Human-Computer Interaction
Round 8

So you're building an app to fly an airplane.

You might build this:

So you're building an app to fly an airplane.

You might build this:

...when users really need this:

Fly

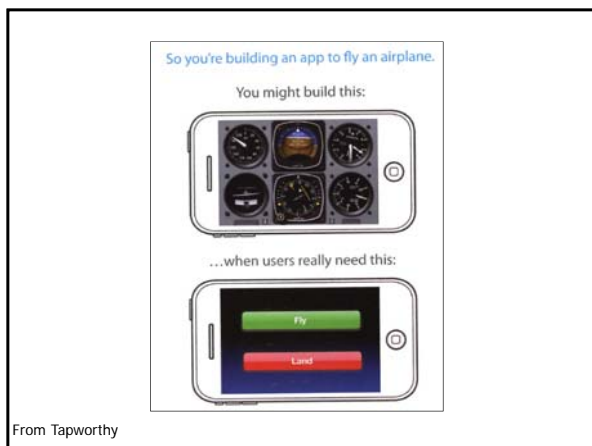Land
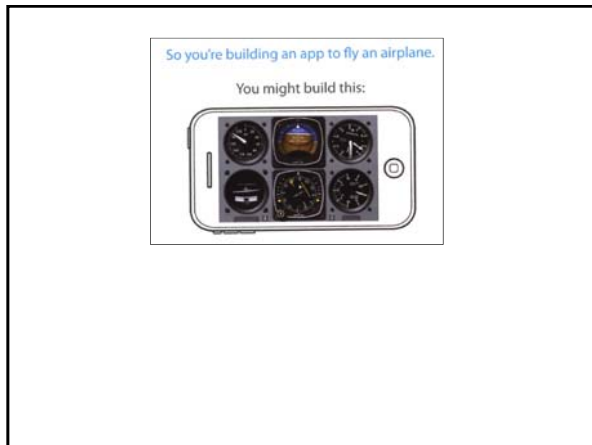
From Tapworthy

Today

- Universal design highlights
- Exercise
- Graphic design
- Exercise discussion
- Mid-term course evaluations
- Research papers

I7: Design

- Due in two weeks

- http://www.ccs.neu.edu/home/intille/teaching/HCI/IndividualAssignments.html#I7

T5: Paper Prototyping #2

- Big deal ... Get going!

I6: Heuristics

- What did you think?

Universal Design Principles

- equitable use
- flexibility in use
- simple and intuitive to use
- perceptible information (redundancy)
- tolerance for error
- low physical effort
- size and space for approach and use

Multi-modal Interaction

- E.g.: Captcha
  http://www.google.com/recaptcha/learnmore

- Channels
  - Increase bandwidth
  - Beware of interference
  - Emphasize if redundant

Multi-modal Interaction

- E.g. Sound
  - Keyclicks reduce errors
  - Gamers and sound

- E.g. Speech
  - Pros?
  - Cons?

Speech Recognition Problems

- Different people speak differently:
  - accent, intonation, stress, idiom, volume, etc.
- The syntax of semantically similar sentences may vary.
- Background noises can interfere.
- People often "ummm....." and "errr....."
- Words not enough - semantics needed as well
  - requires intelligence to understand a sentence
  - context of the utterance often has to be known
  - also information about the subject and speaker
  - e.g. even if "Errr.... I, um, don't like this" is recognised, it is a fairly useless piece of information on it's own

Evaluating websites

- http://webaim.org/simulations/screenreader

- http://www.paciellogroup.com/resources/contrast-analyser.html#download

- http://www.paciellogroup.com/resources/wat-ie-about.html

- http://www.iyiz.com/10-tools-for-evaluating-web-design-accessibility-and-performance/

Speech Recognition: useful?

- Single user or limited vocabulary systems
  - e.g. computer dictation
- Open use, limited vocabulary systems can work satisfactorily
  - e.g. some voice activated telephone systems
- General user, wide vocabulary systems ...
  ... still a problem
- Great potential, however
  - When users hands are already occupied
    - e.g. driving, manufacturing
  - For users with physical disabilities
  - Lightweight, mobile devices

Speech Synthesis

The generation of speech

Useful
- Natural and familiar way of receiving information

Problems
- Similar to recognition: prosody particularly

Additional problems
- Intrusive - needs headphones, or creates noise in the workplace
- Transient - harder to review and browse

Speech Synthesis: useful?

Successful in certain constrained applications
  when the user:
  - is particularly motivated to overcome problems
  - has few alternatives

Examples:
- screen readers
  - read the textual display to the user
    utilised by visually impaired people
- warning signals
  - spoken information sometimes presented to pilots whose visual and haptic skills are already fully occupied

Non-Speech Sounds: useful?

- Dual mode displays:
  - Information presented along two different sensory channels
  - Redundant presentation of information
  - Resolution of ambiguity in one mode through information in another

- Sound good for
  - Transient information
  - Background status information

Auditory Icons

- Use natural sounds to represent different types of object or action
- Natural sounds have associated semantics which can be mapped onto similar meanings in the interaction
  - e.g. throwing something away
    - ~ the sound of smashing glass
- Problem: not all things have associated meanings

- Additional information can also be presented:
  - Muffled sounds if object is obscured or action is in the background
  - Use of stereo allows positional information to be added

Earcons

- Synthetic sounds used to convey information
- Structured combinations of notes (motives) represent actions and objects
- Motives combined to provide rich information
  - compound earcons
  - multiple motives combined to make one more complicated earcon

Create	File		Create file
note, getting louder	high-low note		create icon followed by file icon

Earcons (ctd)

- Family earcons
  - similar types of earcons represent similar classes of action or similar objects: the family of "errors" would contain syntax and operating system errors

- Earcons easily grouped and refined due to compositional and hierarchical nature

- Harder to associate with the interface task since there is no natural mapping

Handwriting Recognition

- Problems
  - Personal differences in letter formation
  - Co-articulation effects

- Breakthroughs:
  - Stroke not just bitmap
  - Special 'alphabet' – Graffeti on PalmOS

- Current state:
  - Usable – even without training
  - But many prefer keyboards!

