleep Radio

Bleep Radio[61] also encourages you to explore their single-page website. Unlike the websites above, there's less of a directional nature to the scrolling. What you want to do could be located on any part of the page. As with the *Cadillac ATS* pages, there are visual cues in the form of triangles that suggest they are clickable for navigation.

Any browser open to at least 1200×900 will see most of the main menu, which is inside a large triangle showing the word Discover (again, encouraging exploration). The program link takes you to a section above the page (like Who We Are on Ballantyne). Again, there is an X to get back.

Aside from the Program link, most of the other links are located in the main Discover triangle. And of course, you can scroll up and down the page to find different content.

---

61. http://www.bleepradio.gr/program

While the layout is certainly original and interesting, I don't think the navigation here works as well as with the other websites, for a few reasons:

- Unless you navigate to a section toward the top or bottom of the page, you're left without navigation back besides scrolling. The discover triangle is only present at the top and bottom.

- Some triangles are clickable, while others aren't, creating a bit of confusion as to what is and isn't navigation.

- The page is always wider than the browser, no matter what size it's opened to. Scrolling vertically will at times shift things to the right or left.

  In all fairness to the website, it's written in Greek (and I don't speak Greek) so I could easily be missing some obvious cues.
  On a more positive note, the website does have some qualities that are both nice and fun:

- Clicking the Just Bleep triangle at the top clears away most of the content on the page so that you can focus on the task at hand. Nothing specifically happens for me after clicking Just Bleep (though I'm guessing it would, were I logged into the website).

- The bleeper section is a grid of member images. There are a few triangles sitting atop the images, and hovering over them results in their shifting to the right or left. There's no functional purpose, but it lends an interactive feel to the website.

One other thing to point out is the **triangle along the right edge that remains fixed** in place when scrolling. Clicking on it opens the current

on-air Bleep, along with some social buttons. I can't help but think navigating the website would be easier if the Discover menu was similarly fixed in place along the left edge.

The lesson here is that a unique and creative design can encourage exploration, however you should be consistent in your navigational cues. If a shape, color or specific style is a link in one place, it should be a link everywhere it occurs, or it risks confusing your visitors.

EVO Energy: The Interactive U.K. Energy Consumption Guide

The Interactive U.K. Energy Consumption Guide from EVO Energy[62] is what information graphics[63] on the Web should be. As with the *Cadillac* website, we're looking at a single page within a larger website. And as with all the pages, the primary way to navigate is to scroll from top to bottom.

However, **scrolling isn't the only way to navigate the content here**. You are expected to interact with the page in order to get most of the information it contains.
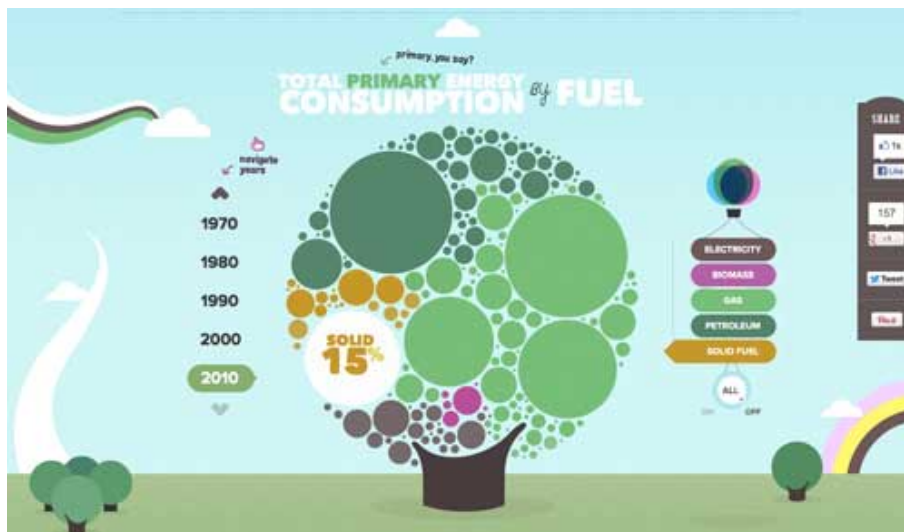
For example, the first interactive section on the page offers data about the total primary energy consumption from fuel used in the United Kingdom. The main graphic is a tree with circles of various colors representing leaves. Each color is associated with a different type of fuel…

- Electricity

---

62. http://www.evoenergy.co.uk/uk-energy-guide/
63. http://www.smashingmagazine.com/2011/10/14/the-dos-and-donts-of-infographic-design/

- Biomass

- Gas

- Petroleum

- Solid Fuel

The more colored circles are shown in the graphic, the greater that fuel contributes to the total. Each of the fuel types are listed in another graphic to the right, and hovering over them reveals the actual percentage of the fuel within the total.

To the left is another list allowing you to view the same data over different decades. With a couple of hovers and clicks, you will see that solid fuel accounted for 47% of the total in 1970 and only 15% of the total in 2010.
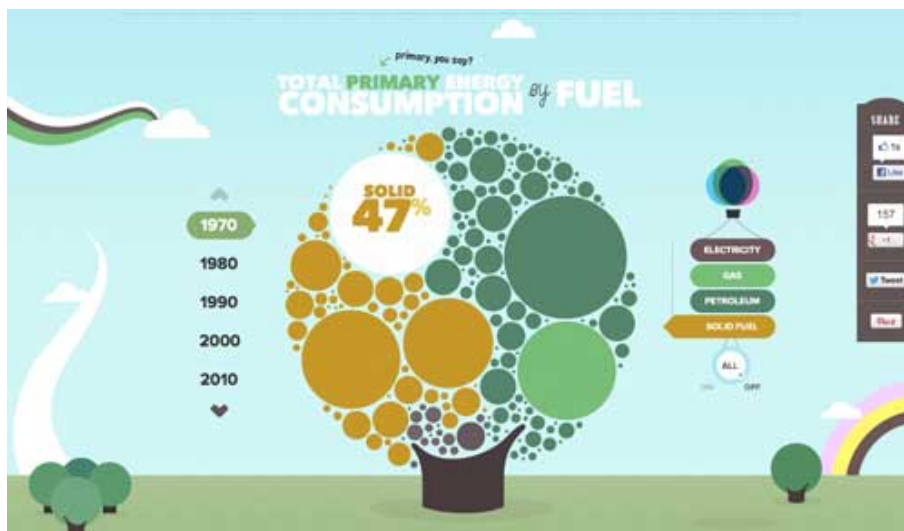

There's little in the way of text on the page outside of a few basic bits of information and occasional instructions. It's hardly needed (though it could enhance the graphics some).

These interactive infographics[64] take advantage of what the Web can do and through interaction the information sinks in a lot more. You aren't just being presented information—you're actively selecting the information you want to see, making it more likely that you'll pay attention and remember it.

The only issue I have with the page is that some panels aren't interactive. After interacting with so many, I felt cheated when all of a sudden I couldn't interact with one.

---

64. http://www.smashingmagazine.com/2011/10/21/the-do%E2%80%99s-and-don%E2%80%99ts-of-infographic-design-revisited/

The lesson here is that **navigation is more than moving about a website or Web page**, it can also be a way to bring content to you in place. Instead of something that takes your visitors from one location on a page or website to another, navigation can be about replacing content in place—it's a much more engaging way to interact with a website.
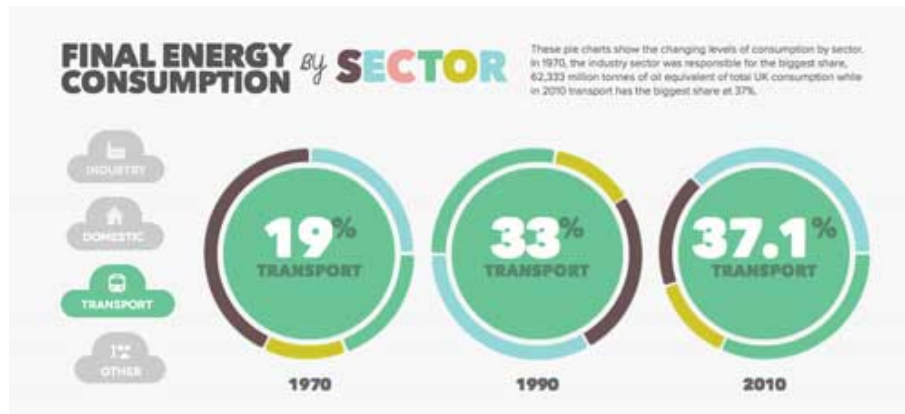
Summary

The five examples above naturally allow you to scroll up and down their pages—but they don't stop there, as they provide additional cues and means for you to get around.

Some of the lessons these websites teach us about navigation:

- Choose appropriate navigation based on the needs of the content.

- Provide alternate forms of navigation when it benefits your visitor.

- Provide immediate and obvious cues about how to navigate.

- Offer advanced ways to navigate for advanced users.

- Encourage exploration, but don't require it for navigation to be usable.

- You don't always have to take people to the content—you can bring the content to them.

Hopefully this brief look at the websites above will get you to explore further and help you generate ideas for alternate ways to navigate content. ❧

Redefining Hick's Law

BY JASON GROSS ❧

Hick's Law[65] has always been a popular reference point for designers. You'll find it cited in the endless lists of basic laws and principles[66] that all designers should be familiar with. Given our assumed comfort level with this design cornerstone, I am surprised to see so many people getting it wrong.

What we think we understand about Hick's Law as it pertains to Web design is oversimplified and incomplete. We need to more deeply investigate what Hick's Law can do for Web design. In the end, we will see why **this design principle is undervalued**, and we will see how we have been designing incorrectly for the user's decision-making process. In order to get there, we need to look at our current approach to Hick's Law and why it's wrong.

A mess of different size labels for clothing hooks. (Image: außerirdische sind gesund[67])

---

65. http://en.wikipedia.org/wiki/Hick's_law
66. http://3.7designs.co/blog/2010/07/ten-laws-to-design-by/
67. http://www.flickr.com/photos/sooperkuh/358241806/sizes/l/in/photostream/

An Incomplete Definition

As it stands today, most discussions of Hick's Law focus on a narrow portion of Web design. Traditionally, the law is used to encourage designers to limit options in navigation, lists and interactive options. Whether it's used against drop-down and fly-out menus with too many options or pages with too many links, Hick's Law has primarily been a counterweight to sprawl[68].
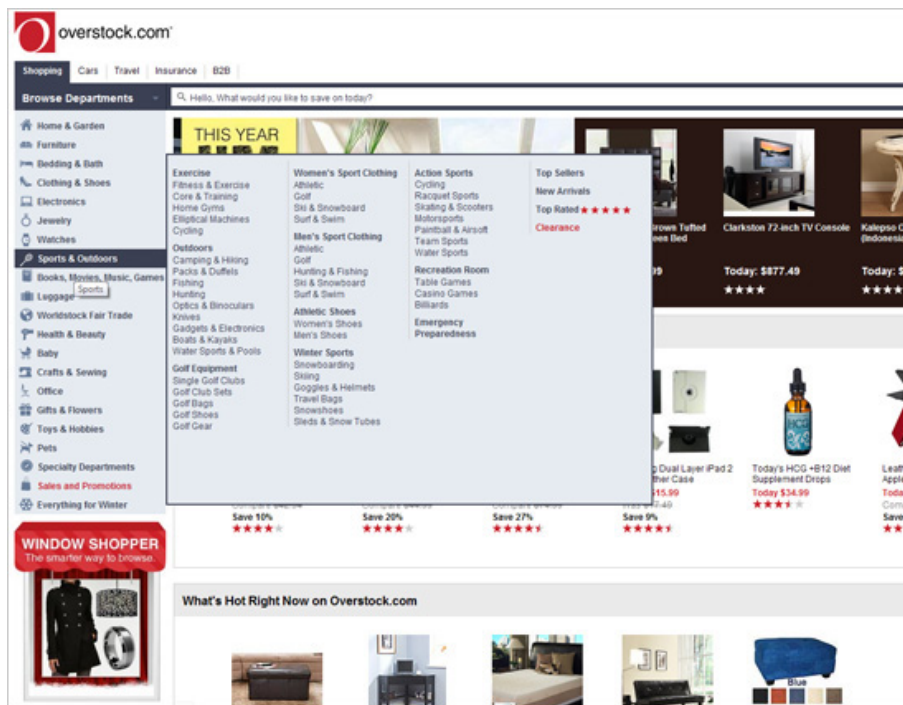
Don't do this.

While the **idea does have merit** (massive menus really are a bad idea), it is incomplete. Why do we restrict Hick's Law to navigation? Hyperlinks are the driving force of the Internet; they take us from one page to another and drive the action on the page. So, applying Hick's Law should begin there. Limiting the number of links and buttons in front of users should simplify their decision-making process, enabling them to move about the Web with minimal stress and delay. But is this the end all and be all of Hick's Law?

A Better Perspective

If we stopped here in our study of Hick's Law, we would miss out on a lot of value. Why do we focus so much on links and clicks? While these

---

68. http://www.vanseodesign.com/web-design/fitts-law-hicks-law/

factors do drive the user experience, **they aren't the only factors** that users take into account when navigating a design. We have to remember that Hick's Law did not come about with the invention of the Internet. Hick's research simply shed light on how a website's options affect the speed and ease of the user's decision making. This makes for a pretty broad scope, because we aren't measuring physical responses or the role that technology plays, but rather the mental processes that lead to making a decision.

So, let's step back and consider the thought process that users go through and how many levels of decision-making a Web design can consist of. For example, instead of just regarding each link in a navigation menu, sign-up form or toolbar as its own option, we should consider the process of interacting with the navigation a decision of its own. For that matter, any given design contains a whole array of top-level "options" that demand decisions of the user.

In choosing whether to read an article, navigate to a new page, fill out a log-in form or perform a search, the user has to mentally process several options before making even a single click. Are they interested in the content on this page? They might decide to skim the headlines to see what stands out to them. Perhaps they are shopping for something. Before even hitting the "Add to cart" button, they have to choose between making the purchase, looking at product details and reviews, and shopping around for something else.
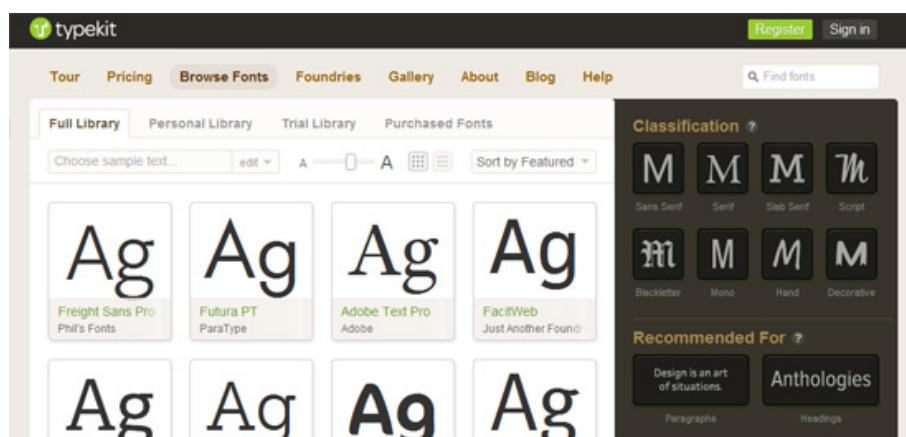
When browsing fonts on Typekit[69], the user has many more decisions to make than simply picking a font.

With all of these options available, it would seem that crunching the numbers and determining how many choices are possible would paralyze any user into indecision and make any website unusable. Clearly,

---

69. http://typekit.com/

this isn't the case. So, what is it about a good design that enables users to decide and act, without being overwhelmed by too many choices? Better yet, can we measure and reproduce these factors in our design work every day?

Reapplying Hick's Law

In order to properly apply Hick's Law to Web design, we must approach a design the way our users do: in phases.

The first phase occurs before the website even launches. While we would never want to design based on an assumption of what our user base is looking for, visitor will rarely happen upon your website without some sort of preconception of what they are going to see. Barring the occasional hijack[70], most first-time visitors enter a website by clicking a link that includes a description, title or search result that hints at the content they will see. Returning visitors probably have an even better idea of what they will be running into. It is rare that a user enters a website with no clue of what it is about.

This preconception among users about content and experience is a great reason to follow a content-first design approach[71]. Of course, this approach also happens to be entirely justified. In an age of search-engine placement and social advertising, many users are landing on content-heavy pages, not just home pages driven by calls to action. So, the first decision point is about content consumption. The human mind has trouble choosing between several options unless one clearly stands out[72] as the best. When you water down a design with widgets and secondary content, you reduce the value of the primary content and force a harder decision on the user. The process of eliminating distracting options has to start here and should be carried on throughout the design process. **The more choices we eliminate, the more enjoyable the experience will be.**

Looking past the primary content, what happens when content comes in large data sets, such as a list of recent posts, product suggestions or thumbnails? It's here that the designer can really prove their worth. We have all seen designs that lack structure, spacing and consistency. The content gets lost, or the user gives up entirely when they aren't given the tools with which to make confident decisions. Building a great experience has a lot to do with how we empower the user's decision-making process through these practices. When we apply our

70. http://trolololololololololo.com/
71. http://uxdesign.smashingmagazine.com/2011/10/24/role-design-kingdom-content/
72. http://www.lifehack.org/articles/management/how-to-make-the-right-choice.html

skill sets to drive users to a particular action on a page, we are counteracting the lag or complete mental shutdown[73] that is caused by a complicated decision-making process.

Is minimalism your thing? Then a splash of color or carefully arranged negative space goes a long way to **breaking down the top-level decisions** that users have to make. If you find yourself painting or spacing out elements haphazardly on the page, then it's time to reconsider the number of options on the page and choose the ones that are most important.
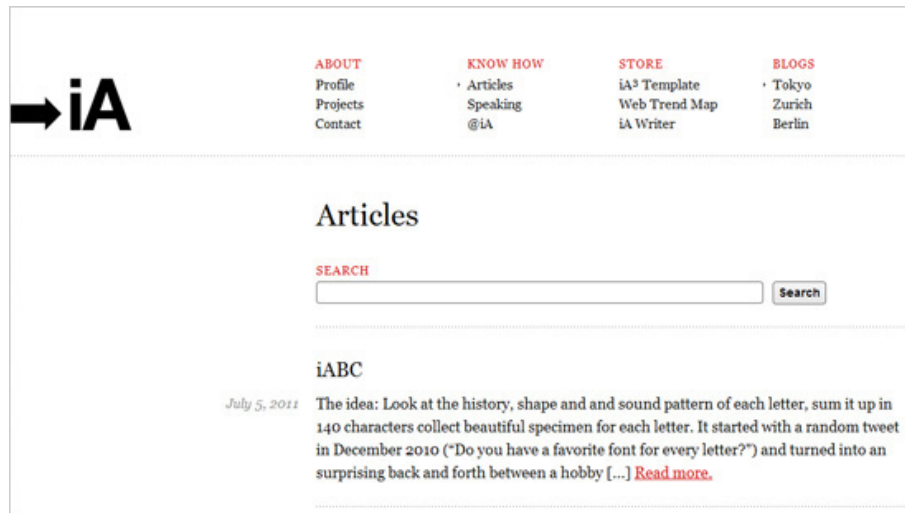
The less color we use, the more powerful it becomes.

When dealing with rich designs and content-heavy websites, patterns are your best friend. When users are in scanning mode, their eyes will key in on consistency, so your designs should be visually consistent in the right way. Are your headings different enough from your titles to be instantly recognizable as secondary or tertiary content? Always fall back on the principles of art and look at how the design uses line, shape, color and spacing. Variations in these things draw the user's attention, while consistency breeds familiarity and easier decision-making. Pushing Hick's Law to the core of this thought process **forces us to think twice** about our reasons for visually emphasizing certain elements.

When we design in patterns, we instill assumptions and behavioral patterns in our users as well. The Web has some global design patterns that help users make decisions. When text is blue and underlined, users understand they can click on it and get sent to a related resource. Similar patterns can exist within the confines of a single design. If we place

---

73. http://www.thedailybeast.com/newsweek/2011/02/27/i-can-t-think.html

a texture behind a headline, the user will associate the two things; the next time the user sees the texture, they will expect to see an element in front of it that carries the same weight or meaning as the headline they first saw. Distributing these patterns throughout a design helps users make choices based on previous experience.

