
Design for Scientists

Simple tips to improve science communication

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The Nature
Conservancy 
Protecting nature. Preserving life.™

“To design is to communicate clearly by
whatever means you can control or master.”

– *Milton Glaser*

On Design

Design is neither magic, nor is it about making things pretty. Good design captures attention, conveys information, and helps others get things done.

On your audience

Get to know your audience. You will accomplish much more when your audience can relate to what you're saying.

Your audience deserves your attention. Any report, graph, tool, presentation, or website is meant to communicate with *people* and inspire them to *do something*. Make it easy for them to understand your message and take specific action.

Motivation

Make your tool or message relevant for your audience. Ask your audience questions about what has motivated them in the past. Do not ask about forward-looking motivational ideas, because people always think an idea *might* work. Look at what *has* worked.

“If you’re only looking at the problem from your own point of view, you’re only going to be, at best, half right.”

–Jesse James Garrett

Context

Understand your audience’s situation by observing them in their environment. Imagine the constraints that might impact how they use your tool, understand your presentation, or process your report. Context *can* impact outcomes.

Emotion

Emotional people take action. Tell stories that relate your work to experiences they can identify with. Tell them what actions they can take, and make it easy for them to do it.

1. Simplify

Focus on your core message, and remove or hide details which compete for your audience's attention.

Presentations

PowerPoint is not a teleprompter. Put a word or two up to emphasize your points, not full sentences. If you'd rather have your audience read, just send them an email instead of reading your slides to them – this saves time for both parties.

Use the animation function to introduce bulleted points one-at-a-time. If you introduce all your points at once, your audience will not listen to you; instead, they will read your slides.

Build out graphs or diagrams piece-by-piece. Help your audience understand what the axes means and the story the data are telling.

“It's all about removing the unnecessary.”

–Jonathan Ive, Apple

Only display a logo on the first and last

slide of your presentation; anything else distracts from your message. If someone walks into the room halfway through your talk, and you bore them so much that they leave before you're finished, do you really want them to remember your organization anyway? *Your story is the “TNC brand,”* not the logo.

Don't use those silly TNC PowerPoint templates. Yes, this will get me in trouble, but it will also make your presentation more effective. Does your audience really need to see small photographs of nature on every slide to be reminded that you work for The Nature Conservancy? No.

Writing

When writing reports, move as much of the non-story to appendices. Nerds love to study methods sections and revel in the details. These are important, but don't let them impede your core message. Hide 'em in the back of the report.

Provide a one- or two-sentence summary at the beginning of every chapter of a report or webpage. Don't make the reader work so hard to figure out your core message.

Graphs

Remove every element of a graph that does not help you tell a story. This includes gradients, 3D fills, dark backgrounds, and unnecessary gridlines.

2. Contrast

If something is different, make it *really* different. Help your audience distinguish what's important.

Typeface

Use **two different typefaces to distinguish the headings from the body text** of a report, presentation, or article written for the web.

When choosing two typefaces, **make sure the two don't look too similar**. The easiest way to avoid this is to choose one serif and one sans-serif font. *Serif fonts* include such favorites as Times New Roman, Georgia, Cambria, Californian, and Palatino. TNC's official serif is Oakleaf. *Sans-serif fonts* include Calibri, Arial, Consolas, Verdana, and Tahoma. TNC's official sans-serif is Imago.

Do not use TNC's Oakleaf and Imago fonts for presentations or other on-screen use. While they look nice in print, they were not made to be easy-to-read on digital screens. Instead, try pairing Georgia & Verdana or Cambria & Calibri.

Make your headings and body text significantly different in size to create a sense of hierarchy. When in doubt, hold your report or presentation at arms length and squint. Can you tell what stands out? It should be the headings.

Highlight no more than 10% of a text using bold, italics, underlining, or color. If you need to highlight an extremely important point, consider incorporating the point in a heading instead.

Color

Choose a couple complementary colors to use throughout a presentation or report. A good source for these is the TNC color guide, which can be downloaded at <http://home.tnc/identity/standards/color.html>.

Try using a monochromatic color scheme that varies the lightness or darkness of a single color when displaying trends in a numerical dataset. This has two advantages: 1) It prints in black-and-white better, and 2) it is easier for those with color blindness to see.

Use an achromatic + 1 color scheme to highlight a single category within a numerical color scheme by using shades of black & grey along with one extra color.