Gesture

- Applications
  - gestural input - e.g. "put that there"
  - sign language
- Technology
  - data glove
  - position sensing devices and motion sensing devices (Wii)
  - Kinect
- Benefits
  - natural form of interaction - pointing
  - enhance communication between signing and non-signing users
- Problems
  - user dependent, variable and issues of coarticulation

Users with disabilities

- visual impairment
  - screen readers, SonicFinder
- hearing impairment
  - text communication, gesture, captions
- physical impairment
  - speech I/O, eyegaze, gesture, predictive systems (e.g. Reactive keyboard)
- speech impairment
  - speech synthesis, text communication
- dyslexia
  - speech input, output
- autism
  - communication, education

Older adults

- No evidence averse to new tech
  - Lack familiarity
  - May fear learning
- People live longer
  - More disposable income
  - More time
  - More independence
- More than half people over 65 have a disability

Other Considerations

- Age groups
  - older people e.g. disability aids, memory aids, communication tools to prevent social isolation
  - children e.g. appropriate input/output devices, involvement in design process
- Cultural differences
  - influence of nationality, generation, gender, race, sexuality, class, religion, political persuasion etc. on interpretation of interface features
  - e.g. interpretation and acceptability of language, cultural symbols, gesture and colour

The remote control

You can use the template on the opposite page for your remote control. The descriptions are the same as in the instruction manual for my own DVD player, but I've added some explanation to a few of them. Most people would just have the icons on the remote control to go by.

Sometimes, solving one problem leads to others. Try to think about how you'd use your version of the remote control and the ways in which it might feel simple or more complicated to use. Don't stick with the first design you come up with. It's always better to make three or four quick sketches than to grow too attached to one idea. Once you've done that, you can select a favorite and try to complete it.

I've been collecting people's designs for a while. If you'd like to see some of them and add your design to the list, visit simpleandusable.com.

Elements of Graphic Design

When you design, do not allow the spacing between elements to "just happen." Develop an active awareness of the spatial relationships that are occurring between the components of a layout or image. *Practiced consciously, this awareness quickly becomes second-nature to a designer or artist.*

**Elements of
Graphic Design**

Typography

Serif versus Sans Serif
Use Serif fonts for printed paragraphs
Use Sans Serif for low-res displays

**Elements of
Graphic Design**

Typography

Fonts come in families.
**When mixing multiple serif or sans serif
fonts, try to stay within the family.**

Medium
UltraLight
Condensed bold

**Elements of
Graphic Design**

Typography

**When in doubt, use
Helvetica.**

**Elements of
Graphic Design**

Typography

When in doubt, use **Helvetica**.

(not Comic Sans)

**Elements of
Graphic Design**

Typography

Don't *OVER-EMPHASIZE*
There is no reason, ever, to combine
italics, boldface, **<u>underscore,</u> or**
UPPERCASE or other form of emphasis in
a single word or passage.

**Elements of
Graphic Design**

Capitalization

DON'T SHOUT
Unless you really mean it.

**Elements of
Graphic Design**

Capitalization

Mixed Cased
This is almost always the right choice, unless you are writing a whole sentence. Also, learn the standard practices for Title Case.

**Elements of
Graphic Design**

Capitalization

Be consistent!
One of the easiest traps to fall in is to inconsistently apply capitalization to user interface elements (labels, forms). Always proof-read your designs.

Grouping

Make stuff easy to find.

When controls or information relate to each other, putting them in close proximity reduces searching behavior for the user.

Grouping is all about organization.

Organize

Organizing is a great strategy for simplifying. In the case of the DVD remote control, it's probably the solution I've seen most often. It's usually an inexpensive solution—changing the layout and labeling the buttons on the DVD remote control costs less and demands fewer tough decisions than, say, removing.

There are plenty of options open to you in organizing an interface—size, color, position, shape, hierarchy. But those choices need to be employed with restraint. Some of the DVD remote controls I've seen over the years have had so many colored buttons they look as though they're made from Skittles.

If you want to organize for simplicity, it's important to emphasize just one or two important things. Simple organization doesn't draw attention to itself, it lets users focus on what they're doing.

The best DVD remote control designs emphasize the starting point (the on/off switch) and the most frequently used buttons (play, pause, and stop).

The Flip is also an excellent example of this. Of its nine buttons, only one (record) is strongly emphasized. If design is like a conversation, then openings are always the most difficult part. The Flip knows just how to say, "Hello, let's start here."

Organizing is often the quickest way to make things simpler.

Chunking

One way to make the blocks of buttons on the DVD remote control more manageable is to break them into chunks.

Chunking is used throughout user interface design. Microsoft Word has hundreds of features. To make them manageable, they are divided up into around nine menus. Each of those has a couple dozen commands—still too many to take in at a glance, so they're divided into chunks again. Click on a menu item and it'll often take you into a dialog box where even more features are available. The daunting list of features is grouped into manageable chunks within a hierarchy.

The classic advice here is to break items down into groups of "seven plus or minus two." In theory, this corresponds to the number of items your brain can hold in short-term memory. If you read a list of ten items, you'll likely have forgotten one of them by the time you get to the end.