WHAT WE DO WITH WORDS

Perhaps you haven't heard the news: people don't really read websites[74]. Users don't read content until they are motivated and enabled to do so. So, we need to take titles seriously and use imagery in the right way. Graphics and images are a huge draw, especially on pages loaded with text. When used correctly, they can make an otherwise heavy page easier to decipher, thus connecting users to the content they care about more quickly.
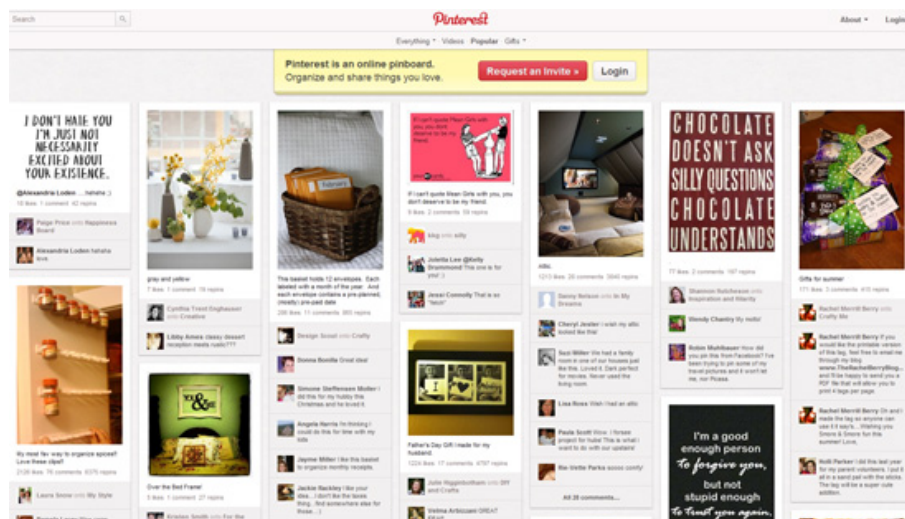
Thanks to design patterns and support of image thumbnails, Pinterest[75] can load a lot of content.

74. http://uxmyths.com/post/647473628/myth-people-read-on-the-web
75. http://pinterest.com/
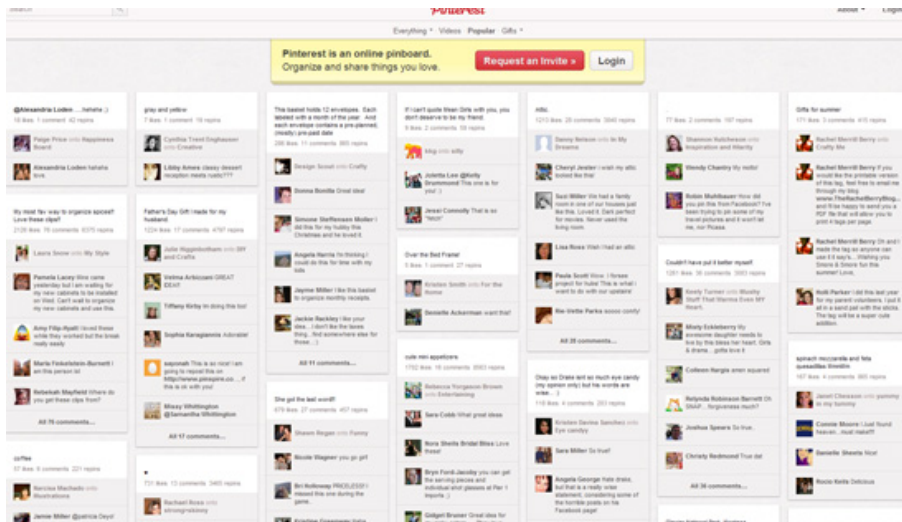
Take away the images, and the design suddenly becomes unusable. This highlights the importance of using images properly.

Designing With Hick's

The only way to get any real value out of Hick's Law is to marry it with the design principles that we know and love. I challenge you to incorporate Hick's Law into the highest levels of your design process. When you set up wireframes, look past the trees of "Link 1, Link 2, Link 3…" and see the forest of decisions that you are putting in front of users. (Cutting this forest down is totally fine.)
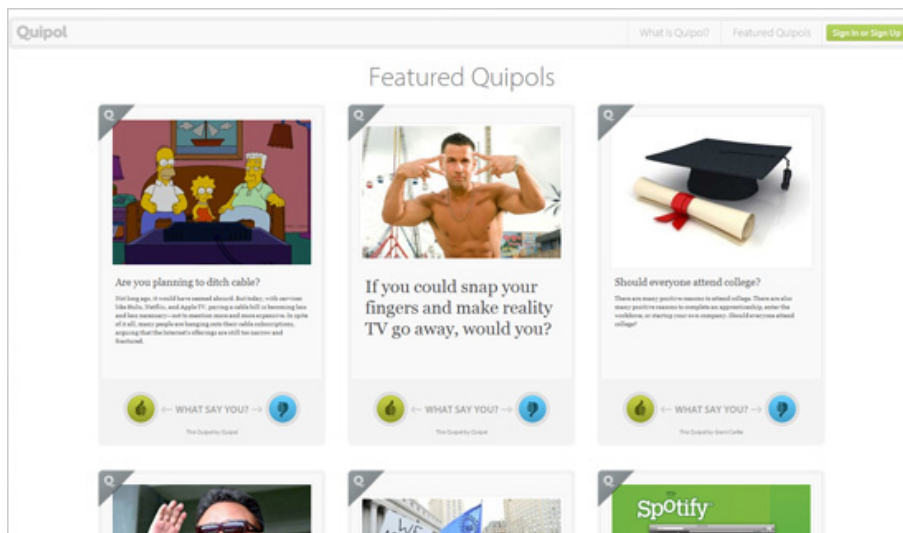
Prototyping stuff out? Don't just worry about how many times to use a call-to-action style. When you group elements or space them out or change the background color or apply a texture, you are setting off a section of the design and potentially laying another choice on users. This is why design is not just about decorating the page or making a button stand out. We must **respect the power of design to draw attention** and, thus, strictly limit the number of decisions that we burden users with.

The Web is a wonderful place to specialize, and a lot of websites out there do a fine job of delivering a very limited scope of options to users in fine style. This level of focus is made possible by zeroing in on a core set of behaviors that are easily targeted by a consistent set of design patterns. This often has the desirable side effect of being great for mobile-first[76] responsive design[77].

---

76. http://www.lukew.com/ff/entry.asp?933
77. http://www.abookapart.com/products/responsive-web-design

Quipol[78] focuses on doing one thing really well, which limits decision overload for users.

WHERE'S MY MAGIC NUMBER?

So, how many choices can we expect users to be able to manage before slowing down? The answer will always be relatively few. Some of the best designed and most popular websites limit options to just a few. On Google, we can log in, search or try our luck. On the Quipol page above, we can vote, log in or sign up, learn about this new service, or see more polls. The options on Twitter's home page have lowered over time, being whittled down to simple sign-up and log-in forms.
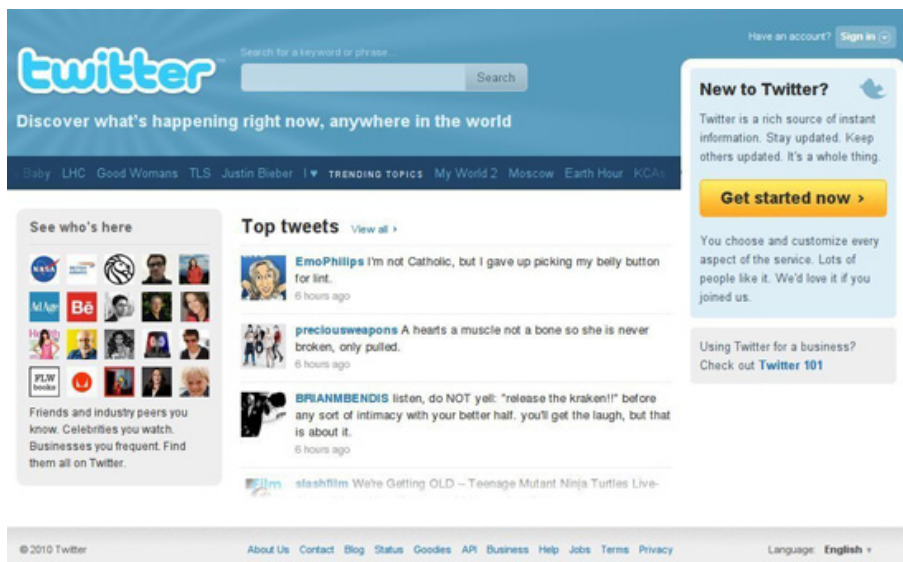
Not long ago, Twitter[79] presented a lot of choices on the home page.

78. http://quipol.com/
79. http://twitter.com/
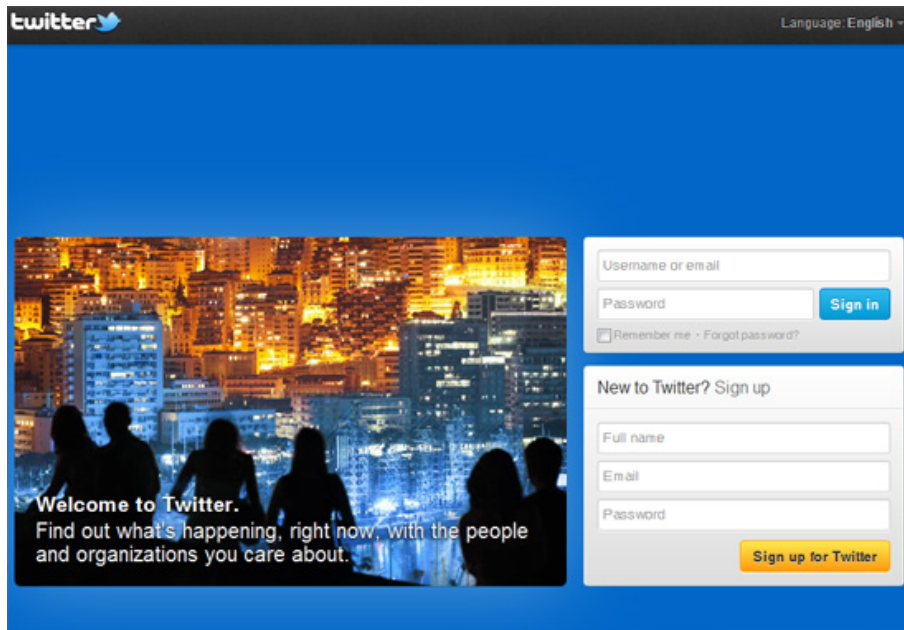
The new design sharply reduces these decision points and exhibits greater focus.

This is a huge design challenge that demands a lot of thought, testing and revision. The process of minimizing options for users without impairing functionality is not an exact science and no easy task. It requires studying our users' behavior patterns and making tough decisions about what to do about such things as advertising, business-derived feature creep and actions such as logging in and signing up (which empower users but distract from the content). As we can see with Twitter, this is an evolving art form. As Twitter continues to grow in popularity, more and more users are landing on its home page already knowing what goes on there. This empowers Twitter's design team to lower the noise that results from having to educate new users on the service.
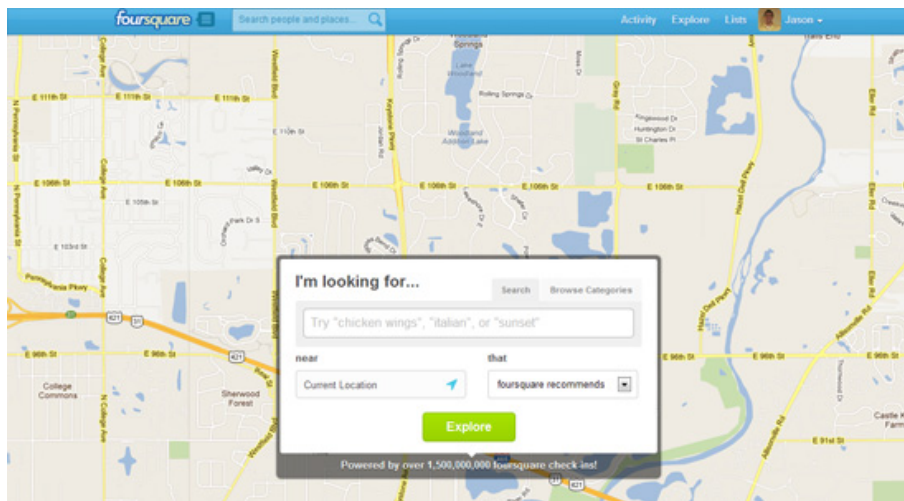
The "Explore" feature on Foursquare[80] packs limitless possibility into a simple set of options.

Foursquare has also done a great job of providing a powerful tool without overwhelming users with choice. In less capable hands, Foursquare's "Explore" feature[81] could easily host dozens of filters, restrictions and settings to tinker with. Instead, the visitor is encouraged to use the service simply by typing what they want in the input field and hitting the only button on the screen. This simplicity is made possible by a few things. First and foremost, the core premise of the service is all about the here and now. Foursquare knows its users are interested in what's right around them, because the service has always been about sharing and exploring your immediate surroundings; so, defaulting the search area to the user's current location is a safe bet. Secondly, over a billion data points yield a lot of power. With such a large a set of information, Foursquare can do a lot behind the scenes to make educated guesses about what its users are really interested in.

Making Sense Of It All

So, how does rethinking Hick's Law outside of its traditional design context make us better designers? **It's all about the process.** It irks me when a client asks me to make something pretty or to put a "magic touch" on some content. Design has always been about so much more than that, and a huge part of it is making the experience effortless for users.

As we've seen in the examples of well-executed design above, websites take different routes and devise different solutions, but the goals

---

80. http://foursquare.com/
81. http://www.foursquare.com/explore

are the same. When we apply principles such as Hick's Law beyond the narrow scope of navigation sets, we start to see the power of eliminating distractions for users. Slimming websites down to one or two clear options makes for a beautiful experience and sets a lofty goal for the designer.

We can't always eliminate all confusion for our busy, distracted users, but we can ease their pain by limiting the options that they have to mentally process. When we view chunks of content as decision-making points, it becomes clear just how much we ask of visitors. Each option is an opportunity to evaluate its importance in the design. Designers who force users to decide between only meaningful and clear options are the ones who deliver an effortless user experience. And when the experience is effortless, everyone wins. ❧

RELATED RESOURCES

- "Thinking of Interfaces as Sets of Jobs[82]," Ryan Singer

- "The Obvious, the Easy, and the Possible[83]," Jason Fried

- "Decision Architecture: Designing for Decision-Making[84]," Colleen Roller

---

82. http://feltpresence.com/articles/13-thinking-of-interfaces-as-sets-of-jobs
83. http://37signals.com/svn/posts/3047-the-obvious-the-easy-and-the-possible
84. http://uxmag.com/articles/decision-architecture-designing-for-decision-making

What Web Designers Can Learn From Video Games

BY ANNE MILES ❧

Games are becoming more Web-like, and the Web is becoming more game-like. If you need proof of this, you have only to look at Yahoo Answers. Random questions are posed, the top answer is chosen, and credibility points are given to the winner. It's a ranking system that accumulates and unlocks more and more features within the system. It works because of the psychology of achievement and game mechanics and thus encourages interaction. This raises the question, **what can a Web designer learn from games**, or—more specifically—video games?

Good game interfaces have to be highly usable and intuitive, capable of handling a lot of repetitive actions in the fewest clicks possible. They need to be attractive and engaging. They need to be likeable. A good game interface adds to and enhances the user's experience. In a game, people want the content delivered to them in a way that doesn't break the fantasy. Any dissonance with the interface will cause an otherwise great game to fail.

Even in older games, as in Prince of Persia (displayed above), the limited system capabilities enforced designers to come up with creative and innovative design patterns. With more capabilities available today, we are able to find more advanced design techniques in modern video games.

In the same way, website users want their content delivered to them in a way that is easy to understand, intuitive and engaging and that doesn't require a lot of scrolling or clicking. In fact, Web designers can learn a lot from video game interfaces. Websites that use common game interface tools can streamline the user experience while adding a lot of personality. This can result in higher traffic and a higher rate of repeat visits—and sales… Cha-ching!

It's no surprise, then, that we've seen an influx of carousels, lightboxes, accordions and increasingly sophisticated navigation patterns, as CSS and JavaScript libraries have put such tools within reach of Web browsers. Whether it's a good or a bad thing, is a topic for another article, and this article will focus on the techniques rather than their wrong applications.

What a Web designer can learn from video games isn't limited to the user interface. Yahoo Answers works because of the psychology of the achievement system that is built in. So, while we will look at some basic user interface ideas and patterns, other higher-level concepts would be useful, too, and worth exploring.

Remember The Big Picture

In considering game interfaces, a Web designer needs to be acutely conscious of their project's context and their client's goals. Obviously, a website will often, though not always, have a goal that is very different from that of a video game. On many websites, efficiency needs to be a higher priority than entertainment. A cool fish-eye interface is not the most practical idea for a website dedicated to delivering tax information quickly or for an e-commerce website. However, an interactive social media channel might benefit from a leaderboard or some type of achievement system. Choose your UI components to fit the project.

Looking at the big picture, also consider structure and method—not just UI components. For example, look at how menus are structured, and consider why those choices were made. In many games, you have a hub-and-spoke type architecture, leading to different sets of tools within the menus. If you choose "Weapons," then all of the options for weapons open on the next screen. You have to navigate back to the top screen in order to choose "Maps." This structure simplifies a set of options that would otherwise quickly become confusing or overwhelming by providing focused attention on one choice at a time.

Can you see how this type of architecture could benefit a website that presents a large amount of information to the visitor? By allowing the visitor to focus on one piece of a large online task or one nugget of information at a time, you potentially increase the conversion rate for

your client. This structure could also be effective when you are crafting a sales funnel on a website. The example below shows a simple game menu structure[85] that could easily be applied to the information architecture of a website, building paths for visitors to follow.
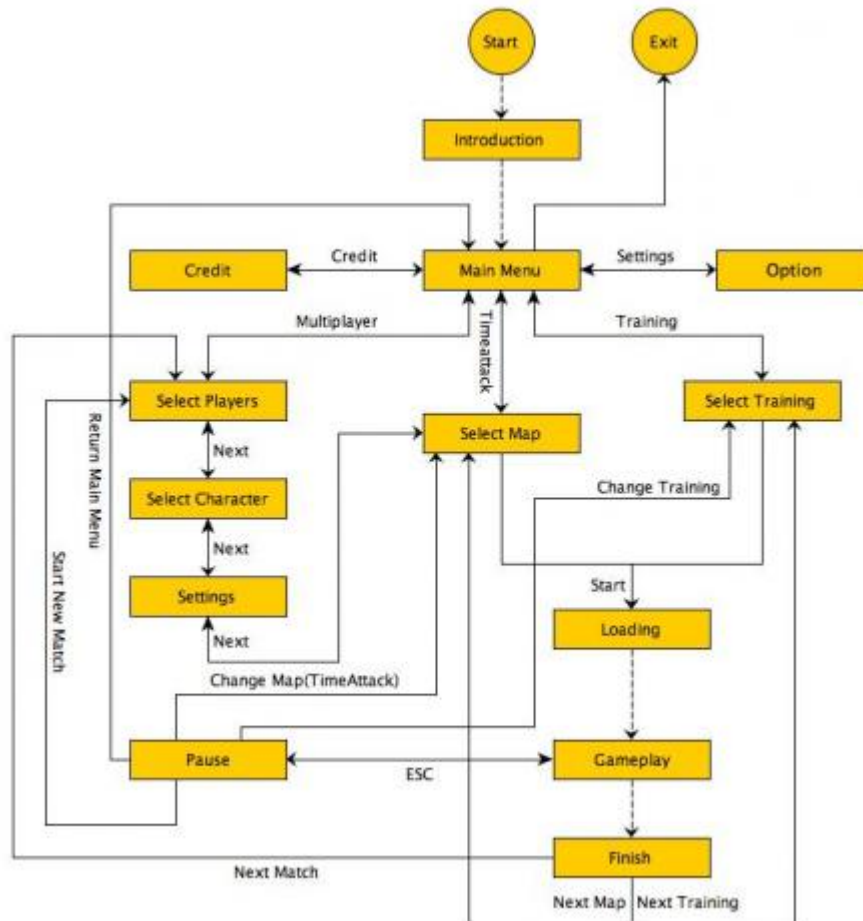
If you were building a website for a CPA firm, you might segment its menu information under headings **relevant to the type of visitor**. A high-wealth individual has very different needs than a small business, but both might be interested in hiring the same firm. You could start at the top level, with two simple entry points serving as a funnel, one for individuals and families and the other for businesses and organizations, each button leading to the hub for that user. This hub page could provide content, offer pertinent tools and advertise relevant services for these very different users, thus simplifying their experience.

