

WEEK 6

Graphic Design Principles: Layout & Fonts

IST719 Information Visualization

WEEK 7

Today

- Assignments for next week
- Graphic design principles
 - Visual hierarchies
 - Typography

ASSIGNMENT

Due Before the next class

- READ
 - Few: Chapter 4- Analytic Interaction and Navigation
 - DS: Chapter 5-Rows and Columns
 - VT: Chapters 5 & 6- Visualizing Relationships
- SUBMIT
 - Exercises in VT Chapter 6
 - Scatterplot Matrix Figure 6-9
 - Bubble chart Figure 6-15
 - Histogram Figure 6-25
 - Density Plot Figure 6-32
 - Small multiple **using data of your choice** see Fig. 6-38 & 6-40
 - Small Multiple are the thing most folks get wrong!

Coming Up Soon

- Week 7: Social Networks
- Week 8: Maps & Posters
- Week 9 & 10: Adv. Topic Presentation
- Week 11: Chasing Ice on Netflix
 - Group Project Feedback
 - Ethics Discussion

Visual Hierarchies

- What is the most important thing on the page?
 - What is the second, third, fourth most important thing on the page?
- What visual cues have you provided to help people find the most important thing(s) on the page?
- What visual cues have you provided to help people make their way through the image?

Visual Hierarchies

Simple rules for good typography

Here are some **basic rules to improve your typography** across either web or print. Of course, these rules are only to start with, and rules are meant to be broken. But if you want something to look neat, clean and generally well designed they are a good set to follow.

Don't use too many typefaces

Consistency throughout a document or website is helpful. It brings unity and one identity. It also makes it clean, tidy and just basically not messy. A good rule to follow then is to not use more than 3 different typefaces in one document.

one size for a heading, one for an introduction, one for body text and one for a pullout quote or something else. This will be consistent across the whole 8-10pt for body copy. Always keep body point between between these sizes. It looks neat and tidy and allows headings. Definitely do not go over 12pt.

keep my leading tight, but without ever overlapping. Usually I will go for a little above the font size, slightly below the auto setting. This works especially well with helvetica like typefaces. Either way, there should not be too much space, and the letters should not overlap at all!

Hierarchy

It is always important in typography to pay close attention to the hierarchy of the page. The most basic thing is to keep the headline at the top of the page in a larger size. But more than this its just a case of looking at the page and asking other people what they read first. As a designer we should be thinking about communication constantly. This is our primary focus.

A typeface not legible
is not a typeface

There is a place for all kinds of artistic typefaces, but for good standard copy lets keep things simple people. It must be legible. This is certainly the case for body copy. Keep experimental typefaces for posters or at best headlines. They are never well received in large quantities. Can you read this easily?

Kerning is the spacing between letters. Again, like leading this seems like an obvious one, but still needs careful attention. Consider if your typeface generally needs spacing out more, or if it looks better with tighter kerning. I always prefer helvetica and futura manually tightened as they have quite a bit of space between letters on the normal setting. Also it is worth taking special care with specific characters. Again, no characters should overlap. An example of this is for helvetica r and t characters together. Be worth kerning manually in this case.

Font size

Use no more than 4 font sizes in a document or website. Preferably 3. Again this is a case of consistency. Too many copy sizes make a document disjointed. 3 also allows enough variation to emphasise certain text and categorise text together. For example, you have

Leading is essentially the vertical space between the lines of type. Leading is something that so many designers forget about, its easy just to stick with the auto settings. But trust me, this can make or break a document. Pay close attention to your leading. I personally like to

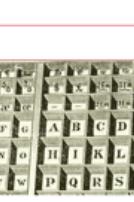
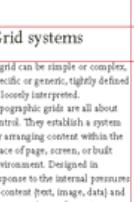
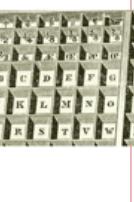
Accent or emphasise

This can help bring out key words and also break up large sections of text. Large chunks of copy tend to

Grids

- Underlying structure
- Alignment
- Placement
- Visual perception

Grids

| | Grid systems | Grid systems | Grid systems |
|--|--|--|---|
| | <p></p> <p>The typographic grid is a proportional regular for composition, tables, pictures, etc. It is a formal programme to accommodate x unknown items. The typographic grid is a proportional regular for composition, tables, pictures, etc. It is a formal programme to accommodate x unknown items.</p> <p>Grid systems</p> <p>A grid can be simple or complex, specific or generic, tightly defined or loosely interpreted.</p> <p>Typographic grids are all about control. They establish a system for arranging content within the space of page, screen, or built environment. Designed in response to the internal pressures of content (text, image, data) and the outer edge of frame (page, screen, window), an effective grid is not a rigid formula but a flexible and resilient structure, a skeleton that moves in concert with the muscular mass of content. Grids belong to the technological framework of typography, from the concrete modularity of letterpress to the ubiquitous rulers, guides, and coordinate systems of graphics applications. Although software generates illusions of smooth curves and continuous tones, every digital image or mark is constructed—ultimately—from a grid of neatly bounded blocks. The ubiquitous language of the gui (graphical user interface) creates a gridded space in which windows overlay windows. In addition to their place in the background of design production, grids have become explicit theoretical tools. Avant-garde designers in the 1910s and 1920s exposed the mechanics of letterpress, bringing it to the potential surface of the page. In Switzerland after World War II, graphic designers built a total</p> | <p></p> <p>The typographic grid is a proportional regular for composition, tables, pictures, etc. It is a formal programme to accommodate x unknown items. The typographic grid is a proportional regular for composition, tables, pictures, etc. It is a formal programme to accommodate x unknown items.</p> <p>Grid systems</p> <p>A grid can be simple or complex, specific or generic, tightly defined or loosely interpreted.</p> <p>Typographic grids are all about control. They establish a system for arranging content within the space of page, screen, or built environment. Designed in response to the internal pressures of content (text, image, data) and the outer edge of frame (page, screen, window), an effective grid is not a rigid formula but a flexible and resilient structure, a skeleton that moves in concert with the muscular mass of content. Grids belong to the technological framework of typography, from the concrete modularity of letterpress to the ubiquitous rulers, guides, and coordinate systems of graphics applications. Although software generates illusions of smooth curves and continuous tones, every digital image or mark is constructed—ultimately—from a grid of neatly bounded blocks. The ubiquitous language of the</p> | <p></p> <p>The typographic grid is a proportional regular for composition, tables, pictures, etc. It is a formal programme to accommodate x unknown items. The typographic grid is a proportional regular for composition, tables, pictures, etc. It is a formal programme to accommodate x unknown items.</p> <p>Grid systems</p> <p>A grid can be simple or complex, specific or generic, tightly defined or loosely interpreted.</p> <p>Typographic grids are all about control. They establish a system for arranging content within the space of page, screen, or built environment. Designed in response to the internal pressures of content (text, image, data) and the outer edge of frame (page, screen, window), an effective grid is not a rigid formula but a flexible and resilient structure, a skeleton that moves in concert with the muscular mass of content. Grids belong to the technological framework of typography, from the concrete modularity of letterpress to the ubiquitous rulers, guides, and coordinate systems of graphics applications. Although software generates illusions of smooth curves and continuous tones, every digital image or mark is constructed—ultimately—from a grid of neatly bounded blocks. The ubiquitous language of the</p> |
| | <p><i>There are numerous ways to use a basic column grid. Here, one column has been reserved for images and captions, and the others for text.</i></p> | <p><i>In this variation, images and text share column space.</i></p> | |