Monochromatic



Achromatic + 1

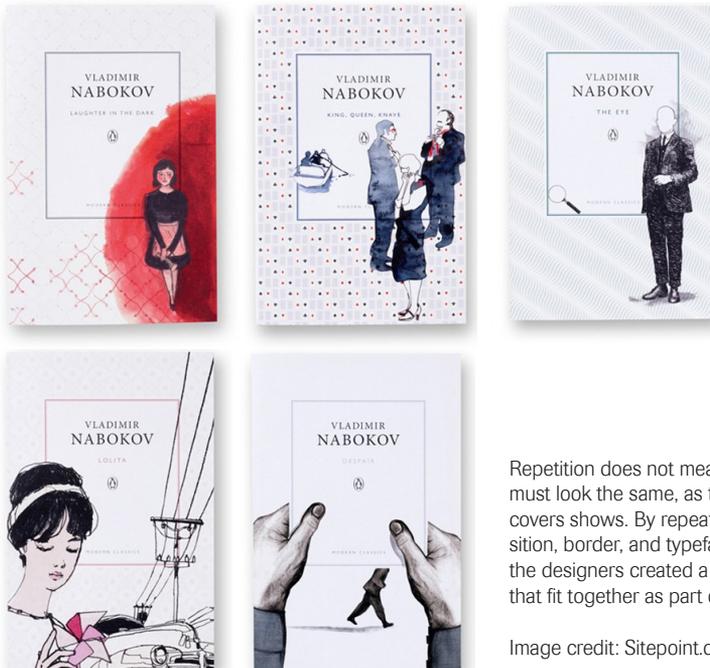
3. Repetition

Repeat elements of a design throughout — consistency helps people learn and adapt to new information quicker.

Choose a couple key typefaces and use them consistently throughout a report or presentation. Choose three at most – one for titles or headings, one for body text, and another for labeling captions or graphs. To create differentiation between levels of headings, use size, color, or variants such as small caps, italics, or bold. Be sparing in color use – one or two colors might make your headings pop out, but a rainbow will confuse your readers.

Find repetitive items and design them consistently. Look for items such as pull-quotes, graphs, borders, icons, and images, and format them in a similar way to create a rhythm throughout your report or presentation.

Turn off the option to shrink text on overflow when giving a presentation in PowerPoint. This option resizes your text to fit in a text box, which will create inconsistency in text sizes throughout your presentation. To turn off the option, right-click a textbox, go to Format Shape > Text Box, and change the Autofit option to Do not Autofit.



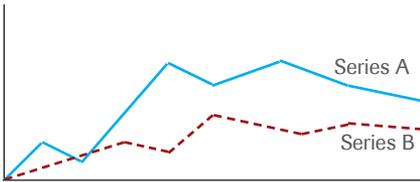
Repetition does not mean that everything must look the same, as this series of book covers shows. By repeating the same position, border, and typeface of the title box, the designers created a series of books that fit together as part of a larger family.

Image credit: Sitepoint.com

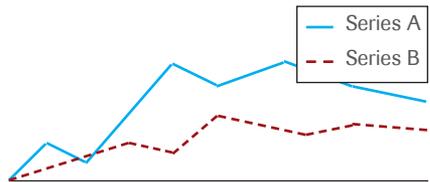
5. Proximity

Group similar items together to indicate relatedness, reduce clutter, and organize information.

Do this



Not this



Directly label data series on graphs when possible. Placing labels in close proximity to data limits confusion and also makes it easier for those with color blindness to understand your data.

Break up writing into headings, especially when writing for the web. The brain naturally looks for groups, and readers don't usually read on the web, they scan.

When displaying lists, combine them into groups of 3-4 items, and create space between the sub-lists. There is a reason phone numbers look like this: (520) 545-0188 and not this: 5205450188. Bite-sized chunks are easier to digest.

BAD

Scrub shrubland
Steppe
Chaparral
Montane grassland
Alpine grassland
Lowland grassland
Conifer forest
Deciduous forest
Mixed forest
Developed
Agriculture

GOOD

Scrub shrub	Forest
Scrub shrubland	Conifer forest
Steppe	Deciduous forest
Chaparral	Mixed forest
Grassland	Human land use
Montane grassland	Developed
Alpine grassland	Agriculture
Lowland grassland	

Resources

Interested in design? Want to make your science more effective? Here are some resources we've found useful.

Design principles

William Lidwell. 2010. Universal principles of design, revised and updated: 125 ways to enhance usability, influence perception, increase appeal, make better design decisions, and teach through design.