Many psychologists now believe short-term memory may be rather smaller—perhaps just four items. But the "seven plus or minus two" rule remains, because it works. It seems to be a number that people can cope with. When I ask users to divide items into chunks, they tend to come up with around half a dozen groups.

There's no reason you can't divide the user's options into fewer chunks. I would always use as few chunks as feels simple to your mainstream user—fewer chunks mean fewer choices and less load on the user.

You don't always need to chunk. If your user needs to find an item in a long alphabetical list or timeline, there's no point in breaking up the list into half a dozen bits. Marking out letters of the alphabet or months of the year can help users to quickly scroll to approximately the right place, but chunking is most effective when users have to evaluate several possibilities rather than locate an item on a continuous index or scale.

Organize into bite-size chunks.

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Organizing for behavior

The first question a user will ask is, "What can I do with this?" so your first point of organization is to understand users' behavior: what they want to do and in what order they want to do it.

An online supermarket requires users to find the items they want to buy, add them to a shopping basket, schedule a delivery, and pay for the goods. Those are the main chunks into which the site should be divided.

People expect to begin their shopping by choosing groceries. This is also the most time-consuming part of the task, so it should be the most prominent.

People usually expect to do things in a particular sequence. It's disorienting and frustrating to break that sequence. The usual culprits here are registration processes and eligibility checks. If you can't remove them, defer them; if you can't defer them, minimize them. Find out what sequence of tasks users expect and do everything you can to stick to that pattern.

If your audience breaks down into totally separate groups who do completely different things on your website (like "doctors" and "patients"), this can be a useful first step.

The problem is that many audiences have similar or overlapping tasks. If your company provides information for journalists on its website, you'll need to give them company background information, press releases, new product information, press photographs, annual reports and staff biographies. A financial analyst wants almost the same information. If you don't have unique audiences, you probably shouldn't label by audience.

Mapping users' behavior will help you see how to organize your software.

Alphabets and formats

There's an old joke: where does "finish" come before "start"? In the dictionary.

Alphabetizing a list jumbles items up. So while alphabetical lists look simple, they're often hard to use. If users don't know the correct word for what they're trying to find, they're lost. Are you looking for a jacket or a sport coat? Do you want to speak to someone in Marketing or Sales and Marketing? Alphabetical lists work well for indexes of proper nouns—where there's a "correct" word to describe something—like surnames or countries. Otherwise, there are usually better alternatives.

Arranging content by format (words, pictures, videos) is another way of categorizing that looks simple but turns out to be unhelpful in the real world. If you're reading about Hawaii, you want to see photos and videos then and there. Going back to the start to find videos is just too much work.

The only situations I've come across where organizing by format makes sense are conference programs in which some formats, like tutorials, require a different registration process. In other words, some formats were used differently by the participants. But these are exceptions—it's usually simplest to organize conference information by time.

Alphabetizing often jumbles items up.

Time and space

Setting events on a timeline is simple and powerful. It works best if the events are of similar duration so that users don't find themselves zooming in and out of a timeline or calendar very often. Although there may be other ways to organize the same content (such as conference themes), organizing events by time gives your audience a clear way to make sense of things.

Physical objects like hotels and countries can all be organized by space, as long as the users are familiar with the layout. For instance, you can organize a hotel website by an imaginary walkthrough of the hotel: concierge, front desk, dining, meetings and events, gym, rooms, suites. People have reasonably good memory for spaces, so this is often a good choice.

Visualizing time and space in diagrams can create some problems. If you're plotting company offices or holiday destinations, you have to cope with the fact that some areas, like Europe, will be very crowded while others, like the Pacific Ocean, will be almost empty. The same goes for plotting events on a day planner (not much happens between 1:00 a.m. and 5:00 a.m.).

Sometimes it's useful to see variations in density, such as seeing that there's a concentration of bus services around rush hour. Other times, it can make information hard to pick out. I can set my computer's clock by clicking on a map of the world—but Paris and London are just a few pixels apart, even though they're in different time zones.

Timelines are a universal way of organizing events.

Grids

It's remarkable how far a tidy layout can go in making a design feel simple.

The form on the opposite page (top) is an interface for searching for train tickets that my company designed. It worked fine in user testing, but people hesitated over it. We revisited the layout and decided we could simplify it. We looked at the number of imaginary horizontal gridlines that were used to line up the field and simplified them. We also got rid of the heavy blocks of color that marked out the areas of the field and let the white space and alignment to the imaginary grid do the job.

The result was a layout that felt simpler to use, even though we hadn't changed the labels or programming of the form at all.

Lining items up using an invisible grid like this is an effective way of drawing the user's attention across the screen. It says, "Here's where to look next," without relying on bright colors or flashing images. The simpler the grid, the more powerful the effect.

Having even a few elements out of position can spoil a grid. In the example opposite, only three of the seventeen controls were out of position, but this was enough to disrupt the layout.

Grid layouts can feel regimented and constricting. One way around this is to make the layout asymmetric—for instance, by having an odd number of columns. Another is to have a few elements that straddle several columns. Take a look at websites and magazines like Wired or the Guardian online and you'll see they're really designed around a regular, asymmetric grid.

Grouping

Boxes and Borders

Can help tie things together, while organizing space to aid searching and avoiding an overwhelming visual landscape.

**Elements of
Graphic Design**

Alignment

Use the invisible grid

Always break down your page or screen into manageable sections before you begin to add content

Alignment

Grids impose order

Alignment

Flush Left, Ragged Right

Make this your mantra for text.

Unless you have only one piece of text on a page, don't use center alignment. Aligning text to the edge of a page or screen provides an anchoring effect.

Alignment

Flush Left, Ragged Right

Make this your mantra.