GRAPHIC AFFAIR • GRID

Print Layout

Single-Column Grid

The grid system in graphic design is a way of organizing content on a page, using any combination of margins, columns, rows and columns. It is commonly seen in newspaper and magazine layout with columns of text and images. One grid, or a collection of grids, may be used across an entire project to achieve a consistent look and feel. In a finished product, the grid is invisible.

Multi-Column Grid

provide flexible formats for publications that have a complex hierarchy of content. More columns = More flexibility.

Modular Grid

has consistent horizontal divisions from top to bottom and vertical divisions from left to right. It organizes image and text.

Golden Section

The Golden Section is a ratio which is evident through out the universe as the number Phi. You can use this ratio in your design by making sure that elements of your grid conform to this ratio. Using the Golden Section can ensure a natural sense of correct composition and balanced design. It is based in mathematics and the formula for the golden section is:

$$a:b = b:(a+b)$$

Web Layout

Google's site is very clean, probably the simplest corporate site out there. It uses grid to layout its content.

Facebook.com (largest social network site) is cluttered with information, but still neatly organized into grids.

PHI

Phi was used to symbolize the golden ratio. Usually, the lowercase ϕ is used. Sometime, the uppercase Φ is used for the reciprocal of the golden ratio, $1/\phi$.

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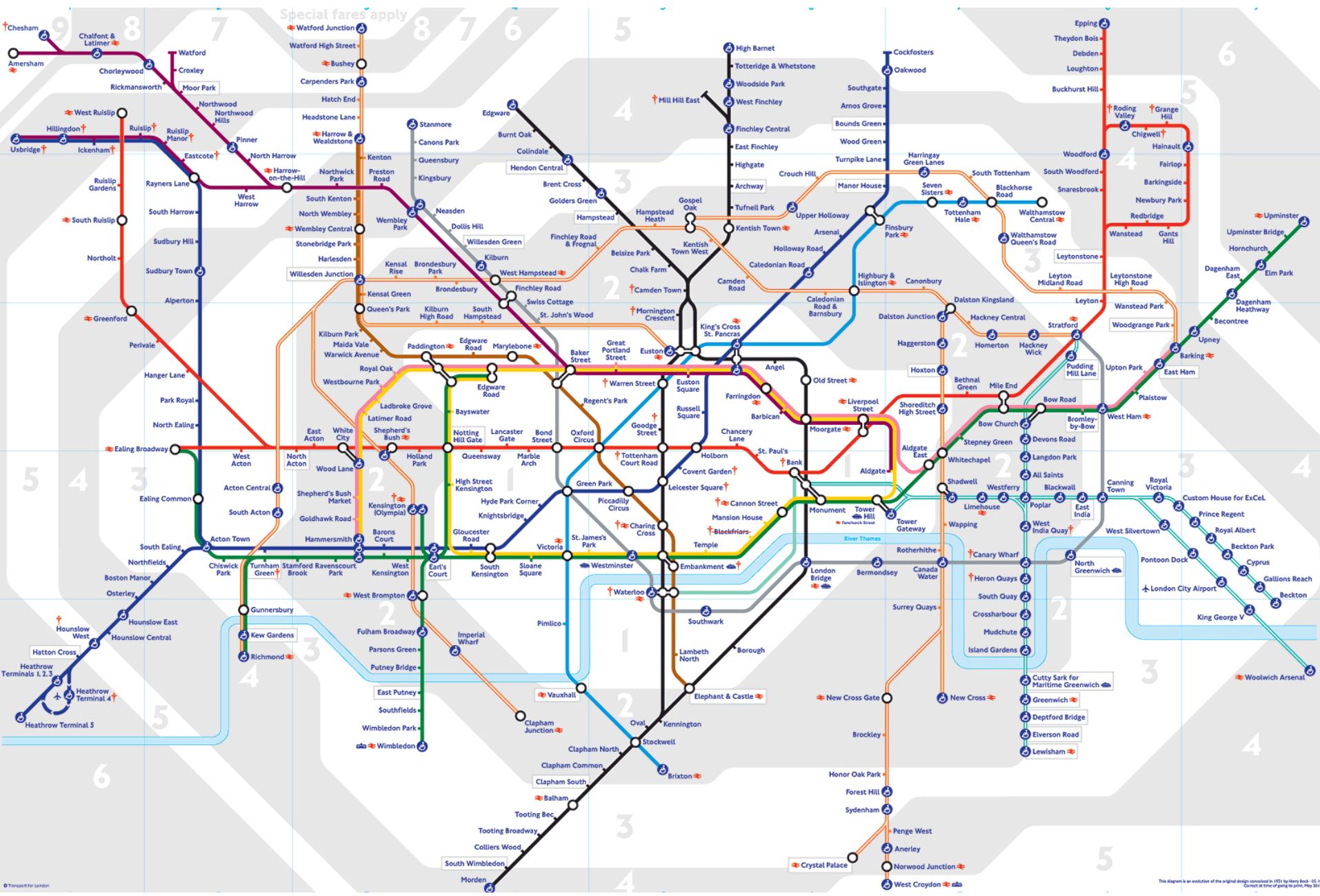
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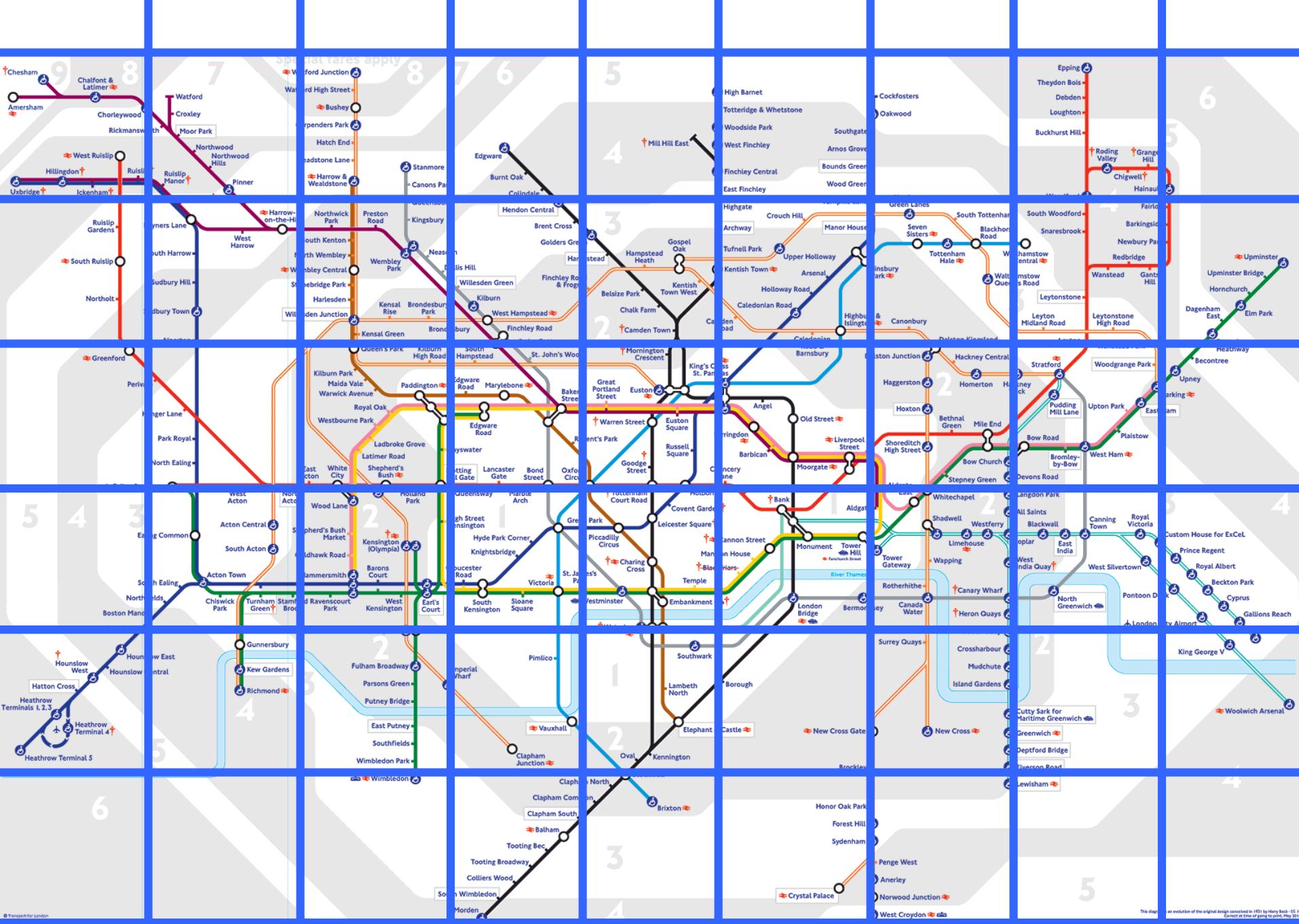
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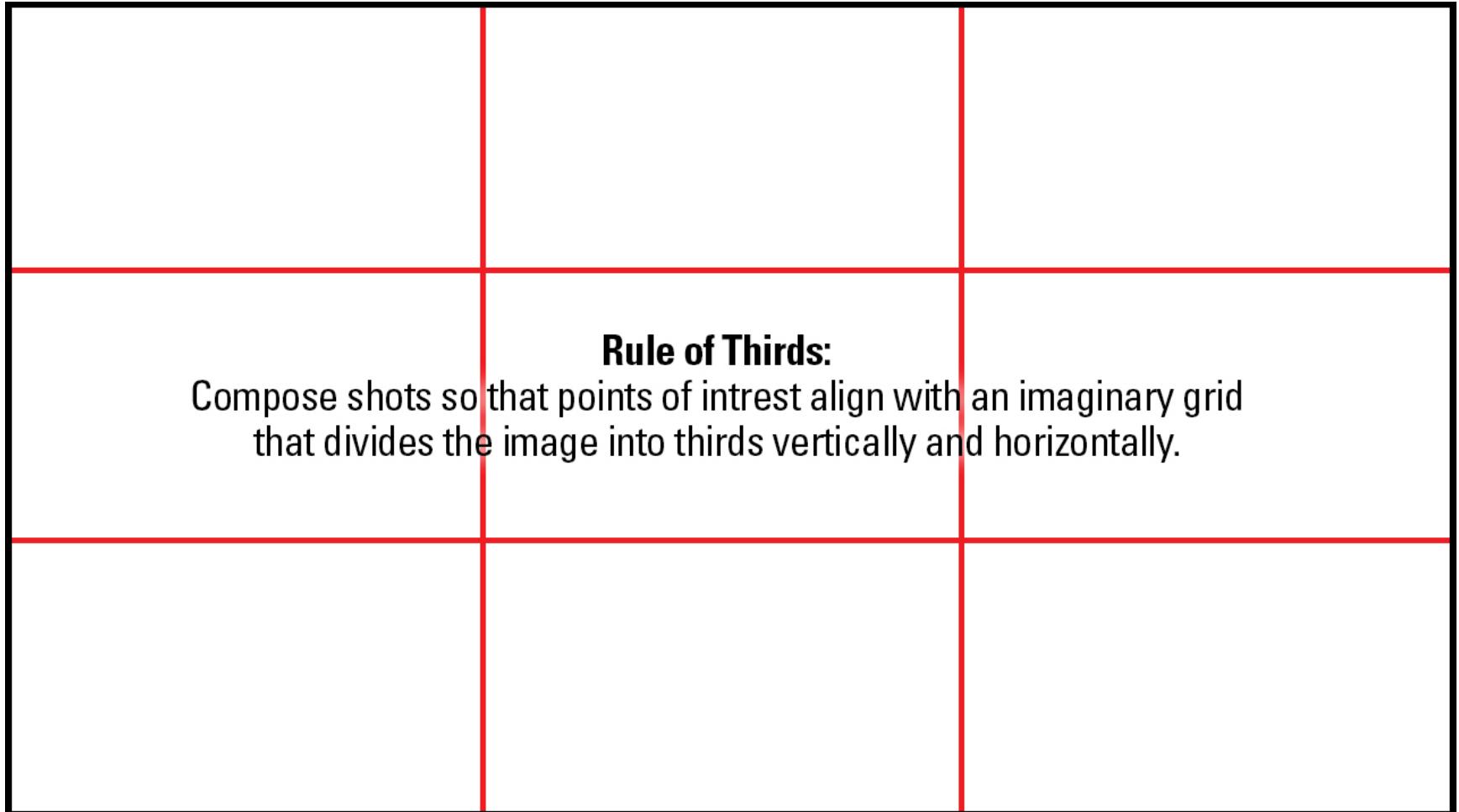
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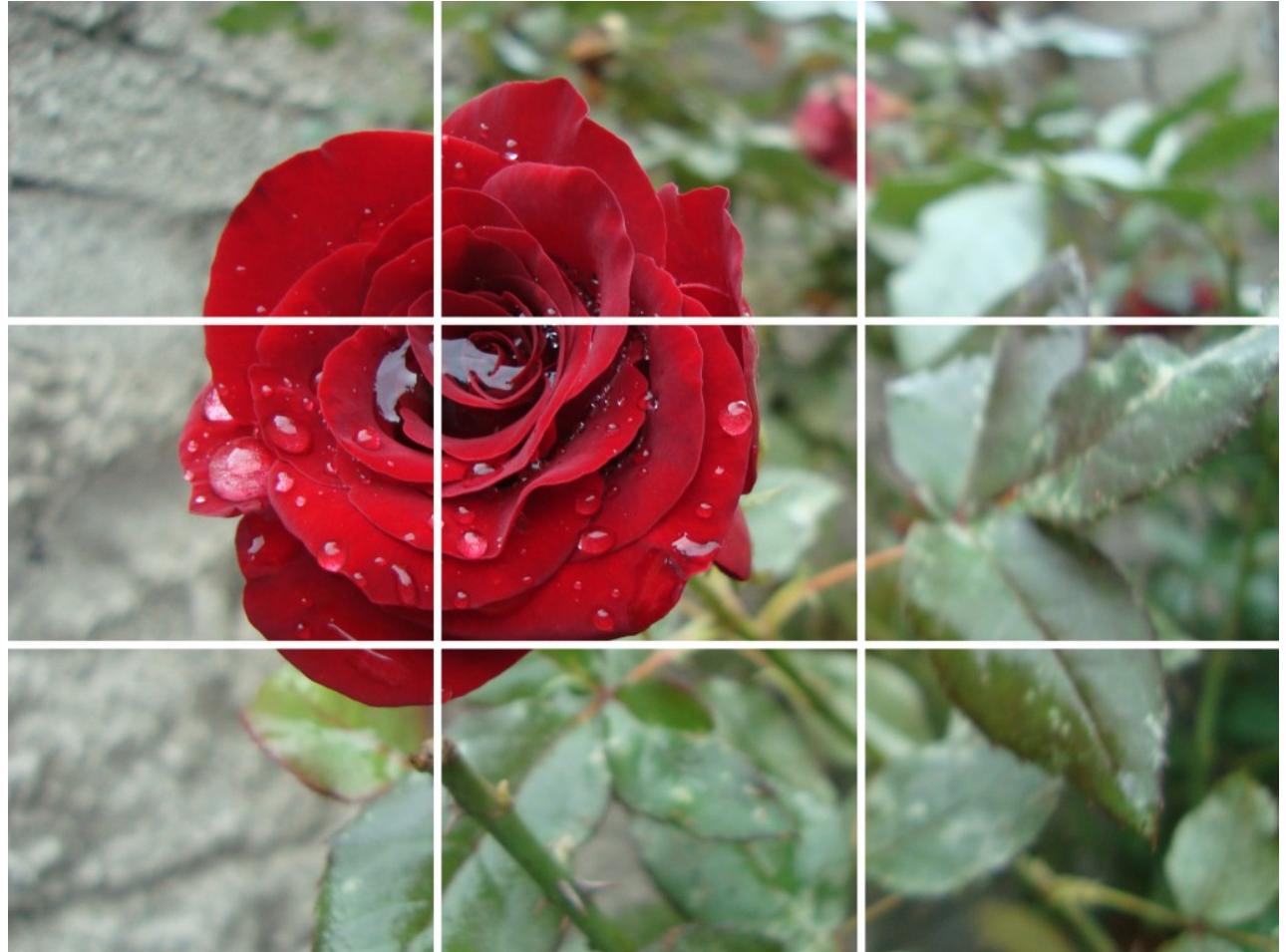