---

85. http://theballgame.wordpress.com/2009/10/04/planing-the-menu-structure/
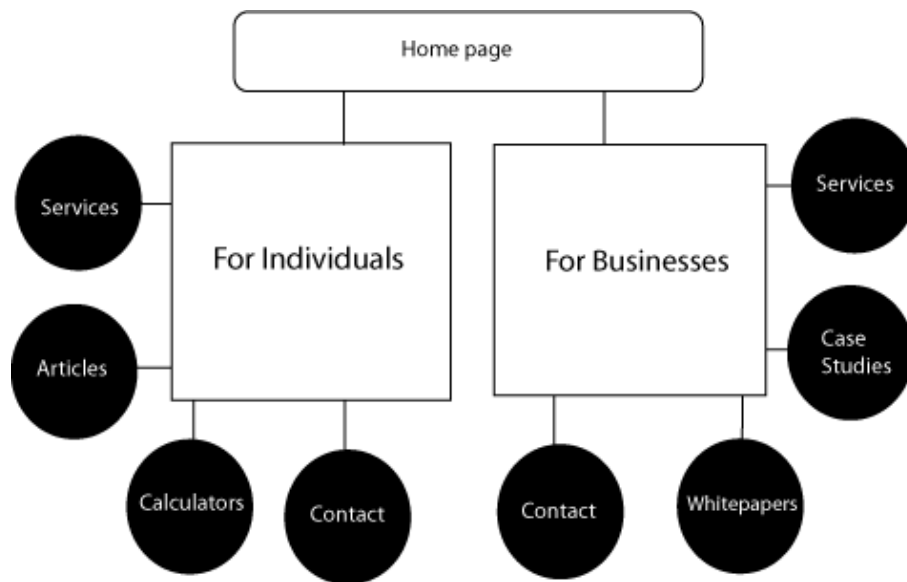
Also, notice places where video games *show* instead of *tell*, and try to understand how they do that. Successful games are particularly adept at *showing* during training sessions, in what are often referred to as "noob caves." A character has to pass through elementary rooms or levels, where they are taught to accomplish basic tasks in a way that is entertaining and integrated with the story. An adventurer learns to pick up a sword and swing it, then kills a rat, then learns how to pick up treasure. The user is taught to use the interface through immersive experience.

In The Elder Scrolls IV: Oblivion", you start out in prison and must escape through an underground cave, fighting rats and the occasional small goblin along the way to learn the basic controls of the game.

Why is this relevant? You probably won't have to make a full interactive tutorial for a complicated interface, but chances are your client's content *will* be more clearly received and more quickly understood through intelligent graphics or charts. You could take big concepts and break them down into bite-sized chunks. You could look for potential points of confusion and clarify with tooltips or examples rather than long explanations. By studying how games show instead of tell, you could get a breakthrough on a thorny presentation problem.

ENGAGEMENT DOESN'T HAVE TO BE GLITZY

Game design wizard Jesse Schell says[86], "Games offer the possibility of success, the opportunity to satisfy your curiosity, the chance to do some problem-solving and make clear choices, giving a feeling of freedom." Even the most mundane of websites could be made more engaging by asking the question, What elements of games do people find pleasurable?

Games provide clear feedback, often at the instant of user input. These elements could be incorporated into interfaces, and not only through carousels or accordions. Asking something as simple as "Would you like to learn more about this topic?" upon confirming the submission of a form can go a long way to increasing user interaction.

Some Web designers already implement some of these common UI components at a simple level. Certainly hover menus and tooltips are not new. Seeing how these are implemented in a game can spark ideas on how to implement ordinary UI elements in a more creative and interesting way.
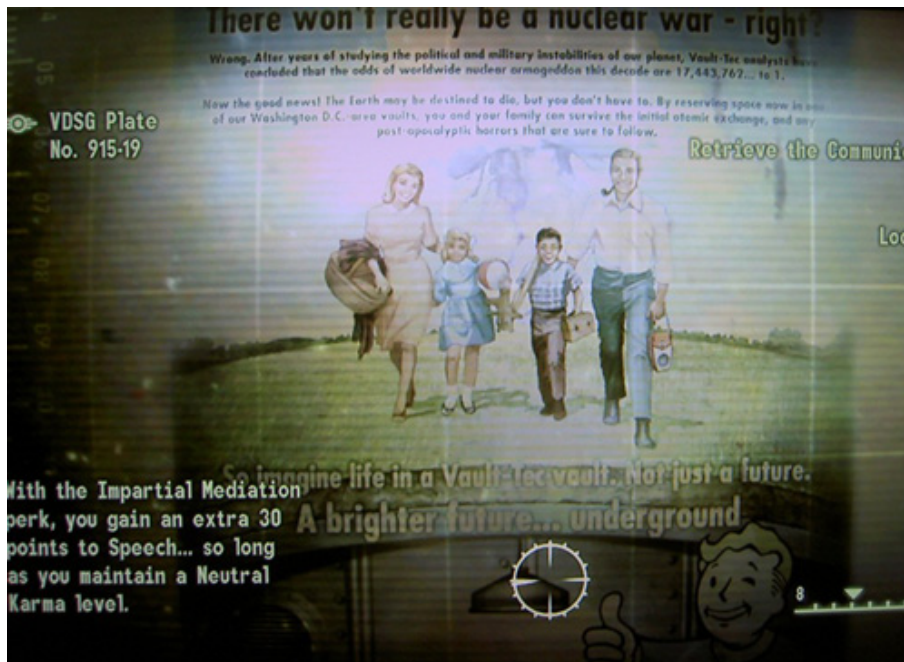
Examples, Please

Let's dive in and look at some UI elements that can add zing to your next project. We'll look at some examples and then a few resources where you can learn more.

86. http://www.ted.com/talks/jesse_schell_when_games_invade_real_life.html

AJAX MESSAGES WITH LOADER IMAGE

These loading screens from *Fallout: New Vegas* (top) and *Fallout 3* (bottom) have helpful information and tips, along with a background image that expands on the theme of the game. Instead of a spinning loader image, the user sees a roulette wheel or green-screen target that transforms a boring wait into a fun part of the game experience.

What a Web designer can take from this:

Customize your graphics. Use them to pull the user into the "world" that you're creating on screen. Even if you are working on a corporate website, you can load tips and helpful bits of information. Building a retail sports website? Perhaps you could use a spinning basketball for your loading graphic on a slideshow. Not sure how to get started? Check out this tutorial to learn how to preload content.[87]

A full-page background image for a loading screen might be too slow, but you could add a colored background to the loading panel div, and then use JavaScript plug-ins to load random tips and information to fill the space. For best results, keep the loader files below 30 KB; the smaller the better. A simple AJAX call can grab tips every so many seconds, or you can simply post one for each load. The choice depends on how much content you need to load and how much time you have. For an example of this kind of loader, check out the Website Grader[88] at HubSpot. After submitting a link, check out the loader that comes up as you wait for the result.
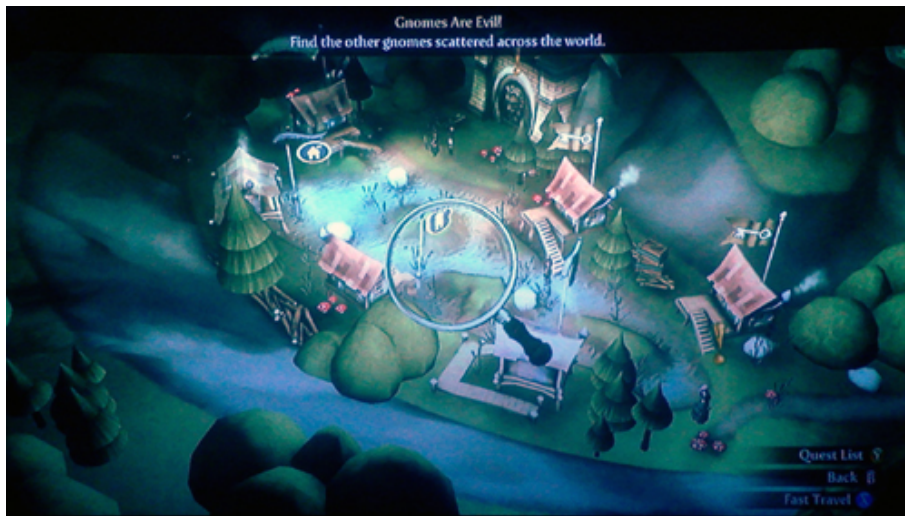

---

87. http://jqueryfordesigners.com/image-loading/
88. http://websitegrader.com/
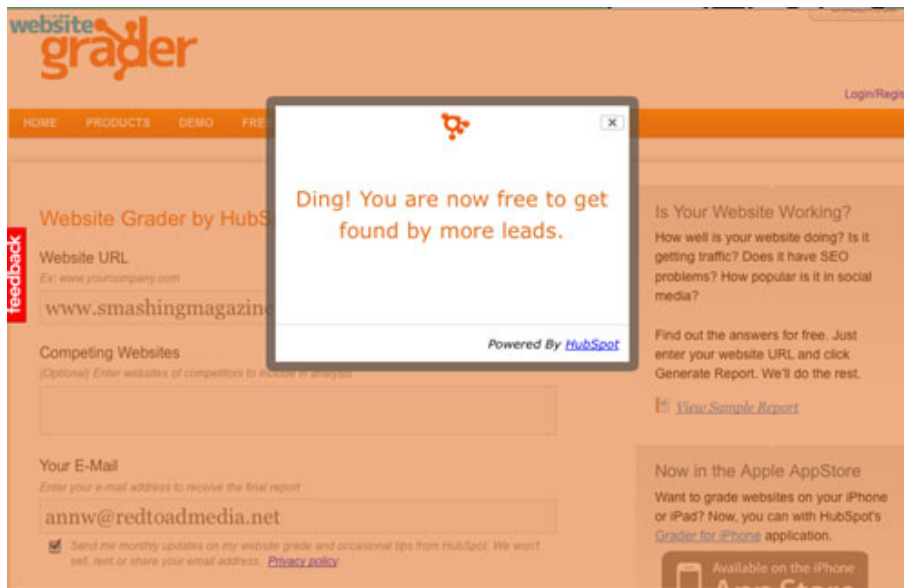
CUSTOM CURSORS

In Fable 3, the place being chosen by the user is indicated by a magnifying glass, which acts as a custom cursor.

In The Elder Scrolls IV: Oblivion, a simple hand cursor indicates an object that the player can pick up. A red hand indicates that the item is being stolen and that soldiers might pursue.

What a Web designer can take from this:
Probably the most recognizable custom cursor is the "grabby hand" Google Maps[89]. But custom cursors are nothing new and are common in Web applications. The capability is built into most browsers.

---

89. http://www.google.com/maps

It's important to **use these cursors sparingly**: when offering help, to indicate clickable content, and to highlight important information. Does a particular piece of information absolutely need to be seen by visitors? Try this demo of a custom cursor[90] (pictured below). Do you see how it could be used to grab attention and highlight important points? Imagine what a well-executed JavaScript magic wand could do on a children's website to capture attention! Obviously, it wouldn't be a good fit for a corporate website, though.

ICONS, ICONS, ICONS

90. http://www.ajaxblender.com/article-sources/jquery/custom-cursors/index.html

One big difference between video games and websites is that icons are used much more in complex game menus than in website navigation, and rightly so. A user typically spends much more time in a game than on a website. But icons are still used on websites, and increasingly so as the line between websites and Web applications blur.

So, how are icons used effectively in game navigation? They must be readable and fit the context. In the example above from *Halo Reach*, the user relies on icons to navigate and choose weapons, but the menus resemble a "heads-up display" (HUD) that we might see in a vehicle in the real world. In *Oblivion*, icons are presented on "scrolls." Website icons should likewise be easy to understand. Add text labels for optimum usability.

Icons can greatly accelerate navigation through complex menus if the icons are carefully chosen and consistent and if users spend a lot of time on the website. Use solid-color, high-contrast outlines of easily recognizable shapes that are simple and quickly readable.

Games are moving away from small, highly detailed images to more sophisticated outlines (in smaller files), such as those found in *Halo Reach* and the *Call of Duty* series, and larger detailed images with distinctive shapes, such as the ones below. Even if you don't notice the details, you will recognize the hand, circle and face outlines. Using the same color makes them less visually complicated and easier to decipher. The more icons that are used, the simpler and more quickly readable they should be.
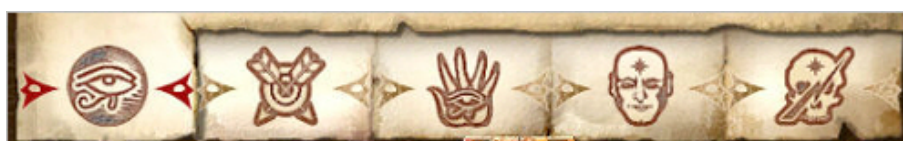
You can also **use icons as visual cues to focus attention on key topics**. Use "header" graphics instead of buttons as quick prompts in con-

tent boxes and repeating topics to reinforce concepts. Make complex images bigger, and be consistent. Use icons to add interest to lists, and break up content into digestible pieces and to draw attention to important sections of text, as Treemo[91] does so well. Consider using relevant icons for navigation and topical groupings. You could use consistent shapes as headings within the text or as pull quotes to indicate that certain content is related. Use icons to make content easy to scan, highlighting points of interest, so that users can quickly find pertinent information.

Icons don't have to be static illustrations. The screenshots on Pattern Tap[92] serve as traditional thumbnails, but their distinctive shape also functions as an icon, increasing interest and reinforcing the brand:


What about using your client's own products as icons? The clever submenu on DonQ[93], shown below, uses the products themselves as icons, quickly and easily directing you to the one you're interested in. Even more clever is the way that the rest of the content dims when the submenu appears, making your options stand out.

---

91. http://www.treemo.com
92. http://patterntap.com/collections
93. http://donq.com/
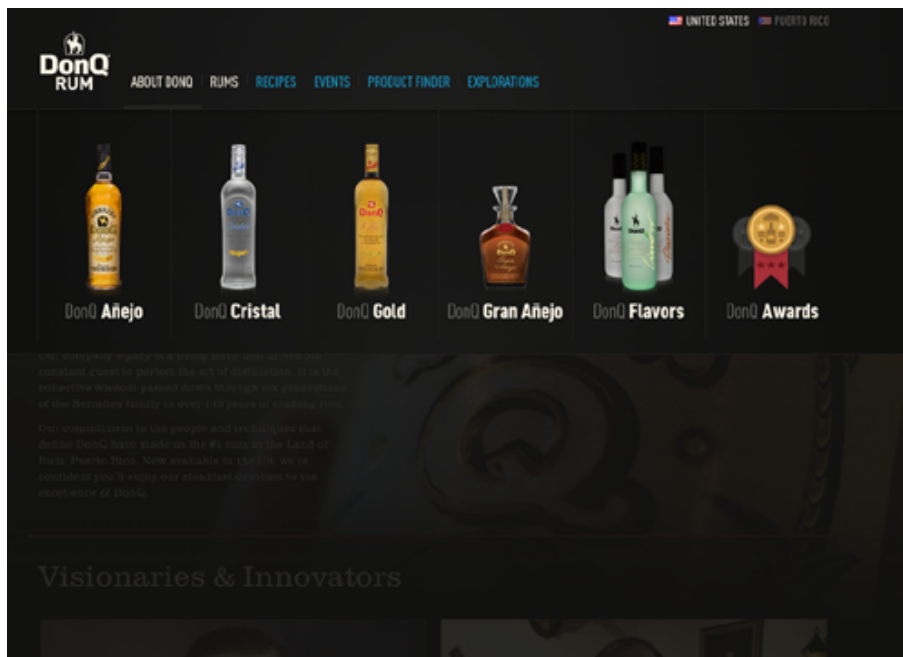
FULL-PAGE CAROUSELS

Tabbed screens that fade out, such as this one from *Dragon Age, Origins*, have been around for a long time:

In the "Carnage Report" in *Halo Reach*, below, this idea is taken to a new level. The screens **scroll** horizontally, and each page has multiple tabs. Gamers are used to this type of interface. But take it to the Web, and people will be surprised.

You have to interact with this type of interface to do it justice. Jax Vineyards[94] uses a similar type of layout, without tabs:
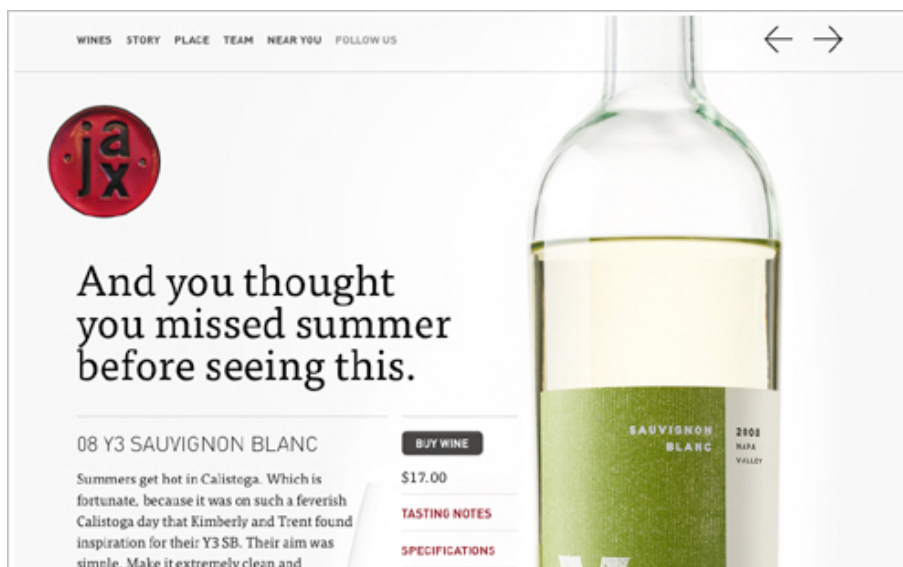
Add tabs to each carousel screen, and you would take this website to the next level. Magento[95] offers another, simpler take on this idea:

---

94. http://jaxvineyards.com/#/sauvignonblanc
95. http://go.magento.com/

Right now we see this type of interface in mobile and tablet UIs in which there are multiple background images. We also see it in games of all types. This is more than tabs within tabs or simple horizontal scrolling: think iPad with multiple desktops. Think for a Living[96] offers a (very game-like!) map in the top-right corner to help users navigate its unusual carousel.

What a Web designer can take from this:

If you have a lot of content, then this bold solution can be user-friendly and can increase engagement. Remember the good old on-page anchor tag with a target? This is the same concept in new clothing. Your screens slide in and are easily navigable with a touch screen, which is a factor that will only increase in importance.

Because of the various screen sizes, this type of layout requires careful planning and might call for CSS3 media queries[97] to ensure that the content loads as intended on different screen sizes. You will need to make your layouts responsive[98]. You can implement a full-screen carousel by using a page-sized `div`, with the `overflow` set to `hidden`, and placing the screens in an unordered list with a set width.

Users will become increasingly familiar and comfortable with this type of interface as they adopt tablets. Implementing an even simpler horizontal scroll can make your client stand out from the crowd.

---

96. http://www.thinkingforaliving.org/
97. http://coding.smashingmagazine.com/2011/01/12/guidelines-for-responsive-web-design/
98. http://www.smashingmagazine.com/2011/07/22/responsive-web-design-techniques-tools-and-design-strategies/

Fable 3 is out, and its immersive menu system is completely different from the one in *Fable 2*[99], pictured above. But *Fable 2* has such a beautiful slider menu[100] that we had to include it.

Scrolling with the slider reveals buttons, and content is presented on the right half of the screen. The buttons also have dropdowns under them. Inactive content dims. Pictured above is the top category of

---

99. http://lionhead.com/fable2/
100. http://jqueryui.com/demos/slider/

"Clothing." Then the content drills down to "Coats," then to specific clothing items. Does this remind you of e-commerce?

What a Web designer can take from this:

Have you ever been on a website that had huge fly-out menus that covered the page? And as you hovered over items, they expanded into sub-menus… four levels deep! Such complicated menus can be intimidating and make the person want to leave. Making the menu small, easy on the eyes and quickly scrollable is a great way to overcome bloat and keep visitors from clicking away.

There are already some slider scripts[101] that provide custom scroll bars for any `div` container. Why not put buttons in the `div`? There may be certain settings (like entertainment or fashion websites) where this type of menu is more usable and scalable than your average drop-down or fly-out menu. Add an AJAX loader for your `onClick` event, and you have an engaging interface that users can easily decipher. The goal is to keep users on *one* screen while keeping the menus scalable. You could add literally as many items under each menu as you need without making them unwieldy.

PIVOT SCREENS

Halo Reach[102] *on YouTube.*

101. http://flowplayer.org/tools/demos/rangeinput/scrollbar.html

I must admit, my heart skipped a beat the first time I saw the pivot screens on *Halo Reach*. When you get to the main menu, the text is skewed. *Halo Reach* uses perspective throughout the game to point to the right edge of menu screens. This is a visual cue. What happens when you push the controller to the right? The screen jumps and scrolls horizontally, blurring, to give you the next screen, which uses perspective as well, this time skewing all of the text and images to the left. Under a tab, your character is animated, barely moving and eerily life-like. Bravo. I sat and played with the pivots for a while. Of course, my first reaction was, I want to do that.