Unless you have only one piece of text on a page, don't use center alignment. Aligning text to the edge of a page or screen provides an anchoring effect.
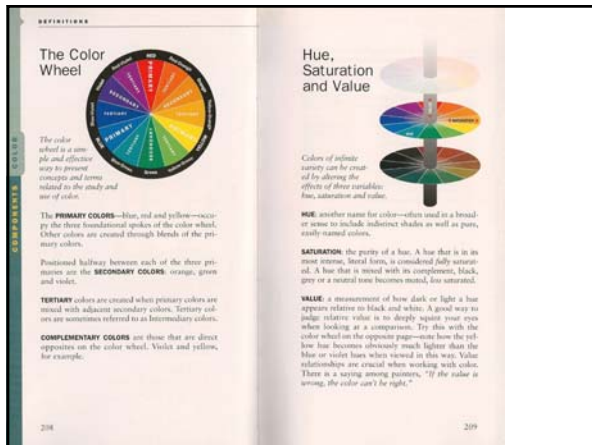
**Elements of
Graphic Design**

Color

Color is extremely powerful.
It's also easy to abuse.

Color

Color is extremely powerful.
It's also easy to abuse.

Like this. Are your eyes hurting yet? Avoid isoluminent colors for text on background

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Color

As in everything else…
Keep your color choices simple until you feel you are ready to be more adventurous.

Black white and grey are always safe, but work best with a single accent color.

Color

Be careful with saturation.
The bright, fully saturated primary colors are great when used sparingly, but chose more subdued values when combining multiple hues.

Color

Choose a color palette

Visit the internet oracle of color choices:
http://colorschemedesigner.com/

Play around with the various types of color combinations: monochromat
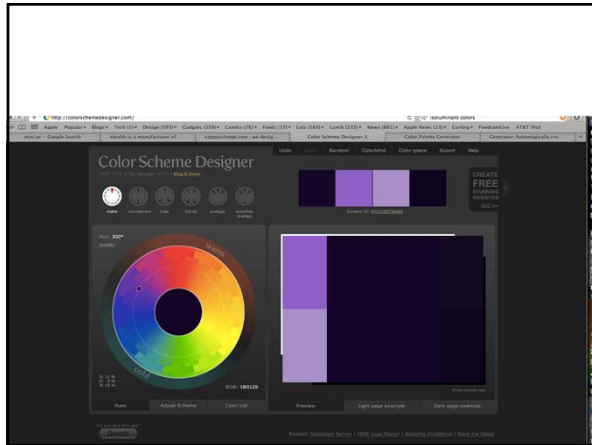
Color coding

Color coding is widespread. You see it in hospitals, folders, traffic lights, size charts, maps, dashboards—everywhere.

Perhaps because designs like the London Tube map are so successful, we tend to think color coding is a route to simplicity. But using colors to layer information is subtly different from using color to label information.

Layering information using color takes advantage of the way the mind works, so it places very little load on the user. But using colors to label information comes with a cost: like all codes, it takes time to learn and decode, so it requires extra effort from the user.

Casual visitors may not have time to learn your code. The more colors you use, the longer it will take to learn. And if you are not rigorously consistent in using the colors throughout your design, users won't be sure what the code means.

Another problem is in taking a system that's well known in one context and using it elsewhere. For instance, some British food labels include traffic light colors to suggest whether they contain items like salt or fat that people need to limit. While the traffic light colors are familiar to drivers, their meaning needs to be explained all over again to food shoppers, so not much is gained. And because the red and green colors don't work well for many color-blind people, they're not a universal solution (real traffic lights use position as well as color as part of their signal).

Adding color when it is not needed creates confusion.

Color coding works best when you are sure people will spend a long time learning and reusing your design, or when you're using a code your audience has already learned.

You'll have to eat a lot of sushi to learn the color code by heart.

Iconography

Elements of
Graphic Design
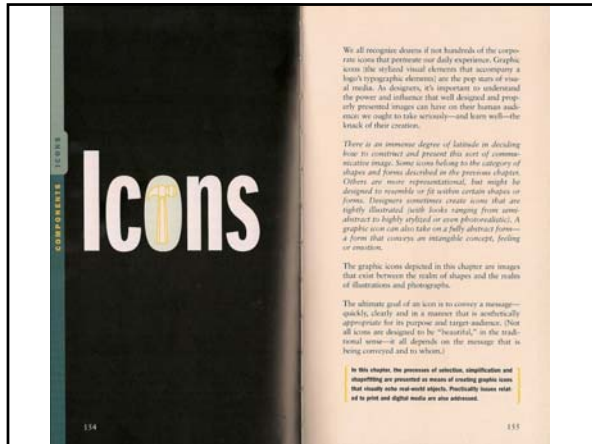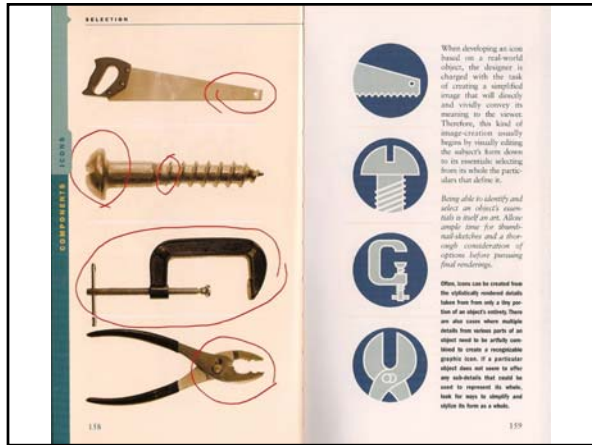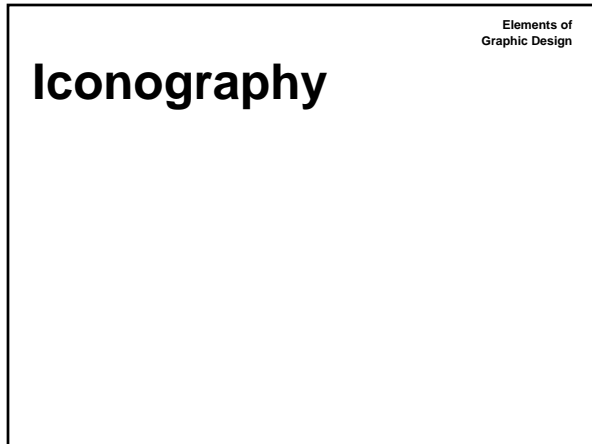
**Elements of
Graphic Design**

Iconography

Don't settle for clip art.
You can make great designs by simply combining basic shapes and tweaking typography.