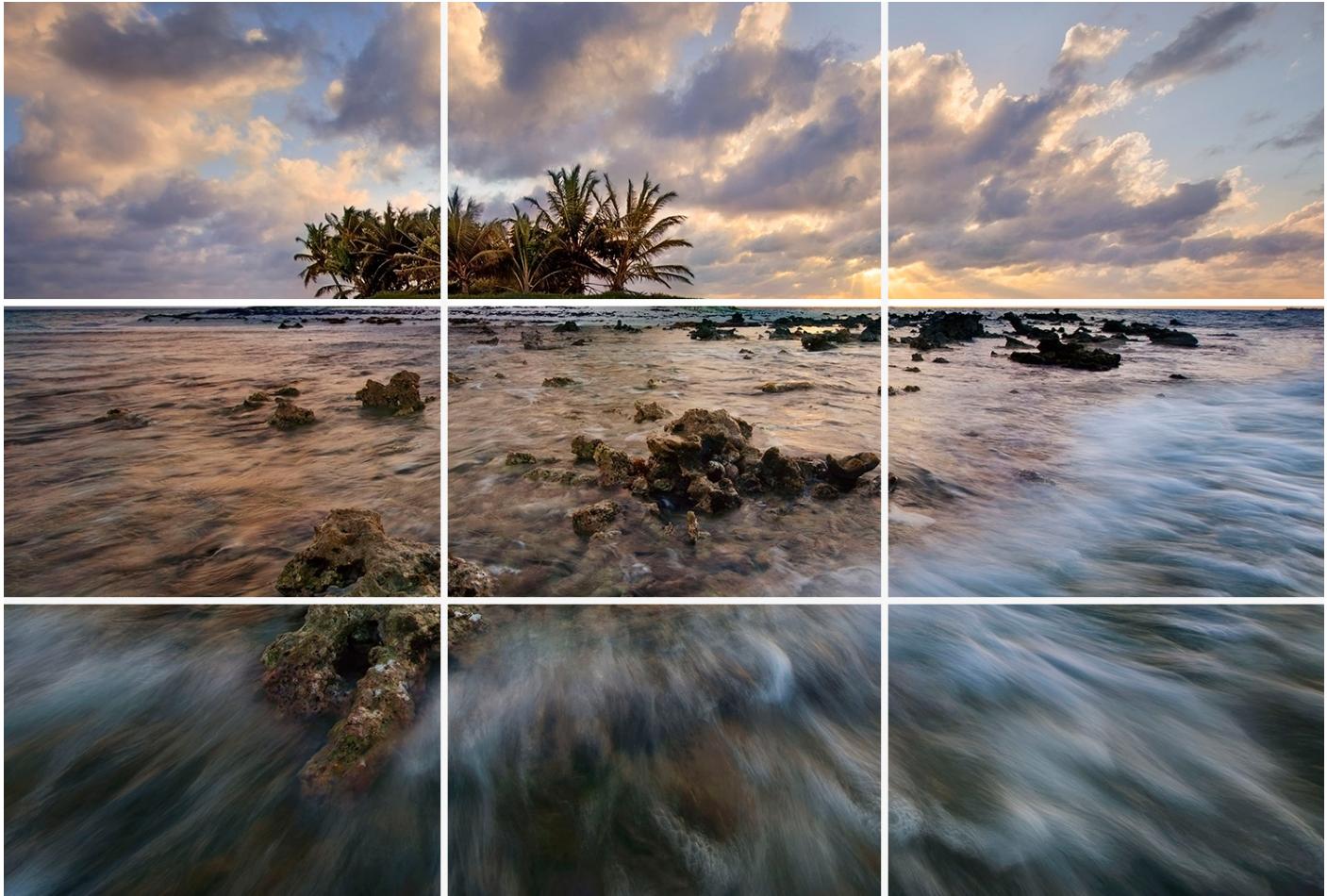
Rule of thirds



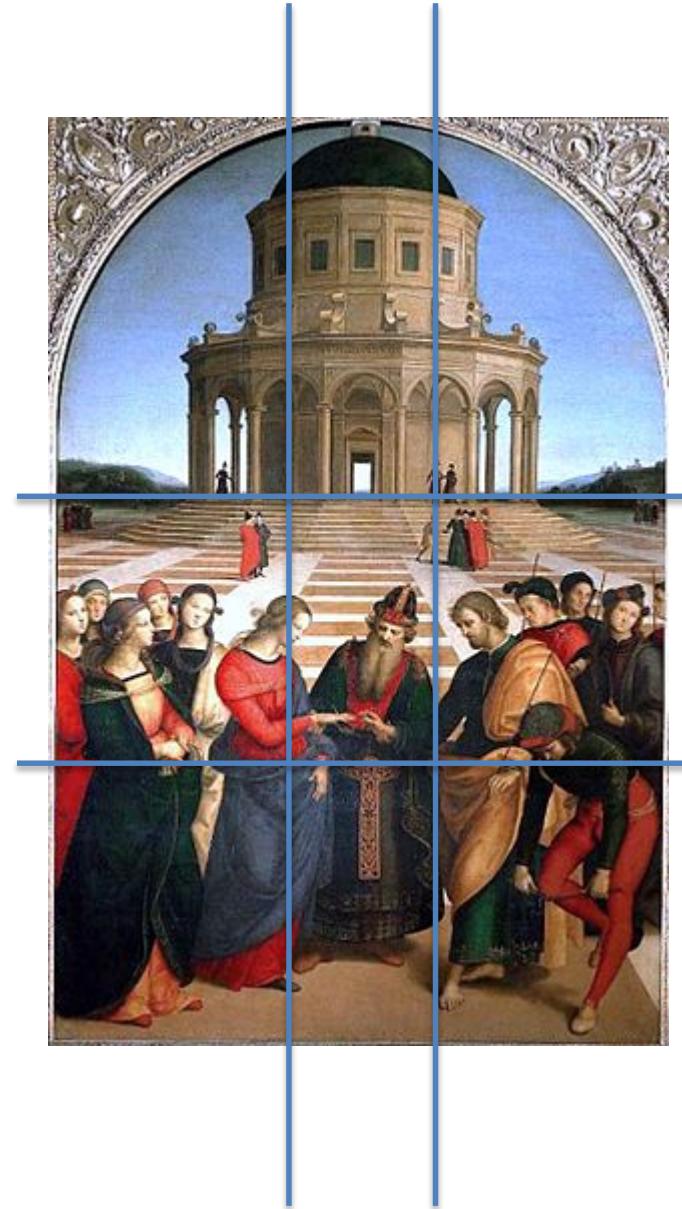
Rule of thirds



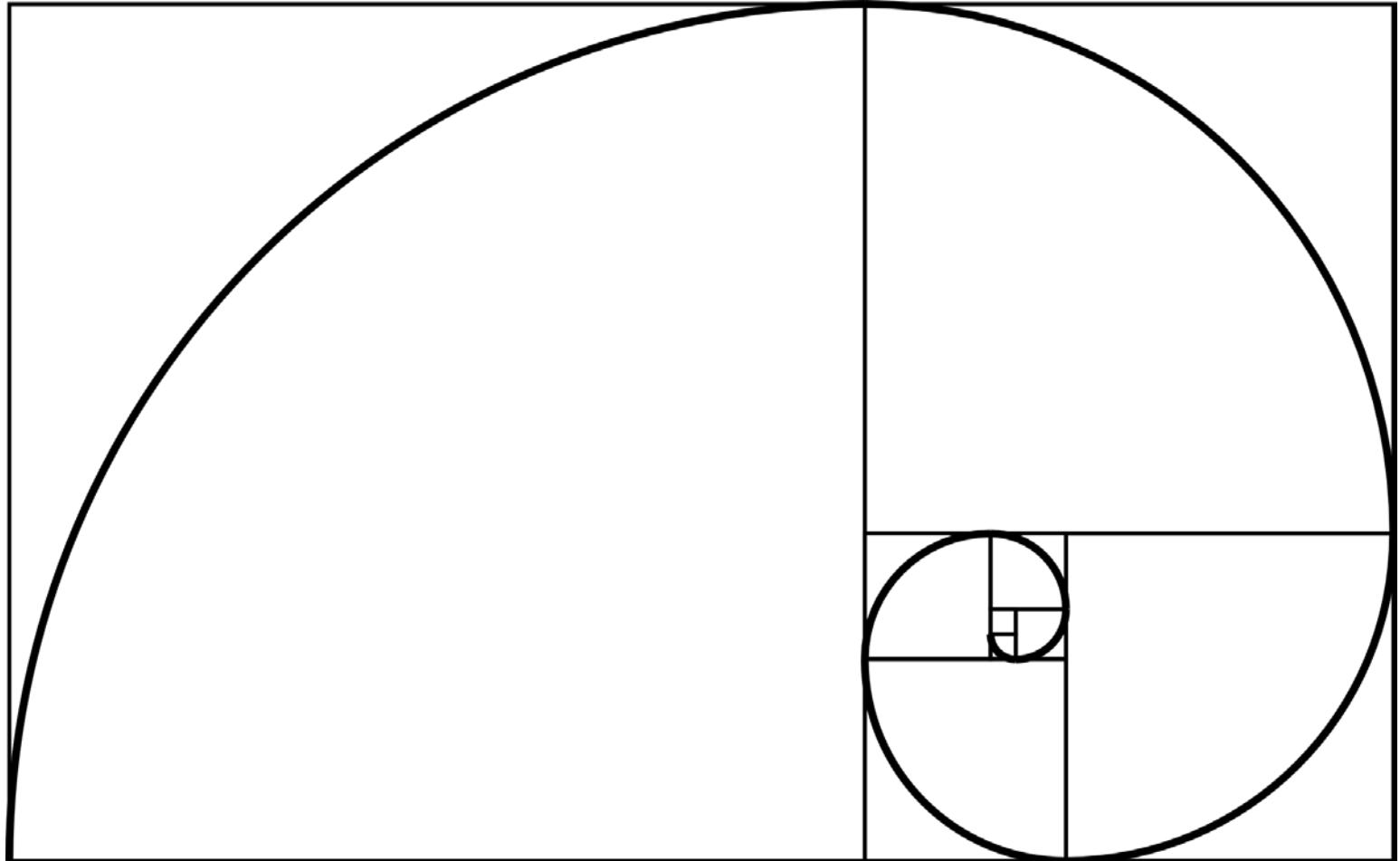
Rule of thirds



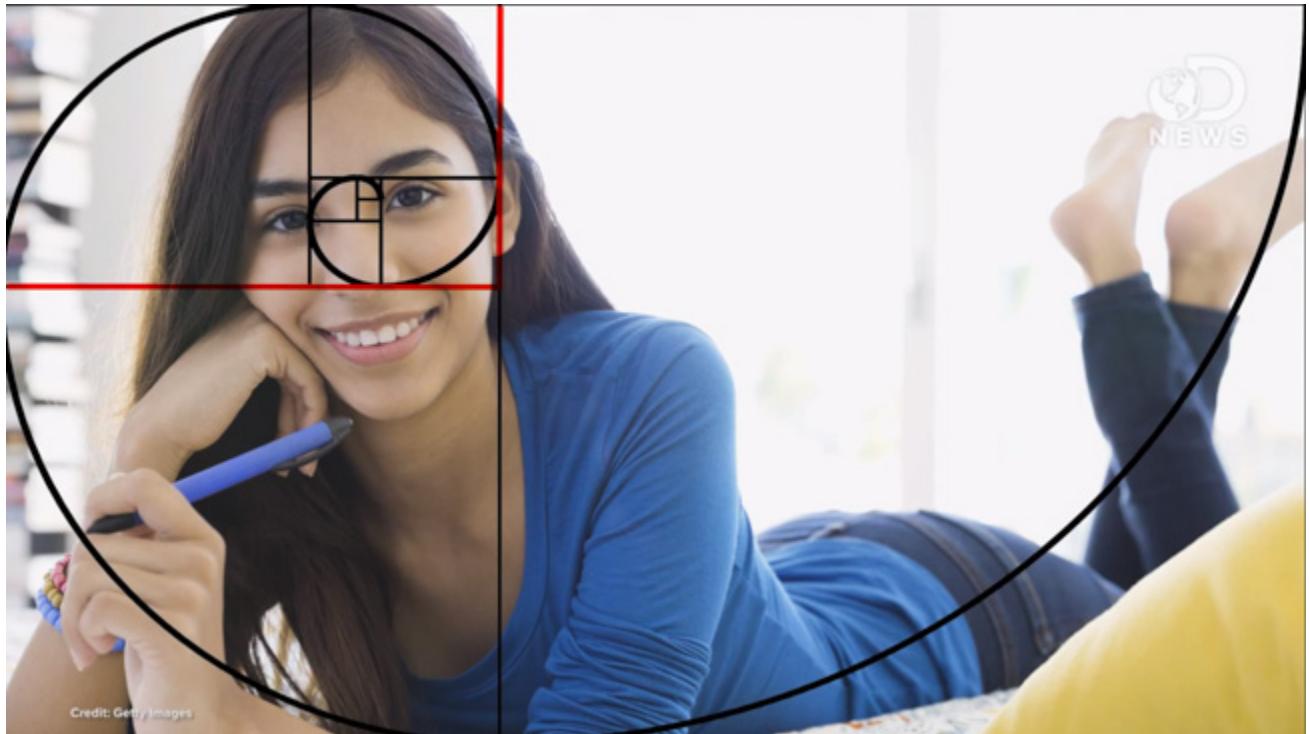
Rule of thirds



Golden Ratio



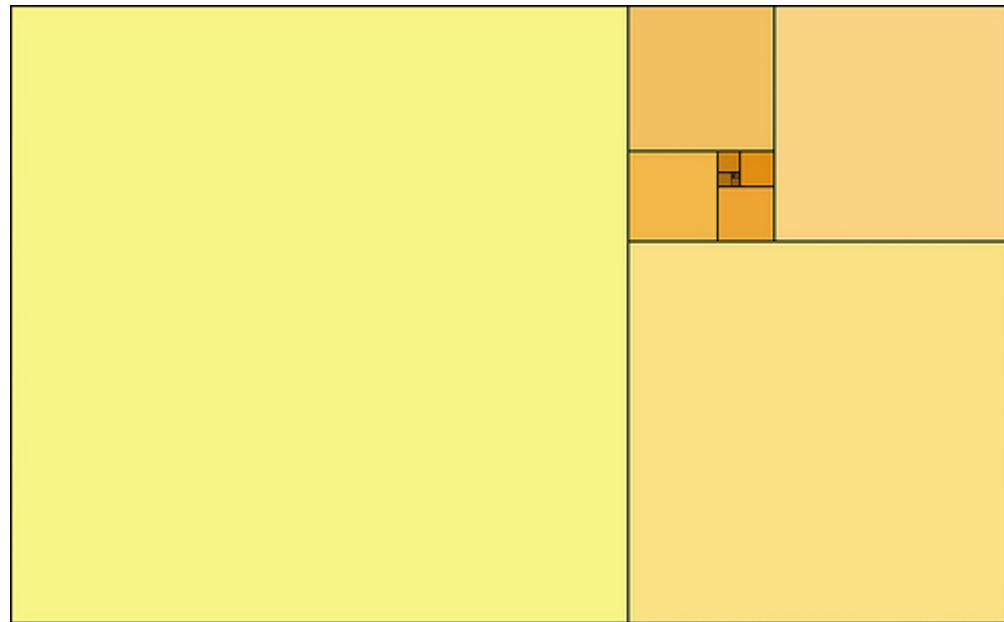
Golden Ratio



Golden Ratio

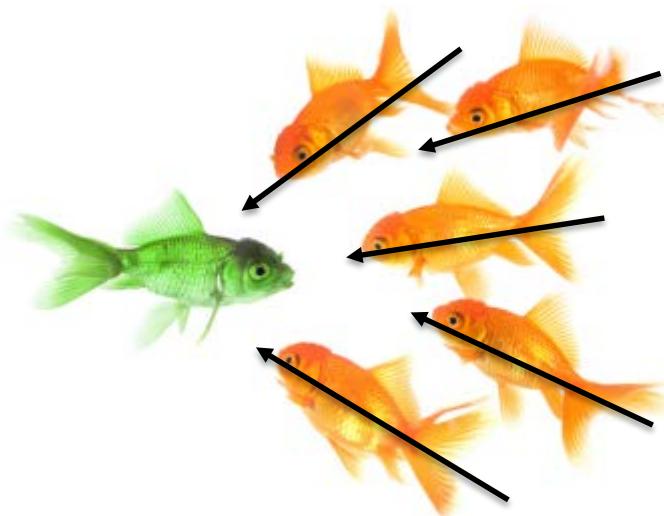


Golden Ratio



Supporting elements

Lines guide your eyes



Supporting elements

Lines guide your eyes



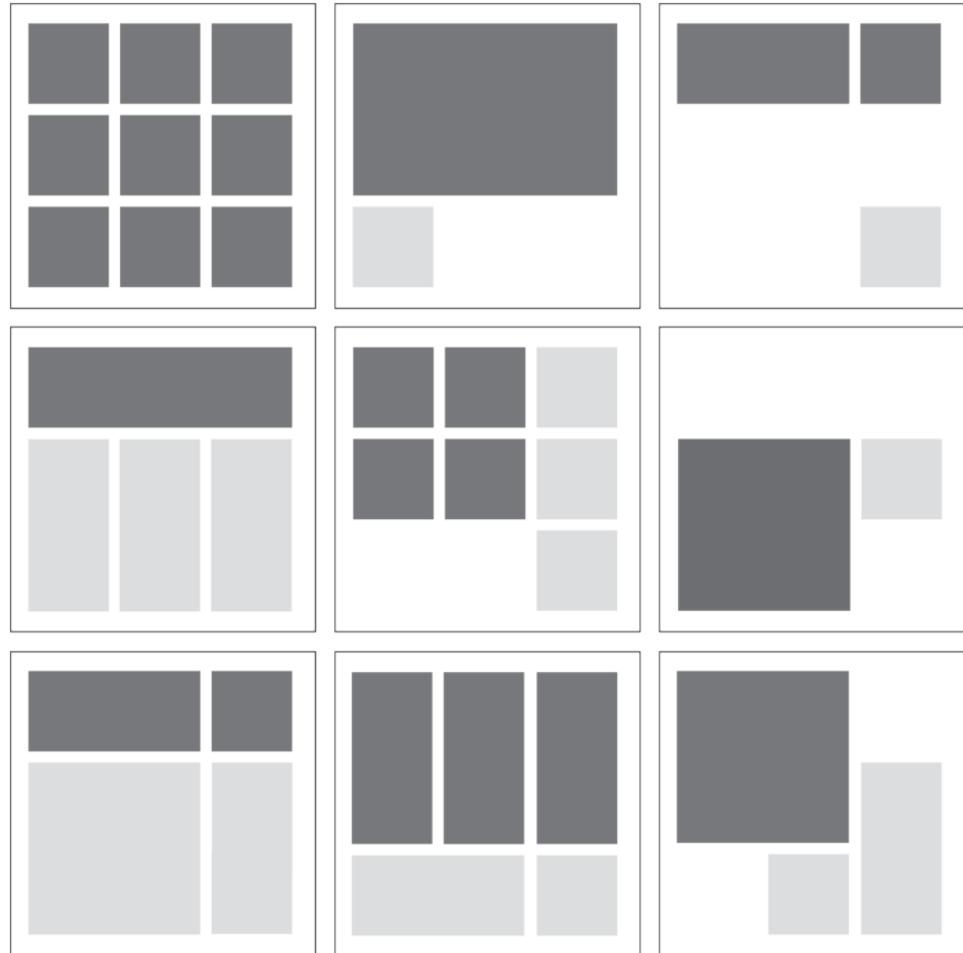
Supporting elements

Lines guide your eyes



Layout

- Sketch your underlying grid
- Are similar things aligned?
- White space
 - Gutters
 - Flow
 - Directing the eye
- Details matter
 - A tiny nudge makes a difference
 - Look at it in a mirror
 - Squint



John P. Corrigan

Good Design

Use all elements



Good Design

Fonts, color, white space



Design: R&D



Confocal Microscopy in Polymer and Colloid Science

I. Hopkinson, V. J. Anderson, M. J. Myatt
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SUMMARY

Confocal microscopy is starting to see increased use in the areas of colloid and polymer science. In this poster we present some initial results of studies on confinued pastes, where we have been able to image an ensemble of confinued particles (approximately 10 μm in diameter) to a depth of 10 particle diameters. We also present some results from ternary polymer solutions. For decton - gelatin - water mixtures we observe the microstructure which develops on quenching the system from the one phase region to the two phase region by decreasing the temperature. The observed morphology depends on the temperature of the quench, because of the changing rate of the gelatin gelation compared to the rate of phase separation. We measure the specific curvature and specific boundary length as a measure of topology. Finally, we describe our initial work on observing phase separation in the decton - poly(ethylene glycol) - water system during dehydration, here phase separation is driven by loss of solvent and in the sample geometry used it nucleates at the surface of a spherical drop.