What a Web designer can take from this:

With a little Photoshop, you can emulate this menu. By using a large panoramic background image that covers two screens' width with skewed CSS3 typography[103], and a fast horizontal scroll in JavaScript, you could get something close to the tilt found in this game.

Apply this to a smaller pane, and use it on a banner or button that is completely animated in two frames, and you'll get a wow (so will your client). I haven't seen anyone using this method on the Web yet, but I did work up a little demo[104] to give you a starting point should you want to implement this yourself.
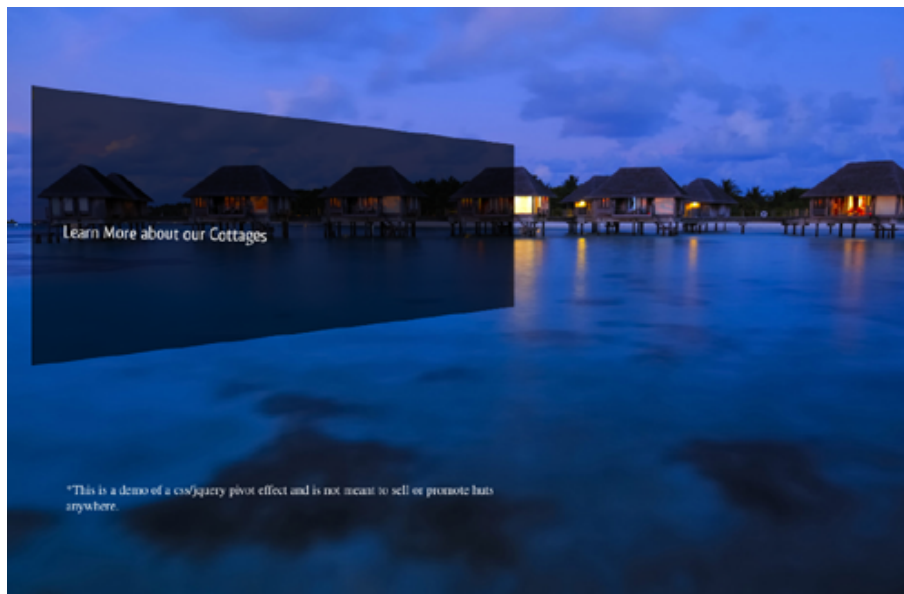
Also, notice the way that *Halo Reach* integrates mundane menu screens into the world of the game with the clever illusion of a landscape in the distance. It's a beautiful thing. It gives a sense of depth and approach, like when you look at a city from a plane before landing. It builds ex-

---

102. http://www.youtube.com/embed/cX_8ZJGu9HY?rel=0
103. http://www.zenelements.com/blog/css3-transform/
104. http://www.redtoadmedia.com/pivot.html

citement and entices you to go deeper, to interact and be part of the action. This type of integration does not lend itself to all website experiences, but it does to some; and when appropriate, it is worth doing. **Never underestimate the power of delight.**

CONTEXT MENUS

The context menu in a video game is the kissing cousin of a website sub-menu. Context menus like the one above from *Assassin's Creed: Brotherhood* give the user specific options depending on their location in the game and their choice of actions. If you choose to cast a spell, then the sub-menu offers you a fireball or lightning blast. If you choose to move, then you can run, climb or hide, all from the radial menu. Radial menus with icons are very popular, but context menus could just as easily be short vertical lists of text.

What a Web designer can take from this:

When you invite a user to take a specific action, a context menu can enhance the experience. Instead of providing lists of links, you could offer a fun array of specific actions to take. We see this used now in Web applications and in small social media sharing widgets.

When making a context menu, you might at least consider making it radial. Radial menus should give users a choice of three to eight options, and the interface can add visual interest. Keep the menus as simple and clear as possible. They should offer relevant choices to the user at the point of decision and increase conversion rates. They should also be easy to click and visually lightweight.
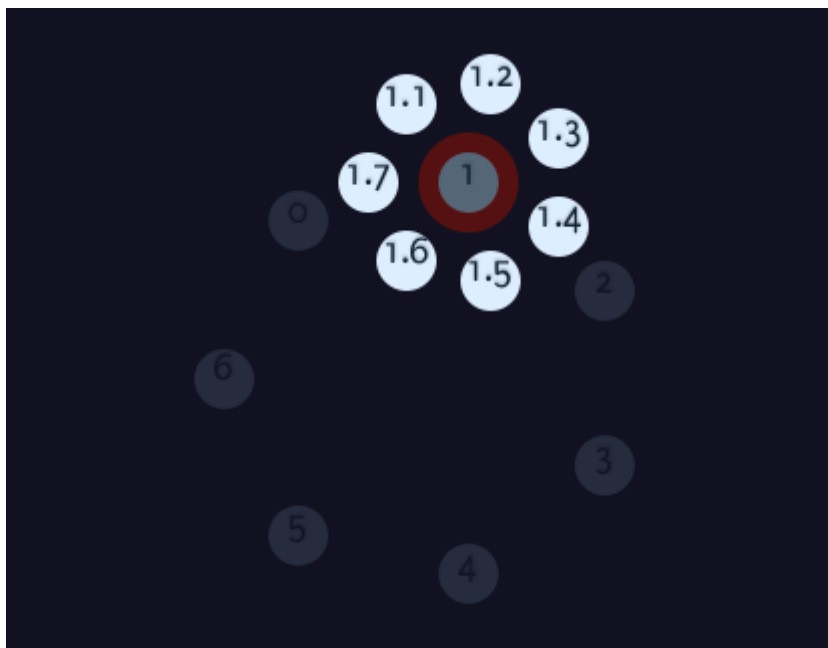
For a fun example of a radial context menu, check out TuneGlue's musicmap[105]:

---

105. http://audiomap.tuneglue.net/

While this was done in Flash, you could build a simple radial menu with JavaScript[106]. Or you could get more complex, with nested radial menus[107], like so:
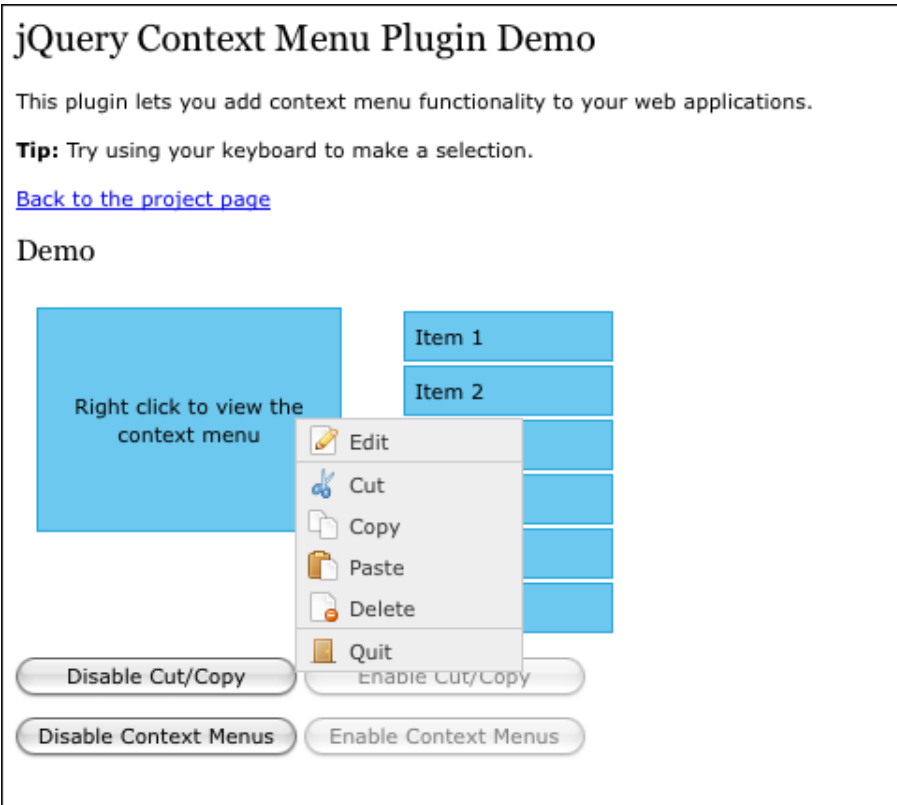

Radial menus aren't limited to context menus. Pop-up panel menus at a point of action can be equally effective and may not take as much time or testing to develop.

---

106. http://www.webtoolkit.info/javascript-pie-menu.html
107. http://www.tikku.com/jquery-radmenu-plugin#code_example_4

Your Turn

Many other examples of great interface ideas can be gleaned from studying video games. Games offer design inspiration that can help you reward and gratify users and make your interfaces more intuitive and fun.

Are you building a website for a non-profit that is planning a donation drive? Consider using leaderboards to track donations. You could use leaderboards to give a shout out to the top 10 readers on your blog, giving them greater incentive to comment.

Study how icons are used, and think of ways to implement them that will make your website more user-friendly and enjoyable. Make interesting tooltips, or consider ways to add downloadable content ("DLC" for all you gamers out there) as a reward or incentive. By observing and implementing creatively, your websites will become more engaging and easier to use. And let's not forget that doing the research is really fun! ❧

FURTHER RESOURCES

- Introduction to Design Patterns[108]
  A good beginner's resource to learn about design patterns.

- Art of Game Design[109]
  This book teaches the fundamentals of game design. Sample chapters are available to download.

- Interaction Design Pattern Library[110]
  A great tool for brainstorming specific solutions to meet user needs. It has a list of patterns and detailed descriptions.

- Yahoo Design Pattern Library[111]
  The mother of all design pattern libraries.

- Vertical Custom Scrollbars/Sliders[112]
  A starting point for a vertical slider menu.

- Patternry[113]
  A wonderful UI resource, with examples and how-to's.

- Gamification.org[114]
  This wiki is dedicated to exploring ways to integrate game mechanics in non-game environments in order to increase engagement.

108. http://www.emdezine.com/deziningInteractions/2010/03/22/why-have-a-design-pattern-library/
109. http://artofgamedesign.com/
110. http://www.welie.com/patterns/
111. http://developer.yahoo.com/ypatterns/
112. http://www.simonbattersby.com/blog/vertical-scrollbar-using-jquery-ui-slider/
113. http://www.patternry.com/
114. http://gamification.org/wiki/Encyclopedia

Motion & Animation: A New Mobile UX Design Material

BY RACHEL HINMAN ❧

Growing up, weekends were about worship in the Hinman household. Sunday mornings were reserved for a laborious worship ritual dictated by my parents. It required dressing up in uncomfortable clothes, going to church and pretending to listen to long-winded sermons about Jesus (while I drew doodles in the hymnals).

Saturday, however, was reserved as my day of worship, and I was a proud and dedicated disciple of the church of Saturday Morning Cartoons. Every Saturday, rain or shine, healthy or sick, I'd jump out of bed, run downstairs to the living room, plant myself in front of the TV, and celebrate the gospel of Wonder Woman, Captain Caveman, Scooby Doo and Papa Smurf for hours on end. While my parents were far from enthusiastic about my choice of religion, they tolerated it as a form of quid pro quo for Sunday church attendance.

Little did either of us know that those hours of fanatical dedication to the gospel of Saturday morning cartoon programming would eventually turn into a valuable vocational asset. I imagine that many of you reading this are members of the very same congregation—the group of us who recognize the subtle yet important religious differences between still-frame cartoons (like those found in the funnies section of the Sunday newspaper) and the animated TV cartoons before, which we gladly took the communion of orange juice and cereal every Saturday morning. We are the ones who understand what adding movement to something flat and lifeless can do. **Movement breathes life into everything it touches.**

Animated cartoons such as Wonder Woman, Scooby Doo and Captain Caveman taught me how movement can breathe life into drawings.

Adding movement to anything—whether a series of drawings or the transitions between the screens in a digital experience—is not just as easy as "adding water." It's an art that requires patience, an eye for subtlety and careful study of how objects and people move through space and time.

Transitions and subtle motion-based animations are emerging as a new and compelling mobile design material, worthy of being learned

and being used with efficiency and grace. The addition of movement to a mobile experience can provide clarity, information about context and, frankly, a dash of joy and fun. However, too much animation or funky transitions can destroy a perfectly good mobile experience. This makes understanding the guiding principles behind the art of animation the best first step to artfully applying motion to your design work.

The people who understand this better than anyone are the legions of brilliant animators who have worked at Walt Disney. Thankfully for us, two animators by the names of Ollie Johnston and Frank Thomas decided to put pen to paper and share with the world the basic animation principles used by Disney animators during the filmmaking process in their book, *The Illusion of Life: Disney Animation*[115].

You may wonder what animation has to do with the mobile user experience. While the art form of animation was once the provenance of animated films and television, it has found its way into the computer and digital user experience realms. Artful animation has all but invaded the mobile user experience field. Whether it is the transitions between screens of a mobile experience or the behaviors applied to UI elements that can be interacted with using gestures, **motion has become a significant mobile design element**. It's a design material you can use to help guide users through the mobile experiences you create.

Taking cues from Johnston and Thomas, this chapter explains the 12 basic principles of animation, borrowed from their 1981 book *The Illusion of Life: Disney Animation*. Although originally developed for animated film and television, these principles are completely applicable to screened-based experiences, too. If applied with subtlety and finesse, motion can elevate your mobile work, giving it that little touch of magic that you experienced every Saturday morning as a child.

---

115. http://www.amazon.com/The-ILLUSION-OF-LIFE-ANIMATION/dp/0786860707
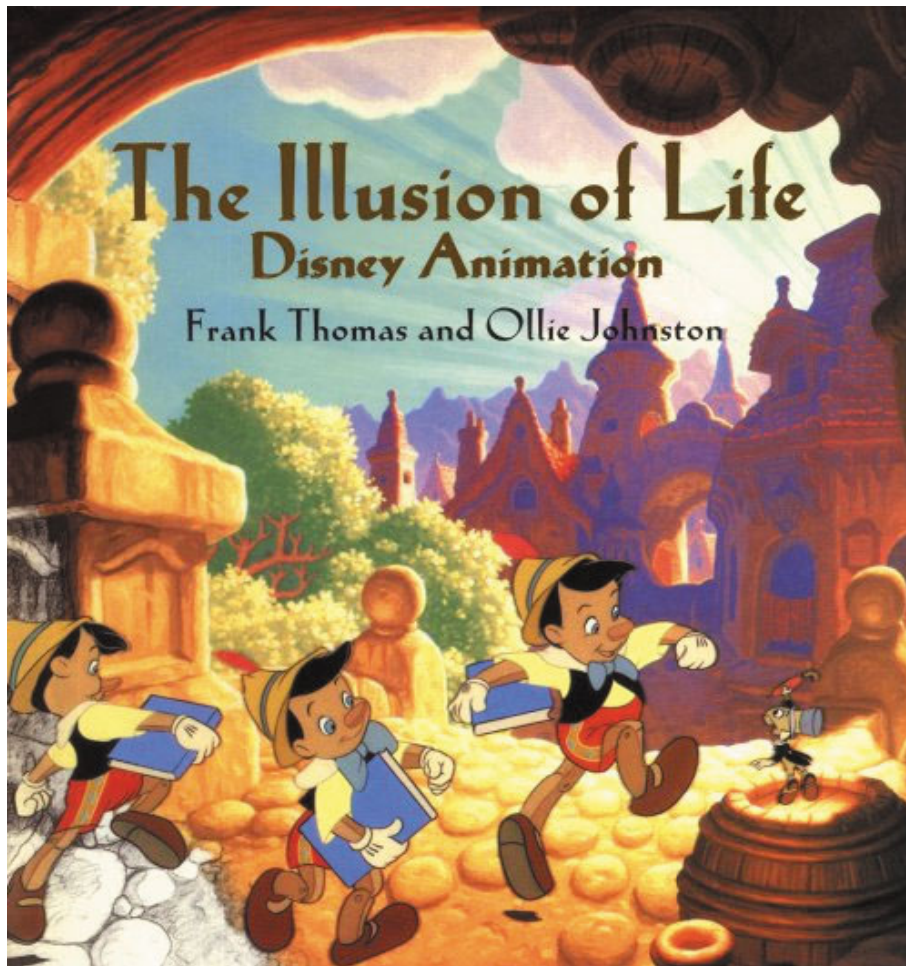
The Illusion of Life: Disney Animation, by Frank Thomas and Ollie Johnston, outlines 12 basic principles of animation.

Here are **the 12 basic principles of animation**:

1. Squash and stretch

2. Anticipation

3. Staging

4. Straight ahead and pose-to-pose

5. Follow through and overlapping action

6. Slow in and out

7. Arcs

8. Secondary action

9. Timing

10. Exaggeration

11. Solid Drawing

12. Appeal

The 12 Principles Of Animation

PRINCIPLE 1: SQUASH AND STRETCH

People and objects have an inherent mass. When an object moves, the quality of the movement often indicates the rigidity of the object. Man-made real-world objects, such as a bookshelf or wooden chair, are rigid and have little flexibility. **Soft surfaces, such as clothing, organic objects and plant leaves, have less rigidity and higher flexibility.** Squash and stretch is the animation principle used to accurately express the rigidity of an object.
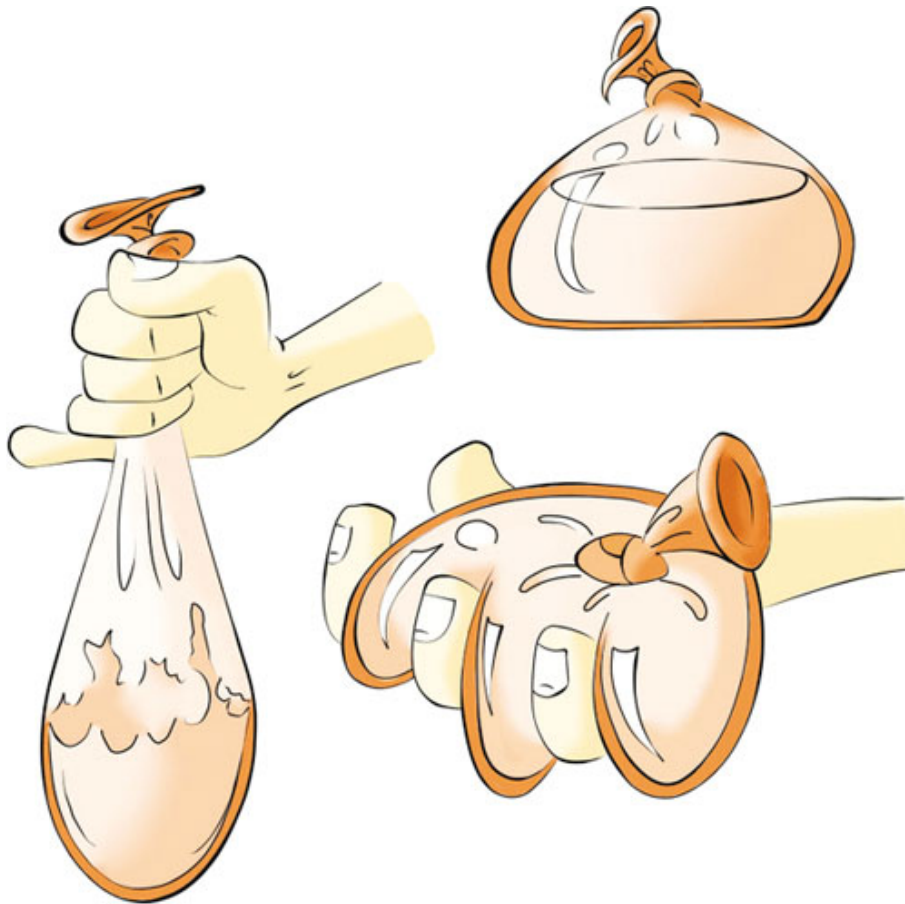

Organic and soft-surface objects, such as a balloon full of water, have some level of flexibility in their shape. Squash and stretch is the animation principle that helps depict this quality in animation.