**Elements of
Graphic Design**

Iconography

The greatest, most memorable logos are often the simplest.

3M

**Elements of
Graphic Design**
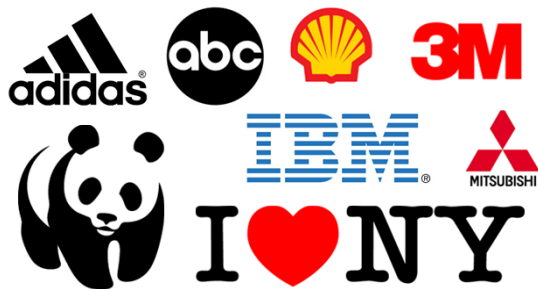
Iconography

**Elements of
Graphic Design**

Iconography

**Elements of
Graphic Design**

Simplicity

**Elements of
Graphic Design**

Simplicity

Keep it simple, okay?

**The best way to make sure people will
actually use your application is to get rid
of the clutter, focusing on the high-level
objectives of the user.**

Remove

According to a 2002 study by Standish Group, 64 percent of software features are "never or rarely used." Take a look at your DVD remote control and count the number of buttons that you've never touched. The same goes for almost any gadget or software you care to name. There are plenty of opportunities to simplify by removing.

Removing or omitting features can lead to successful products:

- Tumblr's blog service has a fraction of the functionality of sites like WordPress or Blogger, but three years after its launch, it was booming with over two million blog posts every day.
- The Lotus Elise started life as a back-to-basics sports car with no air-conditioning and a production run of eight hundred. Fifteen years later, it is still in production and tens of thousands of them have been sold.
- At launch, the iPhone had fewer features than competing phones from Nokia and RIM (makers of BlackBerry), but it was an instant hit.
- Basecamp, a project management extranet by 37signals, does a fraction of what extranet software like Microsoft SharePoint does, but *BusinessWeek* described it as "addictively easy-to-use" and it is used by millions of people worldwide.

Conventional wisdom says that more features mean more capability which, in turn, means a more useful product. But these examples choose depth of capability rather than breadth. They're useful because they do a few things far better than their rivals.

Conventional wisdom also says that products with more features will beat products with fewer. But all of these examples have competed against more fully-featured rivals and won.

Removing clutter allowed designers to focus on solving a few important problems really well. It also allowed users to focus on meeting their goals without distraction.

It's often easy to understand what's essential: a DVD remote needs a play button and a stop button. The problem comes with things that might be valuable. So, when you're simplifying by removing, begin with a blank sheet of paper and ask, "What are the important problems?" Then gradually add the features and content that matter most.

The most obvious way to simplify is to remove what's unnecessary.

How not to do it

The wrong approach to removing features is getting rid of anything that's difficult to build.

A few years ago, I worked on a website that was intended to help people conserve electricity. The big idea was to let people track their electricity usage online and see how small changes in their habits could lead to big savings.

When it came time to begin the design, the project manager decided this feature was too difficult to deliver and dropped it in favor of publishing some articles about saving electricity. When the site launched, it looked substantial, but there was nothing compelling or original about it and it failed to gain the intended audience.

This is a common pattern. A deadline approaches, a budget tightens, and features are cut. Frequently, the team focuses on delivering as many features as possible. Those that are big or tricky to deliver are cancelled. If someone objects strongly, they're told their feature will be pushed into "phase 2" or "phase 3."

What's left behind often adds up to an uninspiring product that's similar to a lot of existing, mediocre offerings.

This approach can tear the heart out of a project and yet it's the standard approach to removing features and content, one I've encountered far more than any other.

You can't avoid the process of removing features and content. Every team has limited resources, and every design project I've encountered has reached the point where features or content needed to be cut. It might be a product that had grown too big over the years, or a new design that had to be reigned in.

Don't wait for the unsympathetic, unsatisfactory process of cutting the most interesting features. Take charge of the design and ensure that you're focusing only on delivering features and content that add value.

Cutting features can be a bloody process.

Focus on what's core

Adding value begins with improving the core experience.

At Telewest, Alan Colville was asked to design a new set-top box incorporating a Personal Video Recorder (PVR).

With tight resources, Telewest couldn't deliver everything on its wish list, but the company was paralyzed over what to drop. So Alan started user-testing competitors' products to see what mattered to customers.

To his surprise, he found that customers were most concerned with one of the frustrations of recording. If they tried to record two TV shows, they couldn't watch a third. People complained that often they'd be recording two overlapping shows and wouldn't be able to change channels.

Overcoming this problem required adding a third TV tuner to the box—a major design change. But Alan's research showed that customers' frustration with this point was stronger than their interest in value-added features such as "red button" applications and interactive TV services, both of which had strong business cases but unproven customer need.

The research convinced the directors to switch their resources into the additional tuner. It quickly came to be seen as a competitive advantage and *Which?* (the UK equivalent of *Consumer Reports*) points to this flexibility as the box's major advantage.