Jan White. 2003. Editing by design: For designers, art directors, and editors —the classic guide to winning readers.

Robin Williams. 2008. The non-designer's design book.

50 free lessons in graphic design.
<http://bit.ly/p2VD7m>

Making things usable

Steve Krug. 2005. Don't make me think: A common sense approach to web usability.

Steve Krug. 2009. Rocket surgery made easy: The do-it-yourself guide to finding and fixing usability problems.

Susan Weinschenk. 2011. 100 things every designer needs to know about people.

Usability.gov/methods - Gives a step-by-step guide for testing the usability of a website or process.

Software Usability Research Lab - Definitive site for user-behavior research. <http://bit.ly/qDZYen>

Color

Colorbrewer2.org – a tool for designing map & data color schemes.

Kuler.adobe.com – a tool for exploring attractive color schemes.

TNC color guide – <http://home.tnc/identity/standards/color.html>

Typography

Robert Bringhurst. 2004. The elements of typographic style.

Ellen Lupton. 2010. Thinking with type: A critical guide for designers, writers, editors, and students.

Typography for lawyers - A ton of free tips for making your text look better.
<http://typographyforlawyers.com/>

Presentations

Nancy Duarte. 2008. Slide:ology: The art and science of creating great presentations.

Nancy Duarte. 2010. Resonate: Present visual stories that transform audiences.

Garr Reynolds. 2009. Presentation Zen design: Simple design principles and techniques to enhance your presentations.

Cliff Atkinson. 2011. Beyond bullet points: Using Microsoft PowerPoint to create presentations that inform, motivate, and inspire.

Carmine Gallo. 2009. The presentation secrets of Steve Jobs: How to be insanely great in front of any audience.

Data visualization

Stephen Few. 2009. Now you see it:

Simple visualization techniques for quantitative analysis.

Edward Tufte. 2001. The visual display of quantitative information.

Nathan Yau. 2011. Visualize this: The FlowingData guide to design, visualization, and statistics.

Dona Wong. 2010. The Wall Street Journal guide to information graphics: The Dos and Don'ts of presenting data, facts, and figures.

Writing

Strunk & White. 1999. The elements of style.

William Zinsser. 2006. On writing well: The classic guide to writing nonfiction.

Ginny Redish. 2007. Letting go of the words: writing web content that works.

Yahoo. 2010. The Yahoo! style guide: The ultimate sourcebook for writing, editing, and creating content for the digital world.

Writing complexity analysis - tests a website for how difficult it is to read. <http://juicystudio.com/services/readability.php>

Messaging & influence

Robert Cialdini. 2006. Influence: The psychology of persuasion.

Frank Luntz. 2006. Words that work: It's not what you say, it's what people hear.

Chip and Dan Heath. 2007. Made to stick: Why some ideas survive and others die.

Guy Kawasaki. 2011. Enchantment: The art of changing hearts, minds, and actions.

Richard Thaler. 2009. Nudge: Improving decisions about health, wealth, and happiness.

Science communication

Randy Olson. 2009. Don't be such a scientist: Talking substance in the age of style.

Cornelia Dean. 2009. Am I making myself clear? A scientist's guide to talking to the public.

Nancy Baron. 2010. Escape from the ivory tower: A guide to making your science matter.

Interaction design

Alan Cooper. 2007. About face 3: The essentials of interaction design.

37signals. 2009. Getting real: The smarter, faster, easier way to build a successful web application.

Giles Colborne. 2010. Simple and usable web, mobile, and interaction design.

Kim Goodwin. 2009. Designing for the digital age: How to create human-centered products and services.

Design thinking

Daniel Pink. 2006. A whole new mind: Why right-brainers will rule the future.

Roger Martin. 2009. The design of business: Why design thinking is the next competitive advantage.

Jeanne Liedtka. 2011. Designing for growth: A design thinking toolkit for managers.

About us

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Dan conducts spatial analyses for Arizona's Conservation Science program, manages GIS and information resources, and designed and maintains the azconservation.org website. He also designed and manages corridordesign.org, a website dedicated to providing tools and information on wildlife corridors, and recently redesigned the maps.tnc.org site for Conservation Data & Information Systems.

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Tara is a Usability Analyst who loves talking with users and creating better software for TIS. She has been a usability junkie for years and has 15 years of experience listening to people talk about what they hate about their computers. She would love to help you with your problems – call or email her!

“By all means break the rules, and break them beautifully, deliberately, and well.”

– *Robert Bringhurst*