Consider using this principle when you decide what feeling you want your mobile experience to evoke as users engage with it. Is your mobile

experience a world of solid planes, rigid surfaces and sharp, exact movements? Or is it a world that's more organic, with softer, pliable surfaces and easy, graceful movements? Squash and stretch can help you express those movements.
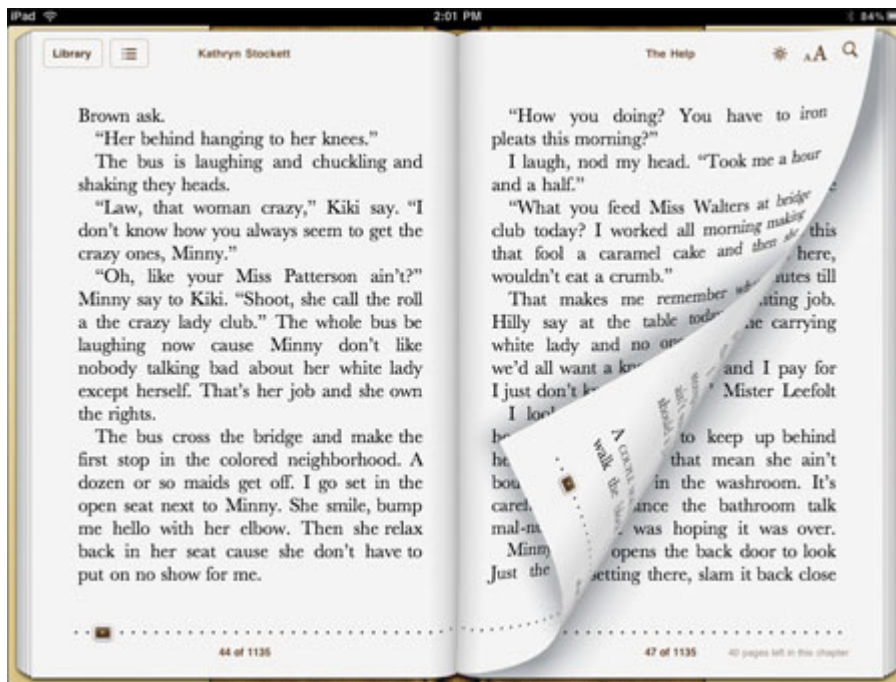
Screen transitions on Flipboard exhibit the principle of squash and stretch to express that the surfaces inside the world of the application are rigid and board-like. By contrast, the screen transitions in Apple's iBook use the principle of squash and stretch to echo the flexible and organic movement of turning the pages of a real paper book.

PRINCIPLE 2: ANTICIPATION

When an illustrator depicts a moving object or character, three distinct phases should be considered to make the object's movement realistic:

- The preparation for the action,

- The action itself,

- The results of the movement.

Whether it's a baseball batter winding up before a swing or the recoil of a spring before it's sprung, anticipation is the animation principle used to prepare an object for movement. Anticipation is about orchestrating the components of a scene—lighting, composition or even the form of an object or character—in order to give the viewer a clue of what is about to happen.

The crouch of a bowler, winding up before swinging a bowling ball, is an example of a pose and motion that the principle of anticipation captures.

Similar to its application in animated film and cartoons, when applied to the realm of mobile UX, **anticipation is all about giving the user insight** into what is about to happen next. For example, the principle could be applied to the visual treatment of the interface as the user opens an application. It could also be applied to the transitions between experiences. Because gesture languages are relatively new to users, the principle of anticipation could also be used to provide affordance for gestural UIs. Anticipation gives clues about the speed and direction that objects in a UI can move and the gestural possibilities of those objects.
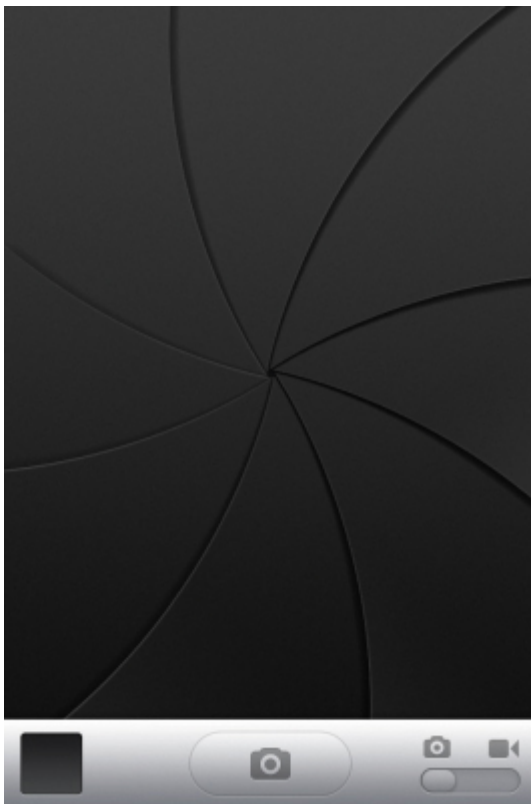
The aperture animation found in the camera application of many smartphones prepares the user for the action of taking a photograph.
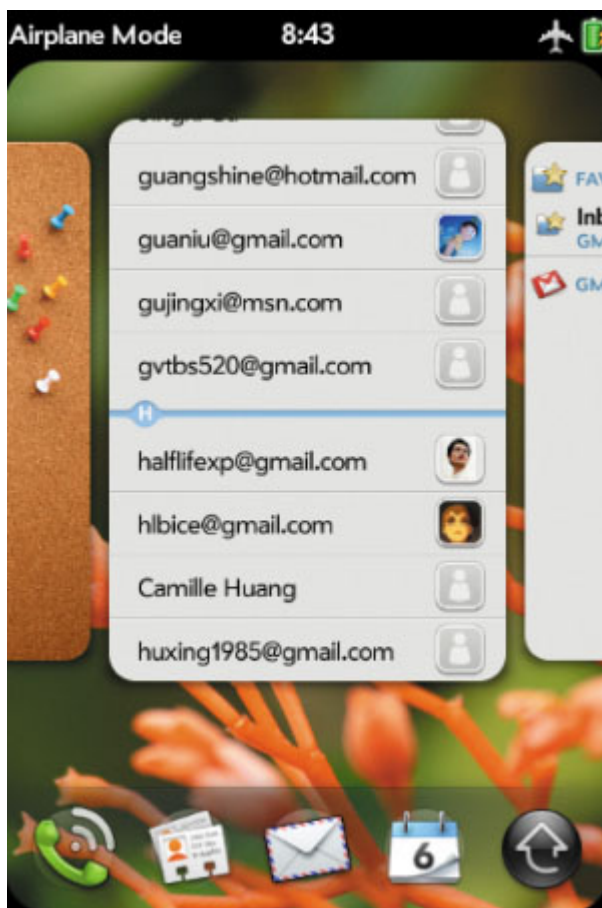
The way the cards in the Palm Pre's UI move is an affordance for users, giving them insight into the gestural language of the UI.
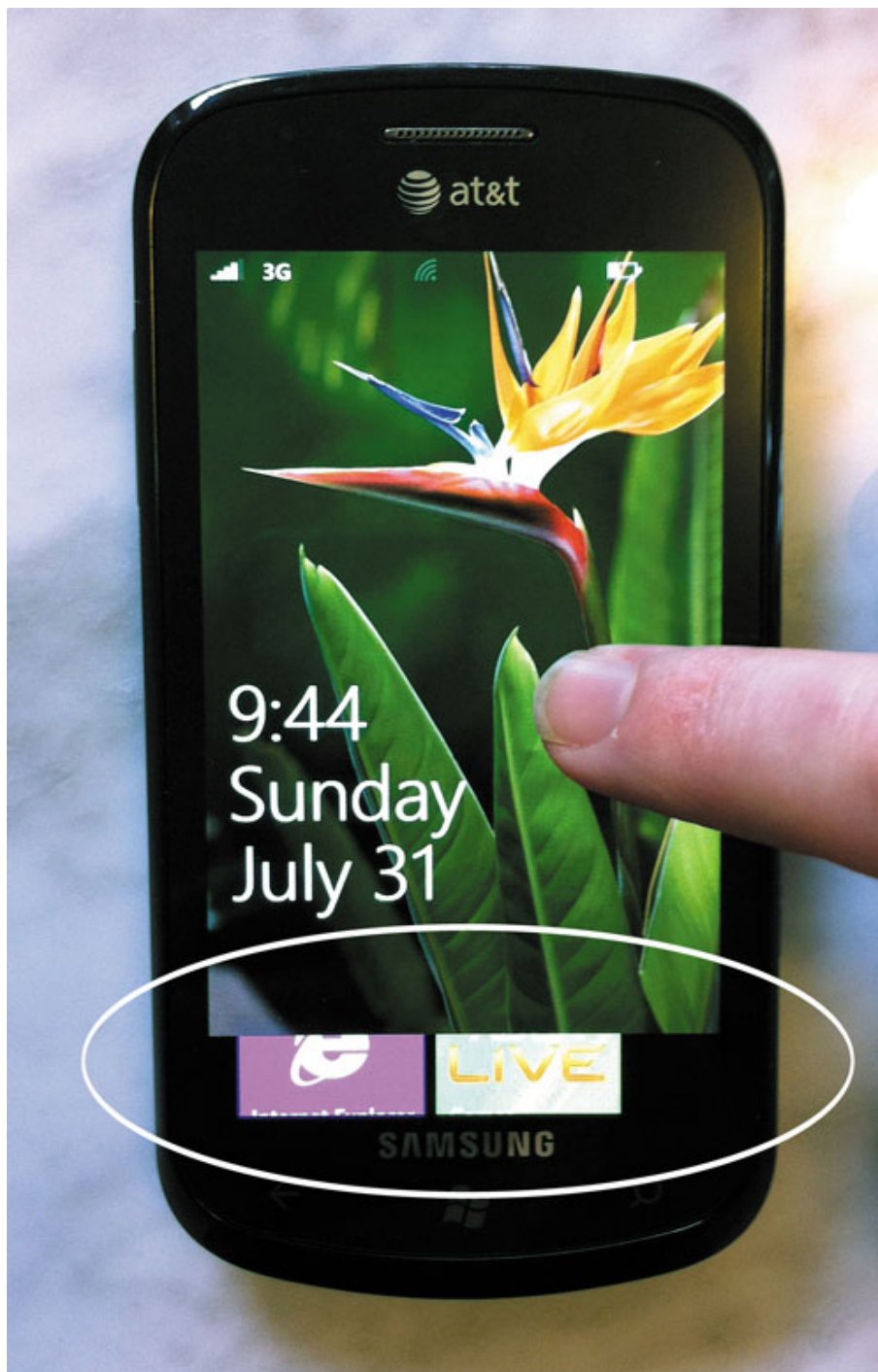
The window shade animation on the home screen of the Windows Phone 7 employs the principle of anticipation by giving users a peek into the phone's dynamic tiled UI.

PRINCIPLE 3: STAGING

People keen on selling property often "stage" a home, meaning they arrange each room in such a way that its purpose is completely clear. The principle of staging in animation is similar, because **good staging makes the central idea of an animation completely clear** to the viewer. In the world of mobile user experience, the principle of staging is most relevant when considering the transitions between screens and

interactions. An interaction that is well staged combines light, color, composition and motion to direct the user's eye to exactly where it needs to be as they interact with the experience. Well-staged mobile experiences have a sense of flow and ease, whereas poorly staged ones feel disjointed.
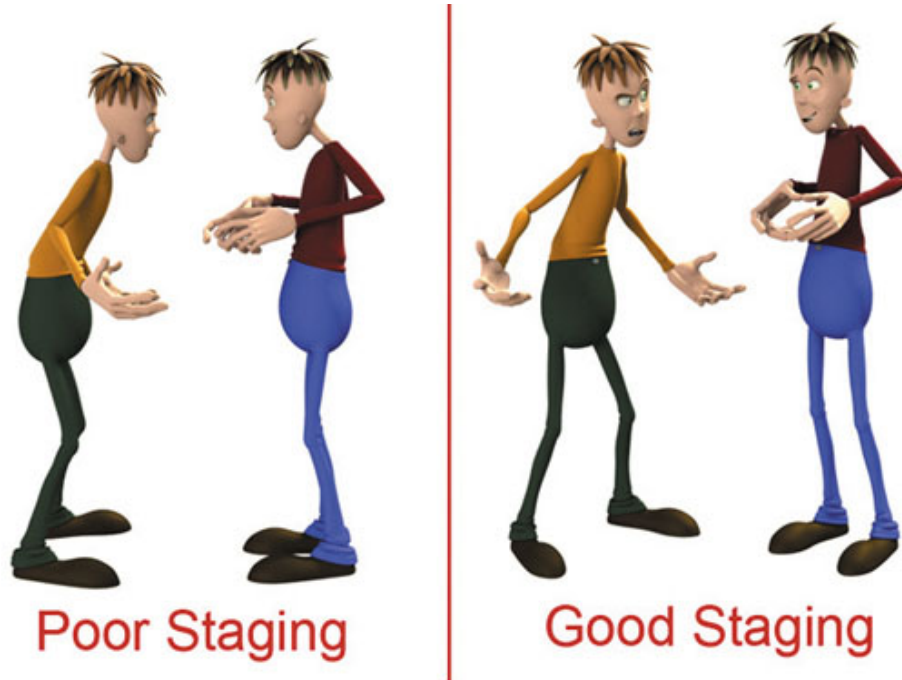
The well-staged illustration on the right makes the central idea—of two characters engaged in conversation—completely clear. The poorly staged illustration on the left leaves the dynamic between the two characters open to interpretation, making the central idea unclear.

Staging is a subtle yet important consideration when applying animation and motion to a mobile experience. A key challenge in creating natural user interfaces is that they lack a strong conceptual anchor. As a result, users who are new to natural UIs often feel anchorless as they navigate touchscreen experiences. If you apply good, strong staging to the animation and transitions of your mobile experience, then users will likely feel more grounded when they interact with it.

Good staging used in the iPad version of Keynote enables users to see exactly where the file they are currently working on lives in the application's file structure. This subtle use of staging makes the user feel grounded in the experience.

PRINCIPLE 4: STRAIGHT-AHEAD AND POSE-TO-POSE

Straight ahead and pose to pose are techniques related to the animation drawing process. In order to capture fast dynamic action with unusual movement, animators will use the straight-ahead technique and draw every single frame of an animation. The pose-to-pose drawing technique employs the use of keyframes (i.e. the important frames of a sequence) and in-betweens (i.e. the intermediate frames that express movement between the keyframes).
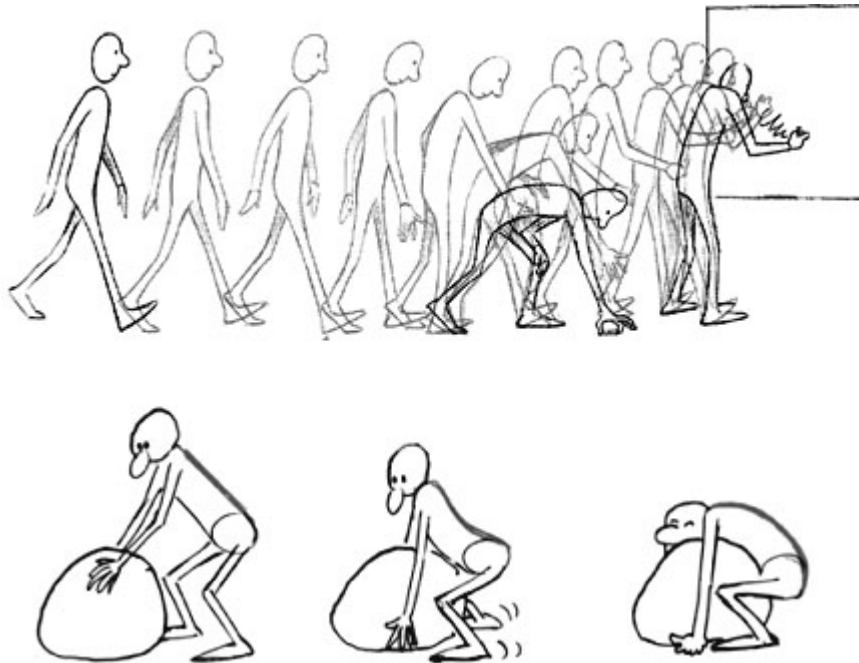
The illustration on top depicts the straight-ahead technique in which every single frame of an animation is rendered. The illustration on the bottom represents the keyframes that will be used in a pose-to-pose animation.

The vast majority of animations and transitions used in mobile experiences employ the pose-to-pose animation technique. Pose-to-pose usually suffices for transitions that are not overly complex and that can be

described easily. If you'd like to incorporate unusual or dynamic movement in your experience that can't be achieved using pose-to-pose, then you'll likely need to incorporate the straight-ahead technique.

Popular games such as Plants vs. Zombies[116] for the iPad employ pose-to-pose animation techniques.

Games with more complex movement, as in the iPad game Fruit Ninja[117], use straight-ahead animation techniques to capture dynamic motion.

---

116. http://www.popcap.com/games/plants-vs-zombies/home
117. http://www.halfbrick.com/our-games/fruit-ninja/

PRINCIPLE 5: FOLLOW-THROUGH AND OVERLAPPING AC-TION

Imagine a big dog with giant jowls shaking his head side to side. The dynamic movement of the flabby skin on his face as he shakes his head to and fro is an example of the fifth animation principle: follow-through and overlapping action. While anticipation has to do with the preparation of an action, follow-through involves the end of an action. Actions rarely come to a sudden and complete stop, but rather come to a gradual end. Follow-through captures how parts of an object (like the dog's jowls) continue to move even after other parts of the object (like the dog's head) have stopped moving.

Follow-through captures how different parts of an object move at different rates (such as a dog's head moving at a different rate than its ears or jowls).

Now imagine that dog walking down a sidewalk with his owner. His entire body is moving, but the timing of his legs is different than the timing of his tail or head. Overlapping action is the animation principle that captures how parts of an object—such as the dog's head, tail and legs—move at different rates. Capturing the movement, as well as the slight variations in timing and speed of these parts, makes **the objects seem more natural**. An action should never be brought to a complete stop before another action has begun. Overlap maintains a flow be-tween self-contained phrases of action.

While UI elements of a mobile experience should work together to form a whole, follow-through and overlapping action can help you de-fine and communicate the relationship between UI elements. Transi-

tions and animations are a great way to express how elements of a UI interrelate.


The transitions to and from the dynamic tiles on a Windows phone employ the principle of overlapping action. The tiles do not travel as one unit, but rather each tile moves at a different rate.

PRINCIPLE 6: SLOW IN AND OUT

Whether it's a car peeling out from a dead stop or a sprinter bursting out of the blocks and making tracks in a race, objects need time to accelerate and slow down. The sixth animation principle, slow in and out, deals with the spacing required to accurately depict the inherent law of inertia that governs all objects and people.

Objects in the world need time to accelerate and slow down. A strategy to accurately depict this type of motion is to add more frames of the object near the beginning and end of the movement and fewer in the middle.
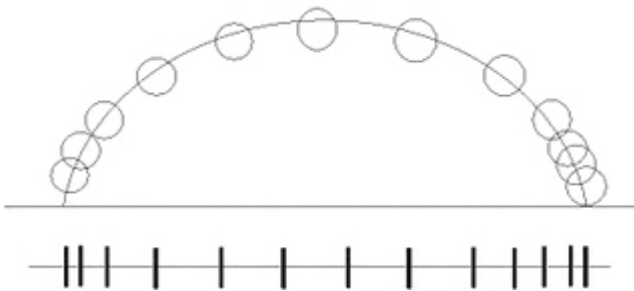
Adding more frames of the object near the beginning and end of a movement and fewer frames in the middle creates the illusion of the effect of inertia.