When you're prioritizing features, remember that users value features that relate to their everyday experience of a product. Begin by following the path set in your vision story. For a PVR, the ability to record and watch TV is close to this everyday experience so it's more important than other features.

Users also value features that eliminate their frustrations effortlessly. When you're plotting your vision story, look for common frustrations and problems. Features that address these are your next priority. For a PVR, the ability to watch and record several shows at once turned out to be important enough to make it a priority.

Customers chose basic improvements over value-added extras.

Kill lame features

It's often a good idea to get rid of poorly implemented features. David Jarvis, Head of Online at TUI Ski, recalls that one of the websites he manages used to have features that let users filter search results and create shortlists. He says:

Neither was implemented particularly well. Although both filtering and shortlisting are features we think should be part of the functionality, and although we'd got something that was kind of working, we felt we were giving people a half-baked experience. We took the features off the UK site and our conversion rate went up.

One objection to removing half-baked features or content is that the time and effort that has gone into creating them will be wasted. No matter how poor the item, if it's been paid for, no one wants to get rid of what they have. In the words of Jack Moffett, "Broken gets fixed. Shoddy lasts forever."

Economists call this the "sunk costs fallacy." In reality, the cost of creating the feature can't be recovered, so the only way to judge the feature is on how much good it is doing and how much more it will cost to keep.

Features and content always place a mental load on users ("Do I look at this or not?") and always cost something to maintain (someone will have to keep the content up to date or make sure the feature still works).

So the question is never, "Why should we get rid of it?" It is always, "Why should we keep it?"

Hanging on to features "because getting rid of them would be a waste" may be holding you back.

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We tend to keep things, even when we know they're broken.

When features don't matter

If you're trying to make an appealing product, getting rid of features seems risky, but it has long-term benefits.

In 2006, three researchers—Roland T. Rust, Debora Viana Thompson, and Rebecca W. Hamilton—conducted an experiment to see whether features or usability mattered most to customers.

They divided participants into two groups and asked them to choose between two digital video players—one with seven features, the other with twenty-one features. Participants from the first group were only allowed to read about the products before they made their choice. The second group got a chance to use one of the products (either the high-feature model or the low-feature one) before making their choice.

Two-thirds of participants in the "no use" group chose the high-feature model. But only 44 percent of participants who used the high-feature model went on to choose it—and they were less confident that they had made the right choice.

Their conclusion: feature lists sell so long as customers don't get a chance to use the product. But once consumers have used a product, their preferences change. Suddenly usability matters very much.

Today, word of mouth, user reviews, personal recommendations, and product trials are becoming more important than mass advertising. Customers find out about products from other users—people who've learned to value usability. There's a strong argument for cutting features, rather than piling them on.

Overburdening your product with features is likely to decrease mainstream users' satisfaction and hurt sales in the long run.

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In the long run, adding features is a losing strategy.

Prioritizing features

When you're trying to figure out which features to keep and which to remove, follow these principles:

▫ Identify the users' goals and set them in order of priority. For the DVD remote control, the main goal is to watch the DVD; a secondary goal would be to use the DVD extras; a less important goal would be to play other media, like music CDs, MP3s, and so on.

▫ Focus on solutions that completely meet users' high-priority goals. Only then move on to the lower-priority goals.

▫ Identify things that are common sources of anxiety or stress and prioritize features that alleviate that stress effortlessly. For instance, interruptions (such as the telephone) are a common frustration when watching TV. The pause button on a DVD remote control is a way of minimizing that frustration.

▫ Identify the "good enough" controls that satisfy mainstream users' needs and the "precision" controls for experts. Set aside the "precision" controls. For instance, the DVD remote control in this book has four buttons that directly control fast-forwarding. Two controls (fast-forward and skip to the end of a chapter) would be good enough in almost all situations.

And finally, don't be tempted to judge the value of your product by the number of features. Instead, consider how well it meets users' high-priority goals.

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Prioritize features that satisfy mainstreamers' needs with minimal effort

Decisions

We often focus on giving users as many choices as possible. But choice can easily overwhelm users.

In 2000, Dr. Sheena S. Iyengar and Dr. Mark R. Lepper set up a tasting booth at Draeger's Market in Menlo Park, California. Hundreds of people walked past the booth each day. One weekend, they put out a selection of twenty-four varieties of jams; on another they set out six. The wider selection performed badly. Only 2 percent of passersby bought the jam. When there were fewer options, 12 percent of passersby purchased the jam.

Iyengar and Lepper repeated similar experiments in a number of settings, and found that people were more likely to make a purchase when given a handful of choices than when they were overwhelmed with dozens of options.

They also found that people who were given a limited choice were more satisfied with their selection than those who'd been given more options.

Offering people a choice gives them a sense of control, and people prefer some choice to no choice. But when that choice exceeds a handful of options it becomes a burden, especially when the options are similar.

You can see something similar at work in people's attitudes toward technology. Most people are anxious when faced with a massive array of options and buttons. Every time they pick up a complex gadget, there's a nagging sense that they don't fully understand it, and that a slip of a finger could easily make things go wrong. People can easily distrust choice.

When you're next looking at a long feature list, a web page with dozens of links, or a computer menu that's full of choices, it's worth remembering how easily this choice can undermine your design.

Users are happier when their choices are limited.

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Options and preferences

When you're looking for something to remove, options and preferences are a good place to begin.

In general, options help users to customize their setup. This is classic expert behavior—experts want to get under their car and tinker with it, mainstreamers want to get in and drive.

I've found that options and preferences generally creep into designs when the design team isn't sure what to do. Maybe there are two possibilities for navigating a website: breadcrumb links or drop-down menus. Both look good, so both go in. That way the user has a choice.

This sounds like it would be helpful, but should users be wasting their time figuring out which navigation technique is most convenient? That task is so far removed from a vision of a simple product that it never appears. Let's go back to the Paris Hilton story for a minute. Imagine: you hand your camera to a friend who then determines which of the three available grip positions and shutter buttons is best. Your friend would be wasting precious time, and you'd probably miss your chance to take the video.

Simple user experiences don't force the user to make these kinds of choices. It's the responsibility of the design team to do that. The best way to decide is to try it out on some users. And if there's no clear winner, and no dangerous pitfalls, then there's no "wrong" design. Choose which one to implement and move on.
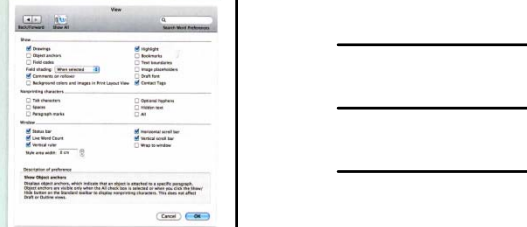
Mainstream users don't like the burden of setting options and preferences.

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Visual clutter

Removing visual clutter means people have to process less information and can concentrate on what's important on the page. I've noticed that users describe interfaces they like as "clean," meaning free from clutter.

The designer Edward Tufte talks about needing to make the "data-ink ratio" as high as possible. In other words, ink (or pixels) shouldn't be wasted on anything that isn't content or in repeating content. So he removes the gridlines on graphs, leaving just the axes and the zigzag line of the graph itself. He reasons that the gridlines distract the reader from the important data: the shape of the graph.

The process for removing clutter is simple. Look at each element in the design and ask why it is needed. Is it critical information or there for support? Try to remove it from the design. If the design no longer works, replace the element.

Here are some good ways to limit visual clutter:

- Use white space or subtle background tints to divide up the page rather than lines. Why? Because lines sit in the foreground, so you pay more attention to them than to tints or white space that sit in the background.
- Use the minimum possible emphasis. Don't make something bold, large, and red, if simply making it bold will do.
- Avoid thick dark lines where fine, light lines will do.
- Limit the levels of information. If you have more than two or three levels of information on a page you may be confusing the user. For instance, limit the number, sizes, and weights of fonts. Try to keep to just two or three levels in total, e.g., a headline, subheading, and body text.
- Limit the variation in sizes of elements. For instance, if you're designing an online newspaper, you might have a large block of text for the main story and five smaller blocks of text for secondary stories, rather than six blocks of text in different sizes.
- Limit the variation in shapes of elements. Stick to one button style rather than using three or four different ones.

You'll be surprised how much clutter you can remove from a page.

Before

After

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Simplifying sentences

Almost any sentence can be simplified and almost any text can be cut. In *Revising Prose*, Richard Lanham offers a simple method to turn long-winded writing into short, crisp sentences.

- Circle the prepositions (of, in, for, onto, into, about). They drain the action from a sentence, so try to eliminate them.
- Circle the "is" verb forms ("is taking time") and replace as many as you can ("takes time").
- Convert passive voice ("time is needed for this project") into active voice ("this project needs time").
- Cut out slow starts ("One can easily see that...") and get to the point.
- Eliminate redundancies. Don't say "on a daily basis" when "daily" means the same thing.

These rules make text clearer, more persuasive, and shorter.

For example:

- Please note that although Chrome is supported for both Mac and Windows operating systems, it is recommended that all users of this site switch to the most up-to-date version of the Firefox web browser for the best possible results. (41 words)

Simplified version:

- For best results, use the latest version of Firefox. Chrome for Mac and Windows is also supported. (17 words)

Use Lanham's rules to remove the words that pad your sentences.

~~Our~~ BlueMotion ~~range combines lighter materials, enhanced aerodynamics, economical engines and tyros that create less friction, which~~ saves you ~~fuel and can reduce your tax, which means you will have more~~ money.

DDB UK's advertisement for Volkswagen in the UK shows just how much you can cut.

102 • PART 4: REMOVE
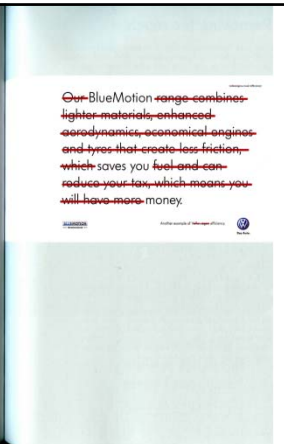
Focus

The "remove" strategy is about removing distractions to bring focus to your project:

- Focus on what's valuable to users. This means concentrating on features that deliver the users' core experience. It also means delivering features that eliminate users' frustrations and ease their sense of anxiety.
- Focus your resources on delivering value by removing lame features, irrelevant extras, and bribes.
- Focus on meeting users' goals. Agonizing over the process will get you bogged down in detail.
- Remove the distractions of tiny speed bumps that add to the load on the user: error messages, irrelevant text, unnecessary choices, and visual clutter.

With patience and the data to back you up, you can bring focus to most projects. If your problem is political, you can overcome it by building on small successes or by using evidence from tests. If your problem is out-of-date technology or incompatible systems, these too can change (slowly) over time. However, there are a couple of exceptions.

Sometimes there is an unavoidable legal requirement to include particular wording or information. Financial services and medical regulations often require that specific wording is used, not because it makes sense to the public, but because it makes sense to lawmakers. Laws can be changed, too. David Sless in Australia has had some success in getting lawmakers to focus on whether consumers understand labels, rather than requiring long and confusing instructions.