This principle works for characters moving between two poses, such as sitting down and standing up, and for inanimate moving objects, such as a bouncing ball. While the experiences we create for mobile UX often live in another world—the world behind the glass of the mobile device—**allowing some of the laws of physics to exist in that world will make those experiences more relatable to users**. Whether it's a

subtle difference in timing in how a list of data scrolls or the animated transition that appears as an application opens, slow in and out will make the motion phrases of your experience flow in a way that feels natural to the user.
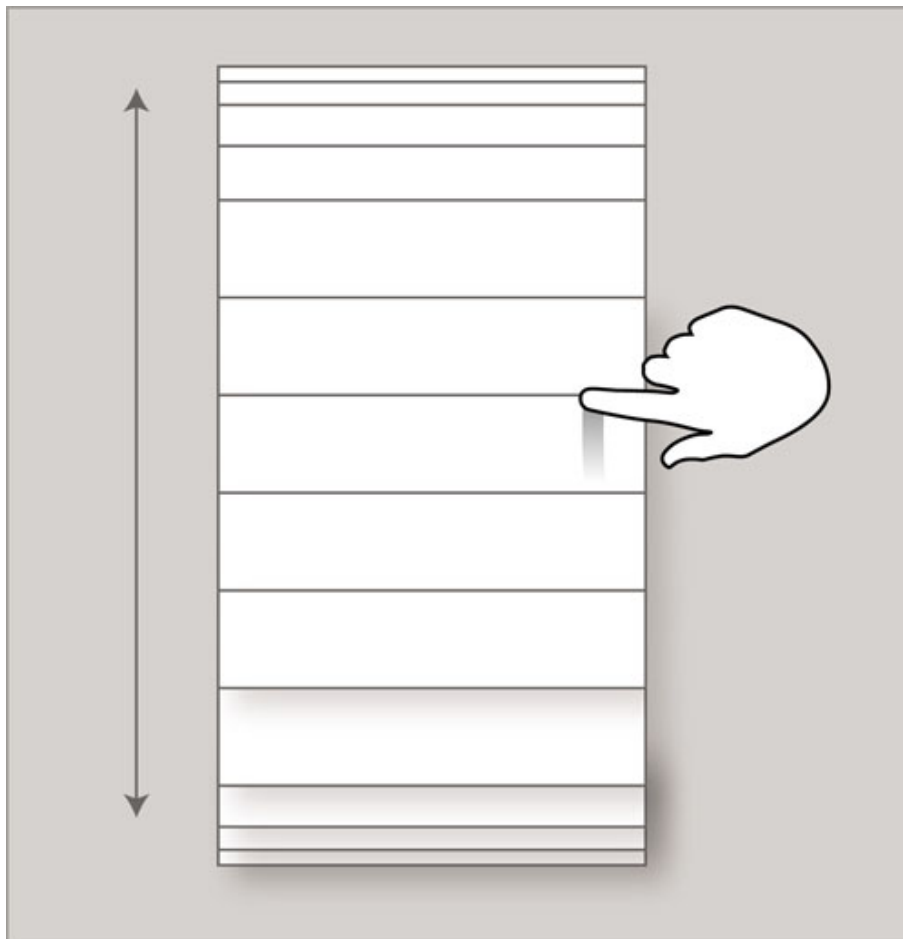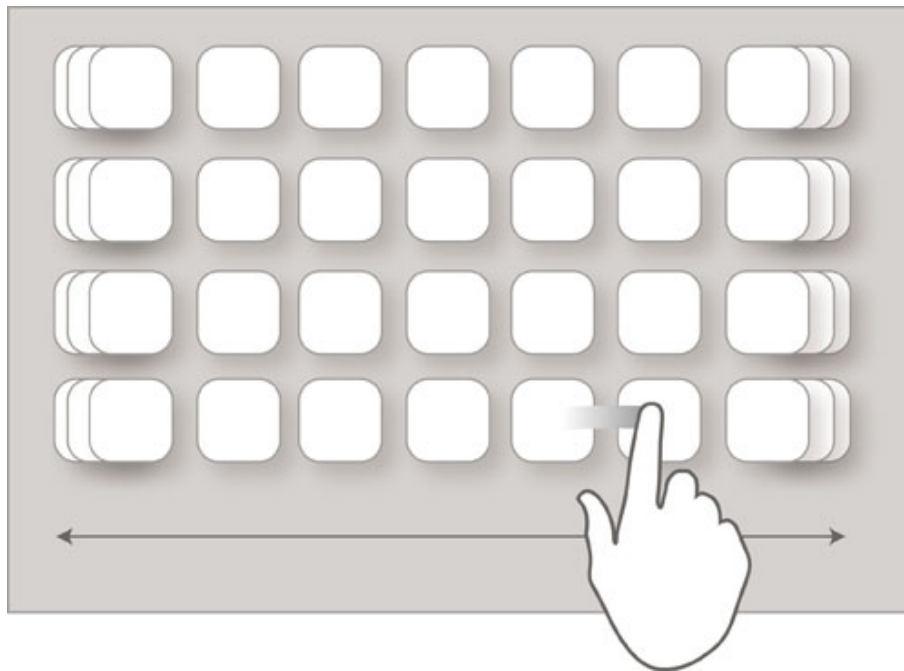
The principle of slow in and out is applied to the scroll of lists in many mobile UIs. More frames are at the beginning and end of the movement. This effect makes the UI appear as if it is governed by the laws of inertia.

More frames are at the beginning and end of the scrolling transition of the home screen on the iPhone, making the application icons feel as though they adhere to the laws of inertia.

PRINCIPLE 7: ARCS

Objects don't move through space randomly. Instead, they move along relatively predictable paths that are influenced by forces such as thrust, wind resistance and gravity. The outline of a sparkler on the Fourth of July or skid marks on the pavement from a braking car are rare physical traces of these paths; usually, an object's trajectory is invisible.

An object's trajectory is largely invisible, except on rare occasions, such as a lit sparkler whose glowing sparks trace its path.

While these paths are largely unseen by the human eye, patterns exist for trajectories based on whether the object is organic or mechanical. Objects that are mechanical, such as cars, bicycles and trains, tend to move along straight trajectories, whereas organic objects, such as plants, people and animals, tend to move along arched trajectories. The object you want to animate should reflect these characteristics for greater realism.

When integrating motion into a mobile experience, consider whether the object being animated should reflect organic or mechanical qualities. If the former, then the arc animation principle suggests that the object should move along an arched trajectory. If the latter, then the object would move along a straight path.
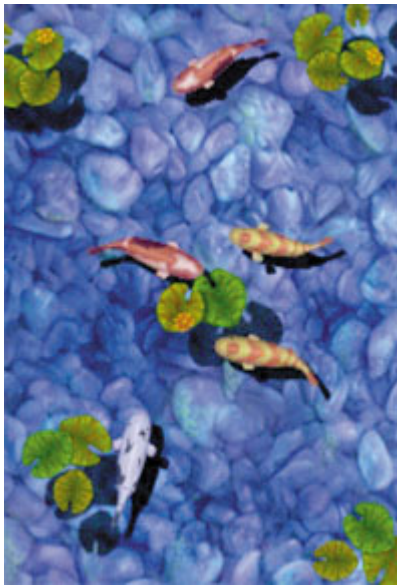
Natural elements such as the fish and water in this iPhone application move along arched trajectories.

Interface elements in the Android mobile platform tend to move along straight lines, giving the UI a mechanical feeling.

PRINCIPLE 8: SECONDARY ACTION

Imagine a squirrel running across your lawn and then leaping into a tree. The movement of the squirrel's legs (considered the primary action) would be animated to emphasize the animal's light, nimble, spry gait. The agile, undulating movement of the squirrel's tail (the secondary action) would be a separate and slightly different type of movement that supports the primary action.

The primary action of this animation is the movement of the squirrel's body and legs. The shape and character of the squirrel's tail as it moves is the secondary action. Together, they make the animation feel more realistic.

The squirrel's tail is an example of secondary action, which supports the primary action of an animation sequence without distracting from it. Secondary action is applied to reinforce the mood or enrich the main action of an animated scene. The key to secondary action is that **it should emphasize**, rather than draw attention from, the main action.

   The transition that occurs when a user clicks on a URL in an email, activating the browser on an iPhone, is an example of secondary action. The primary action is the browser window swinging forward into view. The secondary action is the email application receding into the background. Both actions occur simultaneously, but the secondary action of the email application supports the primary action of the browser window.

An example of secondary action applied to an animated transition between application windows.

PRINCIPLE 9: TIMING

In animation, as in life, **timing is everything**. The frustration and awkwardness we feel when objects, characters or life itself move too slow or too fast is a testament to the innate importance of timing. In the world of animation, timing refers to the number of drawings or frames of a given action, which translates to the speed of the action on film. Timing is an important technique to master because it helps define the physical characteristics of an object, such as weight, size and scale. It can also make objects appear to abide by the laws of physics—as seen, say, in the speed of an object when pushed.

In addition to expressing physical characteristics, timing helps communicate the emotional state, mood and personality of an object or character. For example, subtle adjustments in timing can communicate the physicality and mood of the focused and deliberate Wile E. Coyote as he feverishly chases the quick, good-natured Road Runner, who by contrast moves with ease.

Timing—the mere speed at which the Road Runner moves—expresses both the physicality of the character (weight, height and scale) and the mood of the chase between the Road Runner and Wile E. Coyote.

Whether it's the speed at which a list scrolls or the pacing of a transition between screens in a mobile application, timing is subtle yet important to master. Timing, as it applies to the mobile UX, is an art that requires finesse and practice. Take the time to understand what is being communicated through the movement and speed of the interface

elements in your design. Also, take time for experimentation and trial and error as you begin to work with animation.
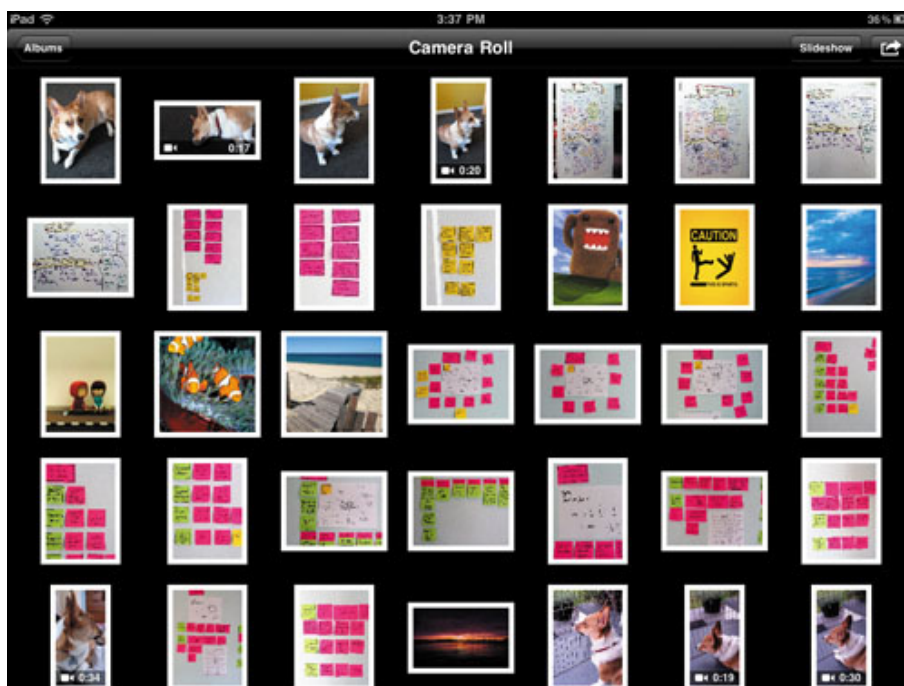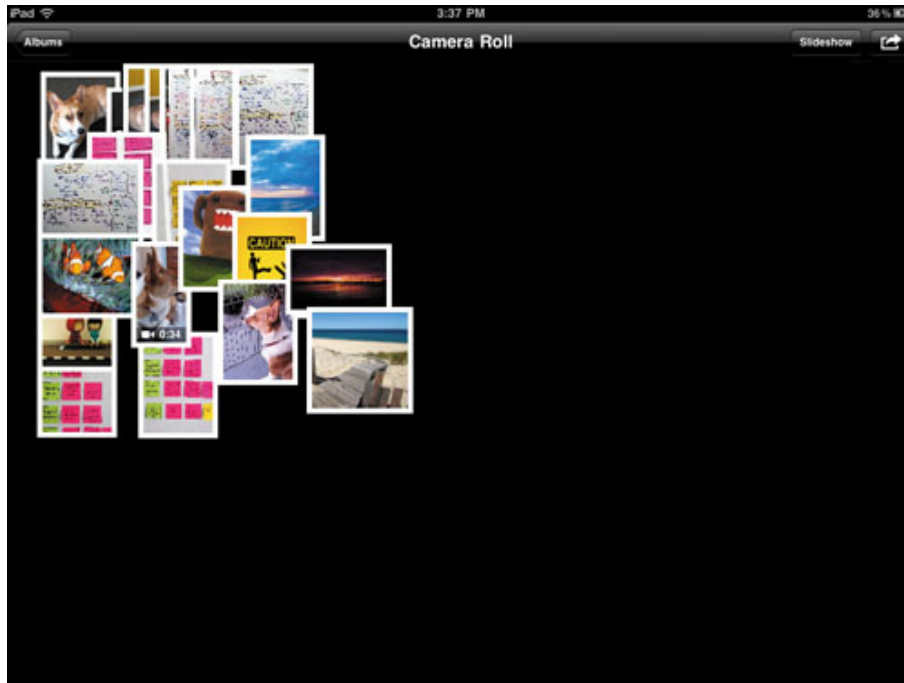
The timing in the iPad's photo application is akin to the quick shuffling of a deck of cards. It expresses lightness, buoyancy and hyper-realistic speed.

PRINCIPLE 10: EXAGGERATION

The principle that I feel brings the most fun to the animation party is exaggeration. It's the element that makes movement feel dynamic,

alive and just plain fun—much like the iconic characters Ren and Stimpy[118].

Canadian animator John Kricfalusi masterfully used exaggeration in the Ren and Stimpy animated television series.

An animation without some level of exaggeration might look accurate, but will likely feel stiff and mechanical. Mastering this principle involves identifying the relevant design element, figuring out how that element moves, and then tweaking the shape, scale or composition of the element so that it reinforces the movement, while adding a layer of drama. Exaggeration does not necessarily mean extreme distortion.

The classic definition of exaggeration, employed by Disney, is to **remain true to reality but to present a wilder form**. When applying this principle to movement in a mobile experience, exercise a certain level of restraint. If a scene contains several elements, then the exaggeration of those elements should be balanced relative to each other, to avoid confusing or annoying the viewer.

118. http://en.wikipedia.org/wiki/The_Ren_%26_Stimpy_Show
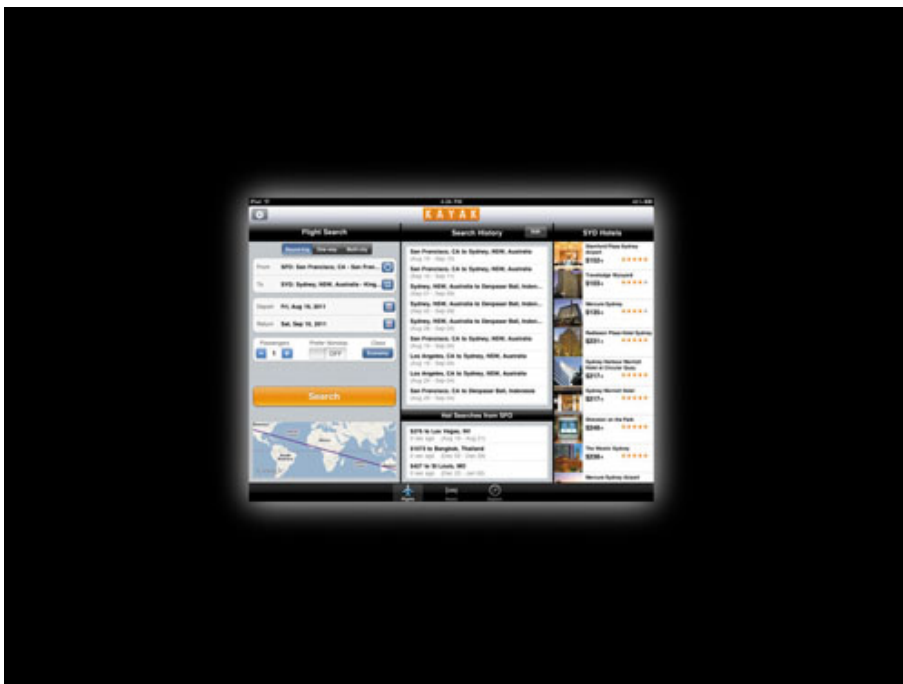
The transition between the home screen of the iPad and the opening of an application is exaggerated. It makes opening an application feel springy and fun, like bouncing on a trampoline.

PRINCIPLES 11 AND 12: SOLID DRAWING AND APPEAL

Of the 12 animation principles outlined by Johnston and Thomas, the last two—solid drawing and appeal—are the most specific to character animation. Thus, they have slightly less relevance to mobile UX. Solid drawing is about honoring the rules of three-dimensional space and giving objects and characters appropriate dimensionality through vol-

ume and weight. Solid drawing requires animators to understand the basics of three-dimensional shapes: anatomy, weight, balance, light and shadow.

Solid drawing emphasizes three-dimensional shapes, accurate anatomy and animation that has a sense of weight, balance, light and shadow.

The appeal of an animated character is similar to the charisma of a live actor. A character who is appealing is not necessarily sympathetic—because villains or monsters can also be appealing. The important thing is that the viewer feels the character is real and interesting.

Methods Of Conveying Motion In Your Work

While the 12 principles developed by Johnston and Thomas are helpful for providing a vocabulary for motion and giving a sense of what's possible, the core question of **how to integrate motion into a design** remains. The first step is to be aware of motion as a design material. The next step is to begin to integrate motion into the design process. Here are three key places in the design process where you can begin working with the magic of motion:

- sketching,

- wireframing,

- prototyping.

SKETCHING

The time to start thinking about motion is during the sketching phase of your design process. Similar to how the movement of an animated character expresses its personality, the movement of screens and interface elements are powerful ways to express the personality of the mobile experience you're creating. Sketching ideas for transitions and movement phrases early on will help you think about the personality that you want your mobile experience to convey and how you can use motion to communicate it.
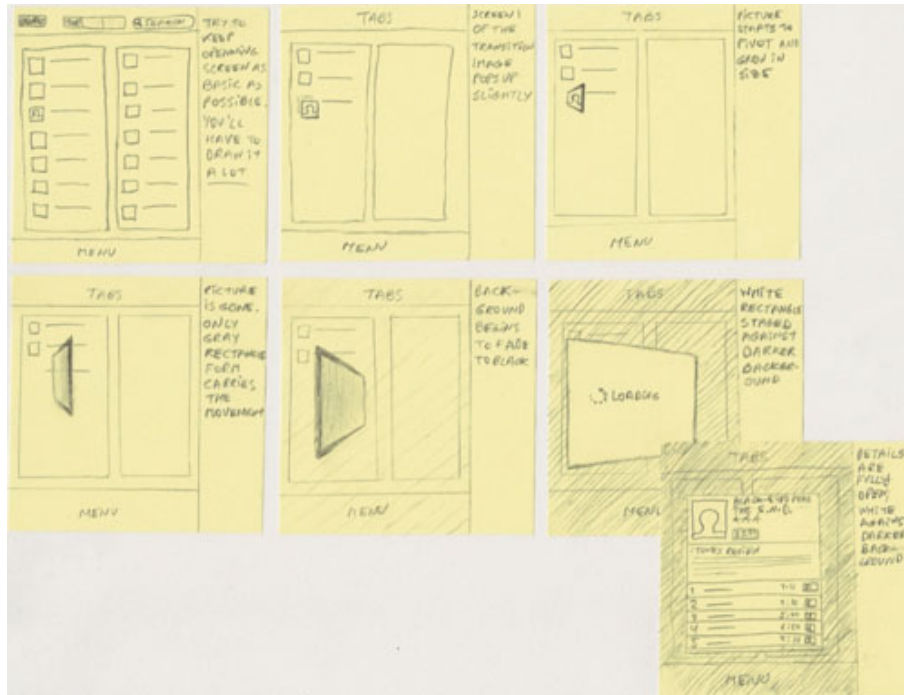
This motion storyboard sketch for the "opening iTunes details" transition is done with basic sticky notes.

WIREFRAMING

Wireframing is yet another phase in the design process to work out the motion you want to integrate into the mobile experience. Because wireframes often convey the flow of screens, transitions—i.e. the motion between screens—fit naturally into wireframe documents. Using images and illustrations, you can begin to draw out the movements you have in mind. Because wireframes are documents that communicate design ideas to both developers and stakeholders in an organization, simply including motion specifications in the document will make everyone aware of motion and get them talking about it.
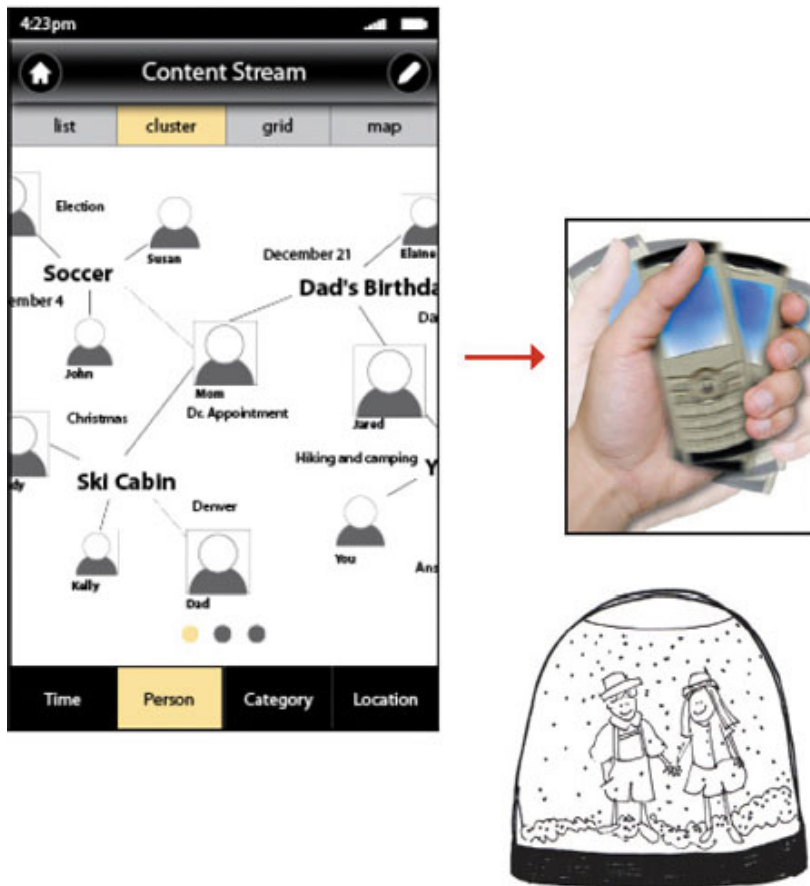
This motion specification in a wireframe document relies on images and illustrations.