Sometimes you can't remove because your design is part of a larger system. That's the case with the DVD remote. For instance, there are millions of DVDs in circulation that make use of the numeric keypad on the remote. If you removed it, you would risk breaking the user experience for anyone who already owned such a DVD.

While you're waiting for the world to change, however, there are other ways of simplifying that are less radical, but quicker to implement.

Removing clutter helps users focus on what's important.

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Elements of Graphic Design

White Space

## White Space

Graphic designers love white space.

White Space

Just because you have a lot of space you can fill with text does not mean you should. People don't like to feel cramped, plus there are a lot of other ways you can express content without making people spend a lot of time reading it. Edit. Respect white space.

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**Elements of
Graphic Design**

White Space

Edit. Respect white space.
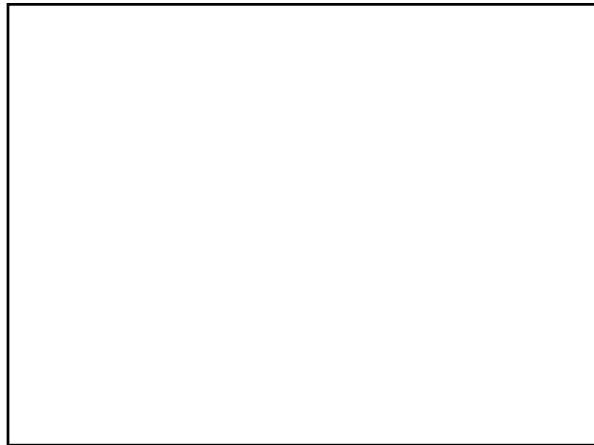
**Elements of
Graphic Design**

Final words

**Elements of
Graphic Design**

Final words
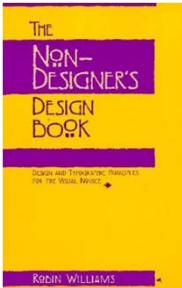
From Robin Williams

**Elements of
Graphic Design**

"Graphic Design
is all about CRAP."

**Elements of
Graphic Design**

Robin Williams

THE
NON-
DESIGNER'S
DESIGN
BOOK

DESIGN AND TYPOGRAPHIC PRINCIPLES
FOR THE VISUAL NOVICE

ROBIN WILLIAMS

**Elements of
Graphic Design**

C.R.A.P.

Contrast

**Elements of
Graphic Design**

C.R.A.P.

Contrast
Repetition

**Elements of
Graphic Design**

C.R.A.P.

Contrast
Repetition
Alignment

Elements of Graphic Design

C.R.A.P.

Contrast
Repetition
Alignment
Proximity

Elements of Graphic Design

C.R.A.P.

Contrast
This is contrast.

Elements of Graphic Design

C.R.A.P.

Contrast
This is contrast. Use sparingly.

C.R.A.P.

Contrast

This is contrast. **Use sparingly.**

C.R.A.P.

Repetition

Repeated elements, such as headings, color and shapes can unify a design.

C.R.A.P.

Alignment

Make your designs rational

C.R.A.P.

Proximity

When things have a related function, group them together. Keeping things together implies relationship, and prevents "floating in space."

Experience Hawaii
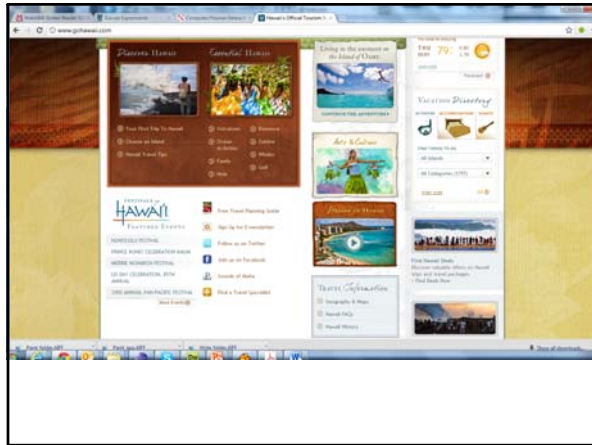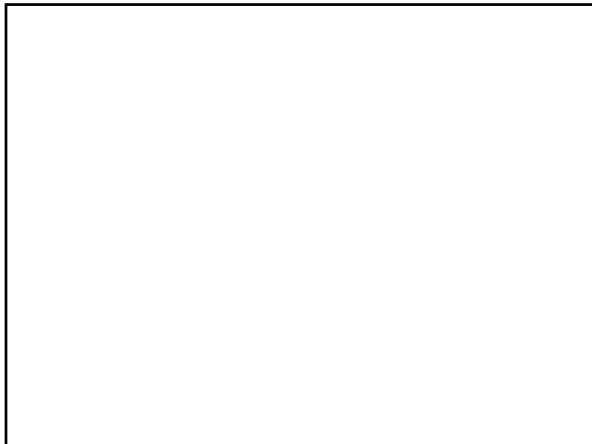
Research Papers – Graphic Design, Tangible Int., Games

- Harrison et al., Kineticons: Using Iconographic Motion in Graphical User Interface Design, CHI 2011 (Presenter: Serkan Okur)
- Badshah et al., Interactive Generator: A Self-Powered Haptic Feedback Device, CHI 2011 (Presenter: Chen Chu)
- Andersen et al., Placing a Value on Aesthetics in Online Casual Games, CHI 2011 (Presenter: Utsav Shah)

To do

- Have a great break!
- Read and take notes
  - Nielsen Ch 6, 7, 1)
  - Olympic Message System (Gould on Blackboard)
  - Models (Dix Ch 12).
- Do Individual Homework I7 – Design
- Do Team Homework T5 – Paper Prototyping 2
- Be ready to implement…