PROTOTYPING

Sketching and wireframing motion are good first steps, but nothing beats the real thing. Using prototyping tools whose vocabulary includes motion is one of the most powerful ways to foster your own fluency with motion as a design medium. Tools such as presentation software (Keynote, PowerPoint, etc.) include motion in their vocabulary. Instead of sketching motion, create low-fidelity prototypes using this software, which will help you experiment with motion and communicate your animation ideas more accurately to the design team.

Creating prototypes with software such as Keynotopia allows you to animate user inter-actions and transitions between screens, enabling you to experiment with your motion ideas using the real thing.

Tips For Applying Animation Principles To Your Mobile UX Project

1. **Exercise restraint.**
   Few things are more annoying than a mobile experience with too much animation pizazz. While animation is fun and exciting, don't over-apply it, otherwise you might turn a great experience into a train wreck. Instead, rely on subtlety and finesse to convey motion.

2. **Complementary principles**
   Whether it's a scene in an animated movie or the transitions between screens in a mobile experience, animation principles rarely exist in isolation. Rather, most effective animations are an orchestration of many principles applied together. As your animation skills grow, you'll learn how to artfully combine these principles like great recipes.

3. **Animation in a supporting role**
   In film, animation supports the story. The same is true for mobile UX. Animation should complement the mobile experience, not be the star. Make sure your animation supports the interactions in the experience and doesn't detract or confuse.

Summary

Once reserved for cartoons and movies, motion is a new and powerful design material in the mobile UX landscape. In addition to bringing focus and clarity, it can **add a bit of character and even magic to the experiences you create**. While any new design material can be time-consuming to learn, getting up to speed on animation and motion will probably feel intuitive and not feel like a chore, and it will make all those hours of watching Saturday morning cartoons as a child seem like a wise investment.

    To sum up:

- Transitions and subtle motion-based animations are emerging as a new and compelling mobile design material that can add efficiency and grace. The addition of movement to a mobile experience can bring clarity, information about context and a dash of joy and fun.

- Although originally developed for animated film and television, the 12 basic principles of animation from the 1981 book *The Illusion of Life: Disney Animation* apply to screen-based experiences, too. These principles are listed below.

1. Squash and stretch

2. Anticipation

3. Staging

4. Straight ahead and pose to pose

5. Follow-through and overlapping action

6. Slow in and out

7. Arcs

8. Secondary action

9. Timing

10. Exaggeration

11. Solid drawing

12. Appeal

- Three key points in the design process where you can begin working with the magic of motion are sketching, wireframing and prototyping.

This article is an excerpt of The Mobile Frontier[119] written by Rachel Hinman (Rosenfeld Media, 2012). ❧

---

119. http://www.amazon.com/Mobile-Frontier-Rachel-Hinman/dp/1933820551

Mission Transition

BY MARK COSSEY ❧

Life and nature are one big transition. The sun slowly rises to mark a new day and then slowly sets to mark the end of the day and the beginning of night. We are created in the womb and from small cells we grow, are born and gradually age until we die.

Perhaps these natural transitions in life are what make artificial transitions feel… well, right. Sometimes, though, when something jumps from one state to another, it feels OK but doesn't quite feel right.

A transition that has been designed to be slow can feel awful. When designing an application, an interface or any type of structured content, we must ensure that **users understand where they have come from** as they arrive at the new page or state. The transition from one screen or group of content to another should feel natural and should be tested on devices of varying power and speed to get a wider view of how the transition feels. Too fast, and it may appear broken or jumpy; too slow, and it will be frustrating to use.

When discussing design, the word "transition" usually conjures up thoughts of overblown PowerPoint presentations or home-made movies made with cheap video-editing software. But there is more to transitions than meets the eye.

Transitions take us from one state to another all the time, many times a day in fact. Most of the time, these transitions feel completely invisible (as they should), and until they are taken away we don't really

know they are there. This article discusses transitions and how **well-designed transitions can enhance the user's experience** by imparting a sense of control and easy navigation. We will also discuss how poor transitions can impair the user interface.

What Is A Transition?

By definition[120], a transition is "a change from one form or type to another, or the process by which this happens." As mentioned, we make transitions all the time without really knowing it, and they certainly extend beyond our computer interfaces. A well-designed transition takes the user from point A to point B very quickly while conveying the path they have taken.

Transitions are common in interface design, as we know, but are also used in movies and product design. In product design, transitions are triggered by touch, movement or physical handling of the product; in interface design, however, transitions are triggered by navigating through the interface of the application or Web content. A transition should be designed to give the user a sense of their virtual position or location within the interface.

Examples Of Transitions

CINEMATIC

In a scene near the beginning of the 1971 movie Willy Wonka & the Chocolate Factory[121], winners of the golden ticket gather outside the gates of the mysterious factory to see the elusive Willy Wonka emerge.

---

120. http://dictionary.cambridge.org/dictionary/british/transition
121. http://www.imdb.com/title/tt0067992/

Frames from Willy Wonka & the Chocolate Factory[122] *(1971).*

As the scene unfolds, the viewer watches from behind the crowd, through the gates, towards the factory; the next camera angle takes us from behind the crowd to just inside the factory gates; and then we're beside Wonka as he limps along the red carpet; and then we jump to watching him from behind. Although there is no visible "tweening" throughout these transitions in camera angle, we the audience still perfectly understand where we are.

We are watching the movie from our comfy chairs and yet we are made to feel as though we are physically present near the factory. This is an **emotional transition**.

INTERFACE

If you have an iPad or iPhone, pick it up and go into the settings. Tap around between the menu options to see how the screen slides from right to left and left to right. Scroll to the bottom of any screen to see the soft bounce that indicates you have reached the end of the content. These simple quick transitions were carefully designed to give the user a sense of location within the operating system. Only when you slow these transitions down do you notice the detail that has gone into these in-between bits.

---

122. http://www.imdb.com/title/tt0067992/
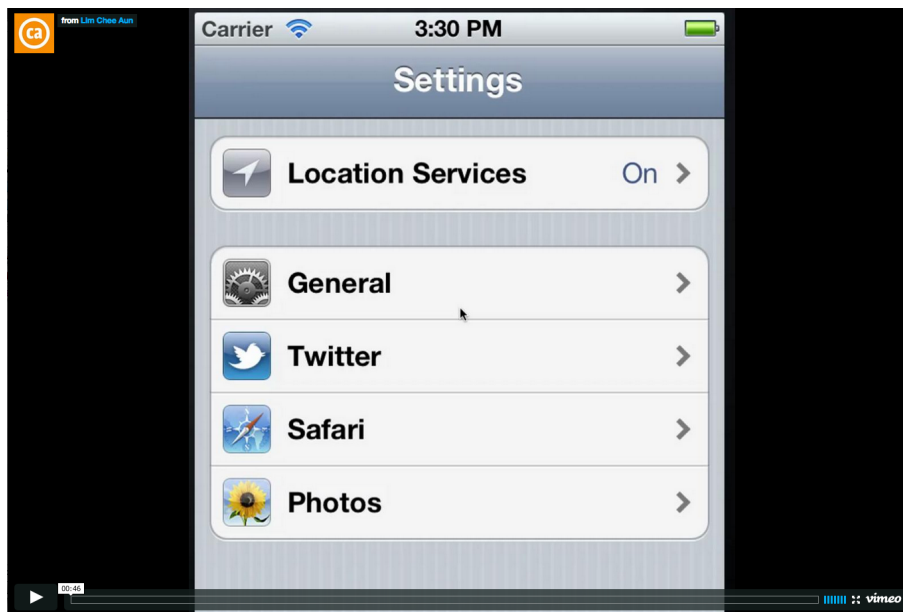
The iOS transition effect in slow motion, by Lim Chee Aun[123]. (Watch it on Vimeo.[124])

Although we are not viewing a physical location, as in a movie, the OS still gives the user a sense of location by letting them know through the transition where they are navigating to and where they have come from. When you tap on a menu button, the screen shifts to the right to show the next step, and to the left to show the previous step.
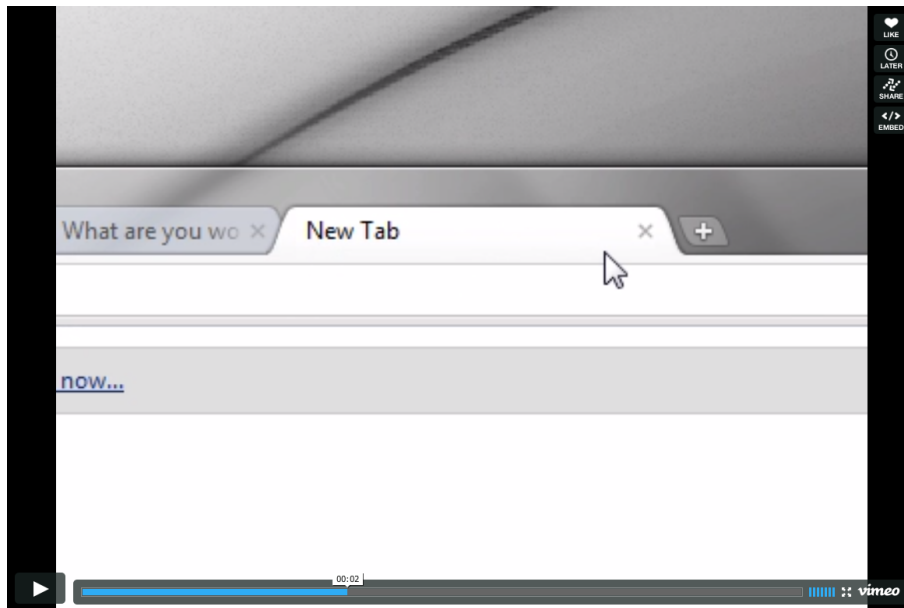
Google Chrome on Windows shows us another simple transition, as seen in the video below. When opening a new tab, you see it open with a brief animation from the left. Closing the tab animates it back to the left before disappearing.

123. http://vimeo.com/cheeaun
124. http://vimeo.com/32704624

Closing Tabs in Chrome Transition[125]

The Path[126] app, which is available on both Android and iPhone, is packed full of interesting transitions between states. It's worth downloading to see how it handles jumping between features.

When the app opens, you go from the splash screen to the actual content with a quick page turn. Clicking on the main menu will spring open the menu options, which spring back once you close the menu. This detail shows the user where those menu items come from, and while we may not consciously think about it, it's **an important detail** in the overall user interface.

125. http://vimeo.com/35256114
126. http://www.path.com
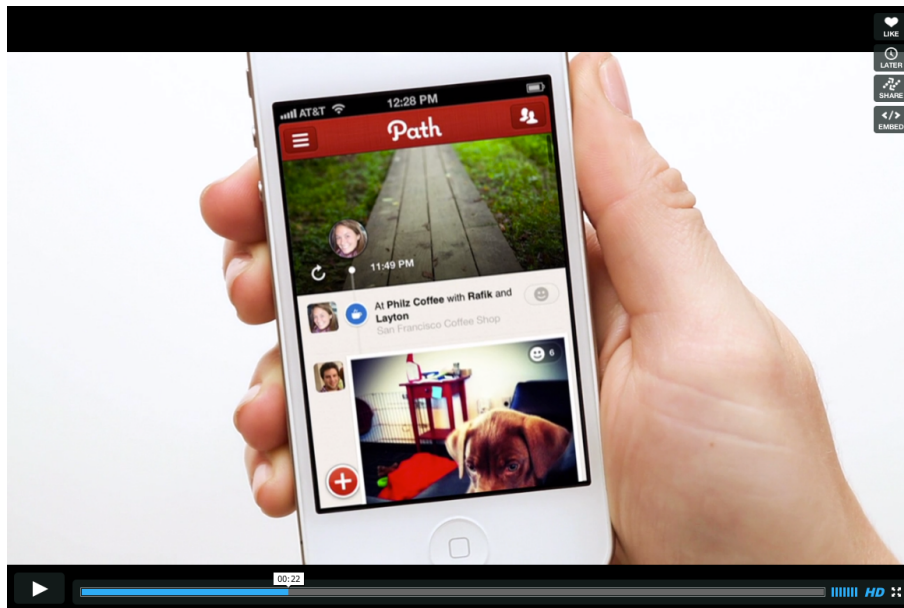
Transitions in Path[127] on Vimeo.

The Scorekeeper[128] app has what appears to be a very simple interface. Solid colors and a lot of straight edges give the impression that the app is easy to use—and perhaps even that little thought has gone into the visual design. But look again. The transitions in this app are beautiful. When a player is awarded points in a game, the app updates their ranking in the list, using excellent transitions to move the player from their original position to their new one.

---

127. http://vimeo.com/32856179
128. http://itunes.apple.com/ca/app/scorekeeper-xl/id463243024
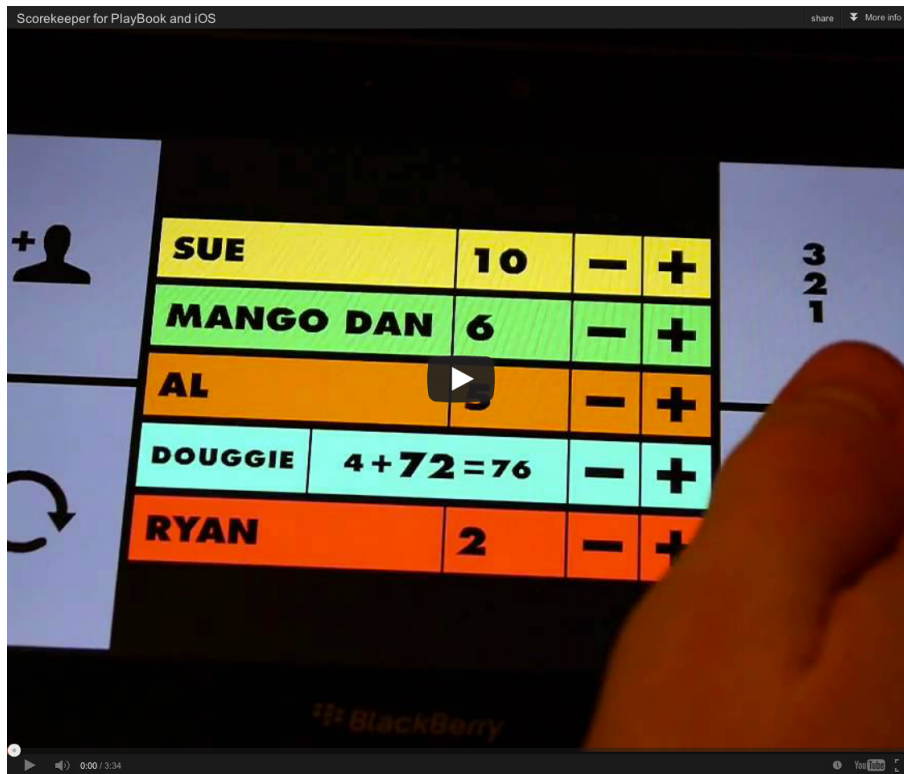
Score Keeper for PlayBook and iOS[129] on YouTube.

PRODUCT DESIGN

I'm afraid I have to use Apple again for this example. If you've ever bought an iPhone, you would have noticed the design of the packaging. The compact box with matte laminate finish has been thought through to the last detail. The vacuum effect that you get when lifting the lid means that you're not just breaking a seal and cracking open a box; rather, the lid slowly slides open (similar to the experience of the OS), taking a good second or two to reveal the shiny new device. This unboxing could be described as a **physical transition**.

---

129. http://www.youtube.com/embed/sXqXpwyBI1k

Unboxing iPhone[130] on Vimeo.

Though not an obvious transition, the MacBook's power light gently pulses when the device is sleeping. The transition is interesting because its fading in and out mimics the natural breathing rhythm of a sleeping person. This can be considered a transition because it's a visual indication of the state of a device that is neither on nor off, but in between the two states.

MacBook Pro Sleep Light Macro HD[131] on YouTube.

---

130. http://vimeo.com/34740599
131. http://www.youtube.com/embed/pEY9vSGmQGI

AUTOMOTIVE

Modern cars are packed full of excellent transitions that guide the driver through various states. For example, the cabin light comes on when you unlock the door, and then it gradually fades as you buckle the seat belt and start the engine. The subtle lighting takes the user from pedestrian to driver in one smooth transition.

(Image credit: eduard_orbitron[132])

NATURE

As I sit in my chair typing this article, I can turn my head from left to right. By doing so, my field of vision shifts. If I want to look at something to my left, I turn my head—in the process catching everything that crosses my line of sight—until my eyes arrive at the object of attention. My eyes and body have made a transition, and it's important that we be conscious of our actions as human beings to discover more about natural transitions. Watch the video below to see how the human body transitions from one state to another.

132. http://www.flickr.com/photos/eduardorbitron/5035577493/sizes/l/in/photostream/
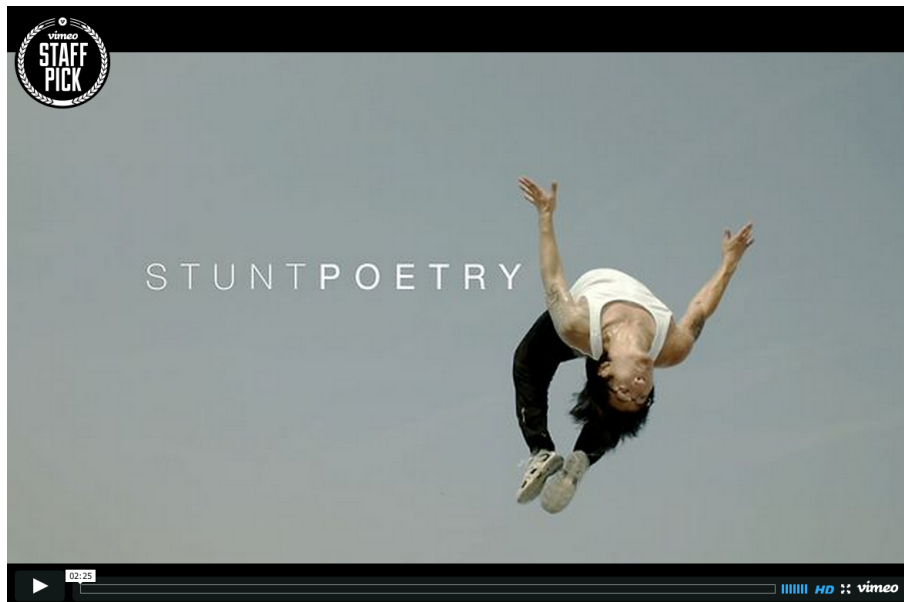
Human body transitions[133] *on Vimeo.*

Why Are Transitions Important?

As designers, we do our best to make content easy to find, easy to read and aesthetically beautiful. But as processors become more powerful and technology advances, the devices and systems people use to access this content will hurtle forward, and we'll discover new ways to deliver this content. We've quickly adopted touch methods, and now gestures are becoming important, too. With this in mind, we need to give users a **sense of location** in our applications, and transitions will play an important part in this.

Most Web content now is organized as "pages": clicking or tapping a link simply show the page behind that link (provided the connection is fast enough). There is rarely any form of transition from one page to the next, and we have become used to this method of displaying Web content. But we can introduce useful and beautiful transitions into Web content—such as by using jQuery ScrollTo[134]—but these transitions can be clunky for a number of reasons, including slow connections, excessive processor requirements and the transition speeds defined in JavaScript.

---

133. http://vimeo.com/27612305
134. http://demos.flesler.com/jquery/scrollTo/

Best Practices For Transitions

There are plenty of ways to incorporate transitions into a design. Here are some general suggestions:

- **Avoid any pause at the point of clicking, touching or swiping.**
  Hardware speed will always be a factor, but it's safe to say that chips, processors and memory are getting faster by the second, so test your code and loading times to make sure there is no lag.

- **Test in the real world.**
  There is no better way to test transitions that by running them in the real world—especially if you are designing for mobile, because people on the go devote less time and attention to navigation. Load a prototype of your design in a supermarket or on the train, and test it to see how it performs under pressure.

- **Don't reinvent the wheel.**
  In general, follow the conventions of the operating system you are designing for, because transition styles that diverge greatly from what people are used to will likely cause confusion and frustration. Of course, don't hold back on designing new transitions; just keep the standards in mind.

- **Mind the future.**
  These days, we interact with apps by clicking, touching, swiping and speaking. However, gestures will likely become a new way of controlling content, so start considering them now. If people will be able to use their bodies (rather than their fingers or mice) in various ways to manipulate the screen, we will have to give thought to timing, pace and physics—that is, the speed at which a body performs a gesture to move content will have to be matched to the speed at which the content moves. Imagine the frustration of throwing a tennis ball as hard as you can, only for it to travel a few feet on release. Our users will feel this same frustration if the timings of our transitions are poorly designed.

Conclusion

A good transition should be almost **invisible to the user**. It should help the user understand where they are navigating to and where they have come from, but it should also be smooth and quick. A stall or stutter impairs the overall user experience and tells the user that something is wrong. There is such a thing as UI motion sickness, where the user gets so used to the fluidity of moving between screens that when a screen

freezes for a second or two, the user feels like they've come to a sudden stop. It is these sensations we should avoid. ❧

Further Resources

For help and inspiration on using transitions in your designs right now, check out the following resources:

- Mark Coleran's showreel[135]
  An excellent showreel showing faux interfaces and interactions designed for movies and TV shows.

- "CSS Easing Animation Tool[136]," Matthew Lein
  A useful online tool to test CSS animations and transitions.

- "Touch-Optimized Web Framework for Smartphones and Tablets[137]," The jQuery Project
  A unified HTML5-based UI system for all popular mobile platforms, built on the rock-solid jQuery and jQuery UI foundation.

- "How to Use jQuery to Make Slick Page Transitions[138]," Dave Gamache
  Adding the final touches to a website can mean the difference between a polished and beautiful product and one that leaves no impression on visitors.

135. http://vimeo.com/1563485
136. http://matthewlein.com/ceaser/
137. http://jquerymobile.com/
138. http://www.onextrapixel.com/2010/02/23/how-to-use-jquery-to-make-slick-page-transitions/

Designing With Audio: What Is Sound Good For?

BY KAREN KAUSHANSKY ❧

Our world is getting louder. Consider all the beeps and bops from your smartphone that alert you that something is happening, and all the feedback from your appliances when your toast is ready or your oven is heated, and when Siri responds to a question you've posed.

Today our **technology is expressing itself with sound**, and, as interaction designers, we need to consider how to deliberately design with audio to create harmony rather than cacophony. The cacophony is beautifully captured in Chris Crutchfield's video[139], in which he interprets the experience of receiving email, SMS texts, phone calls, Facebook messages and tweets all at the same time:
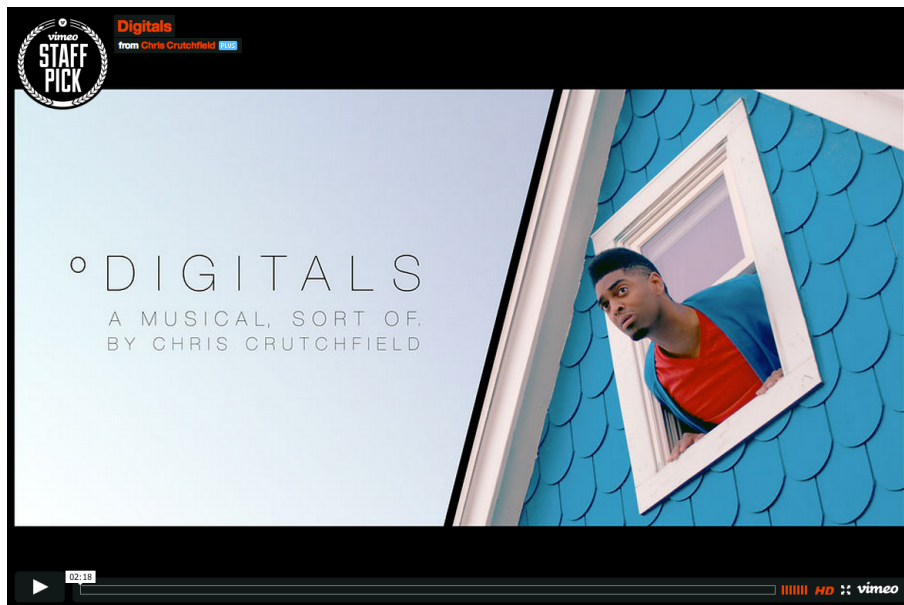
Digital Experience Video[140] *on Vimeo.*

In this article, we'll explore some of the uses of audio, where we might find it and when it is useful. This is meant not as a tutorial but rather as a discussion of some basics on using audio feedback.

Audio is a form of feedback that can be used either in combination with other forms, such as haptics, visual displays and LEDs, or on its

---

139. http://vimeo.com/35873217
140. http://vimeo.com/35873217

own. We have to weigh several factors when designing feedback mechanisms: the scenario, the device and the interaction, where and how the device will be used, whether the user has a screen or display, whether the device has physical buttons or a touchscreen, where the user is relative to the device, and so on.

For every action of the user, a good experience will include feedback that the action has been registered; for example, pressing a number key on a mobile phone would play a sound and show the number being pressed. Audio is particularly useful when there is no screen or when looking at the screen is not possible or not desirable (such as when users want to multitask). It's interactive, **creating a dialog with the user**. It is also particularly good at providing feedback as "shared audio," a form of feedback that reaches multiple people at once, such as a PA system or a citywide emergency warning system.

Audio is not always warranted. Something that makes noise repeatedly when other feedback would suffice is annoying. Audio that is private and intended for you but is heard by others is embarrassing, such as when your phone rings and announces a "Call from Sexy Neighbor." Audio design has many ins and outs, but let's start with some common uses of audio feedback.

Where We Find Audio

Many of us who work on interaction, mobile, device or game design have already discovered the importance of designing audio—audio is everywhere.
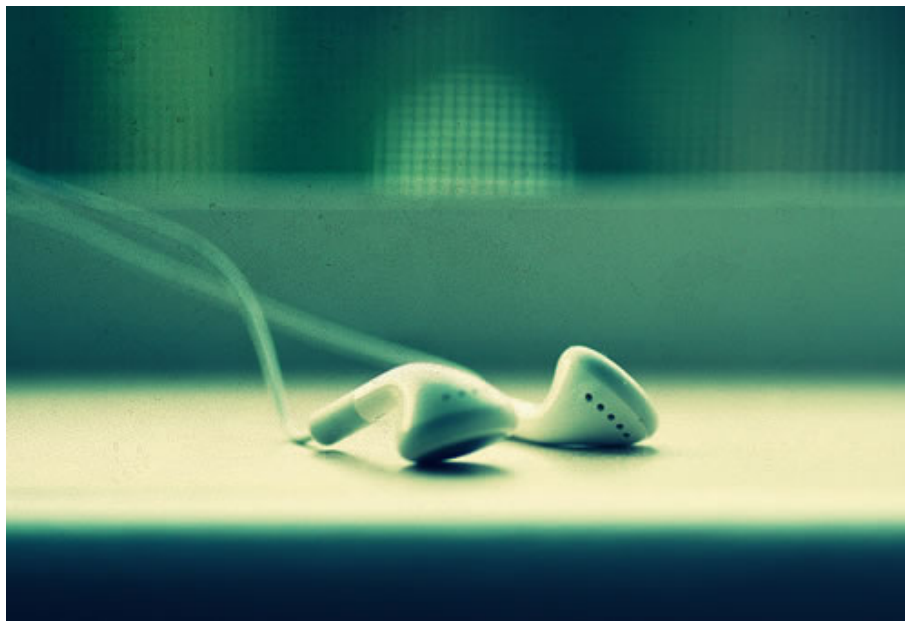
(Image credit: Fey Ilyas[141])

MOBILE

Much of the Web is moving to mobile, which of course entails smaller screens and people on the go. But besides creating mobile-specific websites, there are ways to **augment the mobile experience with audio** when people aren't looking at or can't interact with the screen. A great example is GPS and turn-by-turn navigation systems that speak directions (either as part of a dedicated device or from a smartphone app). While audio isn't yet native to mobile websites and apps, it is native to smartphones to indicate new email, incoming text messages and calendar events.

Turn-by-turn Directions[142] *on YouTube.*

GAMING

For those who play video games, audio is integral to **setting the mood, environment and situation**, and it engages the user tremendously. First-person shooter games such as Halo and Call of Duty rely on audio feedback to show cause and effect—for example, the sound of a gun shooting and the moment of impact on the enemy. Or consider Wii Sports: the smash of the ball in tennis, the crack of the bat in baseball, and the cheer of fans all help to blur the line between the very physical game and the digital world.

141. http://www.flickr.com/photos/renneville/2908748583/sizes/l/in/photostream/
142. http://www.youtube.com/embed/z6c29M97tgY?rel=0

CONSUMER DEVICES

As more appliances become smarter and connected, they might have more to say. Today a set of beeps tells you that the refrigerator door is open, but in the future you can expect notifications that the milk has gone bad or that you need to pick up eggs if you want to make that cake for your spouse's birthday on Tuesday.

More and more of our everyday devices use audio feedback: a Bluetooth headset tells you who is calling, Nike+ tells you your current distance travelled and pace, and cars beep to help you park.

SPEECH RECOGNITION AND ROBOTS

Voice interaction such as Siri's is **revolutionizing the way people interact** with their iPhone and will help to change future interactions with all devices and information sources. People are beginning to talk to their devices and expect some audio feedback in return. Siri is just the start; we're starting to see speech recognition in Xbox Kinect, Samsung TVs and more. Audio feedback is a natural way to let the user know that the system or device has heard them, is processing their request and so on.

Think of your favorite robots—HAL, Wall-E or any of the personal robotic devices that are emerging. These robots are developing human characteristics, with sounds being one of the strongest ways to **deliver emotion**. Leila Takayama[143] of Willow Garage has talked about the "design challenge in communicating internal robot states and requests to effectively reach the robot's assigned goals." Willow Garage has created a set of sound libraries[144] for communication between people and robots that might help make robots "more appealing." Then there are other robots that speak English and other languages, such as the new Autom weight-loss coach. Studies have shown[145] that people who use Autom stick with their diet and exercise routines for twice as long as people who use traditional weight-loss methods, perhaps partly because of its human-like interactions.

---

143. http://www.willowgarage.com/pages/people/leila-takayama-research-scientist
144. http://hri.willowgarage.com/sounds/
145. http://spectrum.ieee.org/automaton/robotics/home-robots/autom-robotic-weight-loss-coach-now-available-for-preorder

Autom lady-bot video[146] *on YouTube.*

Why Use Audio?

There are numerous principles to determine why and when to use audio in designing interactions for devices. Being conscious about adding sound to a device is the first step in designing it right. The point is to do it deliberately, not as an afterthought, so that **the audio means something** and is not annoying. Here are some of the many scenarios in which you should consider using audio.

INSTRUCTIONS AND INFORMATION

Audio is used to give instructions, especially where there is no screen or where looking at a screen would be difficult, unsafe or impossible. Again, think turn-by-turn directions. Or it can be used to augment visuals. The parking machine below obviously has visual instructions for entering a credit card, but they weren't sufficient to get people to enter it correctly.

---

146. http://www.youtube.com/embed/r_LlyyFG96k?rel=0
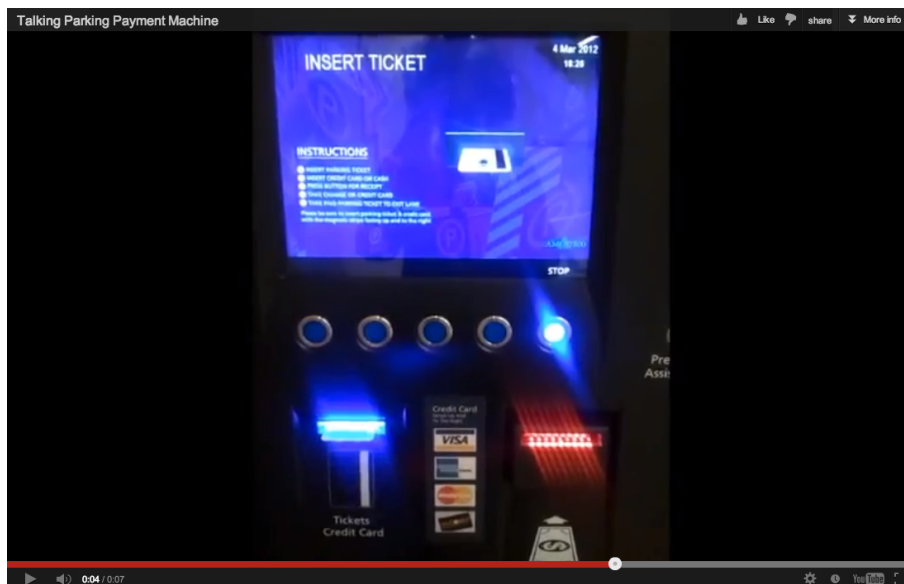
Parking Payment Machine[147] on YouTube.

Audio can be used to offer information, either **when no screen is available** or when certain details would be better captured as audio. The Jambox by Jawbone[148] tells the user when they need to recharge the battery. The Leapfrog LeapPad takes this one step further by specifying the type of batteries it needs!

LeapPad[149] on YouTube.

147. http://www.youtube.com/embed/PL79tBjn-Cw?rel=0
148. http://jawbone.com/speakers/jambox/overview
149. http://www.youtube.com/embed/DWQuYsHTxyE?rel=0

FEEDBACK AND INTERACTION

As mentioned, audio is used as a **feedback mechanism** when the user takes action. This could be feedback for when the user pushes a button, such as when turning on a Jambox speaker, or to tell a driver that they are getting close to a parked car like the Audi Parking Sensor[150].

It's also used to allow for interaction and conversation with our devices. We're used to interacting with speech-recognition systems when we call an airline or a bank, and now sending a text message with your voice from a Windows phone is just as easy. The audio from these services and devices create a dialog that enables users to get things done.

PERSONALIZATION AND CUSTOMIZATION

Audio allows for **personalization of a device**, helping to engage users and create an emotional attachment. Siri learns its user's name and uses it in its replies, adding a personal connection to the interaction. Garmin and TomTom let users download all kinds of voices to their GPS devices, from Bert and Ernie to Star Wars characters to Kitt from Knight Rider[151], with the goal of creating more engaging experiences. Jawbone device owners can download different languages and characters to their Bluetooth headset and speaker, with the device volunteering such responses as, "A bombshell is whispering in my ear… And yes, I'm blushing."

Audio also helps to establish personality and to **humanize a device**. Ford and other electric vehicle manufacturers are dealing with a proposed bill[152] that would require electric vehicles to make some sound to ensure pedestrian safety. Ford has asked the public to vote on four different sounds that would essentially shape the personality of its cars. Here's one of them:

---

150. http://www.youtube.com/embed/KFxugwnzXGw?rel=0
151. http://www.tomtom.com/en_us/products/voices/kitt/index.jsp
152. http://www.govtrack.us/congress/bill.xpd?bill=h111-734

Ford Focus Electric Vehicle Test Sound A[153] *on YouTube.*

In another example, to show the power of talking devices, Radio Lab reported[154] on an experiment that pitted a hamster against a Barbie doll and a Furby (the popular furry electronic talking robot) to see how long kids could hold each of them upside down. While all of the five kids in the experiment could hold Barbie upside down "almost forever," they treated Furby much more like the living hamster than the Barbie. Why? Well, when you hold Furby upside down, he says, "Me scared," giving human-like characteristics to the toy. The kids said afterwards that they "didn't want him to be scared."

Conclusion

Audio is everywhere, and there are **good reasons to use it**: to instruct, enhance and engage and to personalize experiences. But if poorly designed or used inappropriately, it can detract from the experience and be annoying. We've covered the why and the where of audio. Next time, we'll review some guidelines and principles on the ins and out of designing with audio. ✍

153. http://www.youtube.com/embed/qOEuCJfsS8k
154. http://www.radiolab.org/2011/may/31/furbidden-knowledge/

About The Authors

Anne Miles

Anne Miles is the owner and Toad-in-Chief at *Red Toad Media*. A trained graphic designer, Anne's strength lies in her ability to translate messages to the web through user interface design, web graphic and interactive design, web copywriting and social media marketing. Anne has designed everything from software interfaces to children's books. She has taught college courses and also worked as a multimedia specialist for a Fortune 500 Company. She has designed for a wide range of clients, small and large. She lives and works on the outskirts of Louisville, Kentucky.

Charles Hannon

Charles Hannon is a professor of Computing and Information Studies at Washington & Jefferson College in Washington, PA. He teaches courses in the history of computing, human computer interaction, project management, and information visualization. He blogs on user experience design at www.uxappeal.com[155].

Hyrum Denney

Hyrum has a BA in Computer Science and has been in the web design and development industry for a number of years. He is currently a UX/UI Designer at *SirsiDynix*. He previously operated his own ux studio as well as worked as the Director of Web Operations in the eCommerce industry. Hyrum has a passion for learning new things and is particularly interested in anything to do with user experience design and the psychology behind how people use websites.

Jason Gross

Jason Gross is a freelance web designer focused on creating clean and user friendly websites. Jason currently lives in Indiana and can be

---

[155.] http://www.uxappeal.com

found on Twitter as @JasonAGross[156] or on the Web at his personal blog[157] and portfolio.

Karen Kaushansky

Karen Kaushansky is a Principal Device Interaction Designer at *Jawbone* where she creates rich interactive experiences for consumer devices. Karen is formerly of Microsoft/Tellme and is a 14 year veteran of the speech recognition industry. Over the years, her work has spanned from traditional phone-based speech recognition applications, to voice biometrics, to multimodal experiences. You can connect with her on Twitter[158].

Mark Cossey

Mark Cossey is a Graphic and Web Designer in Brighton. He is currently Art Director at *McBOOM*, a digital marketing and advertising agency in the UK. Read more from his blog here http://www.burning.me/blog[159]

Petter Silfver

Interaction designer from Stockholm (Sweden), who loves to create mobile application and Web—designed around, with and for the user. Twitter (psilfver)[160], Blog (significantpixels.com)[161]

Rachel Hinman

Rachel Hinman is a researcher, designer and a recognized thought leader in the mobile user experience field. She is currently a senior research scientist with the Interaction and Experience Research Group at *Intel* and the author of "The Mobile Frontier[162]."

156. http://www.twitter.com/JasonAGross
157. http://www.jasonagross.com/
158. http://twitter.com/#!/kjkausha
159. http://www.burning.me/blog
160. https://twitter.com/psilfver
161. http://www.significantpixels.com/
162. http://www.amazon.com/Mobile-Frontier-Rachel-Hinman/dp/1933820551

Rian van der Merwe

Rian is passionate about designing and building software that people love to use. After spending several years working in Silicon Valley, he is currently Director of User Experience at consultancy Flow Interactive[163] in South Africa. He also blogs[164] and tweets[165] regularly about User Experience and Product Management.

Steven Bradley

Steven Bradley is a web designer and WordPress developer who moved to Boulder, Colorado to be near the mountains. He blogs at Vanseo Design[166] and owns and operates a small business forum[167] helping people learn how to run and market their business better.

---

163. http://www.userexperience.co.za/
164. http://www.elezea.com/
165. http://twitter.com/rianvdm
166. http://www.vanseodesign.com/blog/
167. http://www.small-business-forum.net/

About Smashing Magazine

Smashing Magazine[168] is an online magazine dedicated to Web designers and developers worldwide. Its rigorous quality control and thorough editorial work has gathered a devoted community exceeding half a million subscribers, followers and fans. Each and every published article is carefully prepared, edited, reviewed and curated according to the high quality standards set in Smashing Magazine's own publishing policy.[169]

Smashing Magazine publishes articles on a daily basis with topics ranging from business, visual design, typography, front-end as well as back-end development, all the way to usability and user experience design. The magazine is—and always has been—a professional and independent online publication neither controlled nor influenced by any third parties, delivering content in the best interest of its readers. These guidelines are continually revised and updated to assure that the quality of the published content is never compromised.

About Smashing Media GmbH

Smashing Media GmbH[170] is one of the world's leading online publishing companies in the field of Web design. Founded in 2009 by Sven Lennartz and Vitaly Friedman, the company's headquarters is situated in southern Germany, in the sunny city of Freiburg im Breisgau. Smashing Media's lead publication, Smashing Magazine, has gained worldwide attention since its emergence back in 2006, and is supported by the vast, global Smashing community and readership. Smashing Magazine had proven to be a trustworthy online source containing high quality articles on progressive design and coding techniques as well as recent developments in the Web design industry. ❧

---

168. http://www.smashingmagazine.com
169. http://www.smashingmagazine.com/publishing-policy/
170. http://www.smashing-media.com