COLLOIDS

Colloids are dispersed systems of one phase in another, interactions between the dispersed phases lead to a range of unusual behaviours, such as the shear thickening observed in confinued pastes. Computer simulations suggest that the wide range of behaviours exhibited by colloid systems under shear are characterised by changes in spatial arrangement of the flowing colloid particles. The flow of colloid systems is of great importance to a range of industries and in addition to the bulk organisation the changes in structure introduced by boundaries are also of interest. The aim of this work was to establish the capabilities of confocal microscopy when applied to dense particle systems and to answer the perennial question 'How deep can we see?'. Confinued represents a convenient system to carry out preliminary studies since it is a cheap source of relatively monodisperse particles. It was found that the depth probed was limited by the working distance of the lens, if a near refractive index match solvent was used.

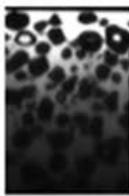


Figure 1(a)

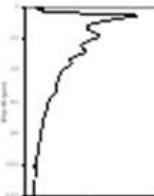


Figure 1(b)

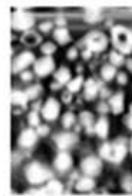


Figure 1(c)

Figure 1(a) is a vertical section of confinued particles. A 200 image stack was acquired using a $\times 40$ oil immersion lens - the image shown here is 120 μm deep and 70 μm wide. The solvent was ethyl-4-ethoxy benzalate and contained Nile Red. The darkening with depth probably due to scattering.

Figure 1(b) is a plot of the average intensity of each plane as a function of depth from the surface. It is clear from this profile that there is a degree of ordering extending over several particle diameters at the surface.

Figure 1(c) is the same data as in Figure 1(b) but it has been inverted and a line-by-line contrast enhancement has been applied to show that structure can be distinguished all the way through the stack. This transformation is for cosmetic purposes and the image shows some artefacts.

POLYMER PHASE SEPARATION

In polymer systems, phase separation is the norm rather than the exception. This is because the connectivity of polymer chains means that the increase in entropy on mixing is much smaller than for small molecule systems, where entropy drives mixing. The morphology produced on phase separation will control rheological and texture properties of the system. As well as having specific applications, polymer systems are convenient platforms on which to study general issues of phase separation. This is because the characteristic length scales in polymer systems are fairly large and the kinetics are relatively slow when compared to small molecule, atomic or magnetic systems. However the underlying physics of phase separation remains the same. In the polymer systems illustrated here phase separation is arrested in the later stages by the onset of gelation or the glass transition. Previous work in our group has used light scattering to study phase separation^{1,2}. Confocal microscopy offers complementary information on morphology and phase connectivity.

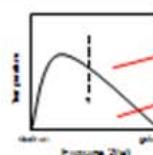


Figure 2(a)

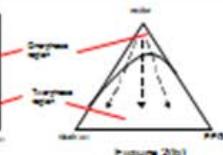


Figure 2(b)

TEMPERATURE QUENCH

Figure 2(a) shows the phase diagram in the composition plane at constant solvent composition. Figure 3 is of a phase separated decton - gelatin mixture, where the gelatin has been labelled with FITC, the composition is 4:24:2:24:6 decton:gelatin:water by weight. The composition is close to critical and so small fluctuations in composition lead to different phase morphologies. In this picture we see decton / gelatin morphology on the right and gelatin / decton on the left. In the centre is a gelatin / decton morphology with a larger length scale and a more irregular morphology than the two other regions. Measuring the specific curvature in a thresholded image³, we find that the small scale decton in gelatin and gelatin in decton phase have opposite signs and similar magnitudes, whilst the structure in the centre has a curvature of smaller magnitude as is expected. If decton - gelatin mixtures are quenched to different temperatures then the microstructure produced exhibits different characteristic length scales. This is illustrated below, figure 4(a) shows a mixture that has been quenched from 200 to 100 $^{\circ}\text{C}$ and figure 4(b), showing a finer structure, has been quenched to 100 $^{\circ}\text{C}$. These differences occur because gelatin of the gelatin rich phase is more rigid at 100 $^{\circ}\text{C}$ than at 200 $^{\circ}\text{C}$ so the development of structure is arrested earlier in the process. The images shown here have a depth of field of around 10 μm and were acquired, as part of stacks, about 50 μm below the sample surface. The morphology shown is bicontinuous and in the future we hope to quantitatively characterise this structure and its development with time.

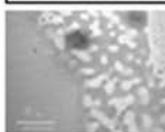


Figure 3

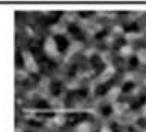


Figure 4(a)

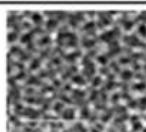


Figure 4(b)

QUENCH BY SOLVENT LOSS

Figure 2(b) shows the phase diagram in the composition plane at constant temperature, points at the top of the triangle represent high solvent compositions, whilst those towards the bottom represent higher polymer contents. Horizontal lines represent changing ratios of the two polymers. The broken line represents a quench of the system from the one phase region to the two phase region achieved by evaporation of the water.

Figure 5(a) shows the development of phase separation in a roughly spherical droplet of decton (labelled with FITC) - poly(ethylene glycol) - water (2.5:2.5:25 dect:PEG:water by weight) as it dries. The images shown are of a fixed horizontal slice through the droplet, approximately 1/4 of the diameter below the droplet apex. This geometry is similar to that encountered in spray drying. At the surface of the droplet small, bright, decton rich droplets form, later in the drying process these are swept into the bulk by convection. In addition to this there appear to be larger scale, but smaller amplitude, fluctuations in composition.

Figure 5(b) shows the top of a similar, drying droplet, here the focal plane is shifted to track the top of the droplet. Note that in the later stages larger droplets of decton rich phase are surrounded by a depletion zone.

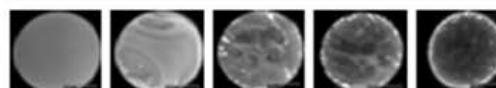


Figure 5(a)

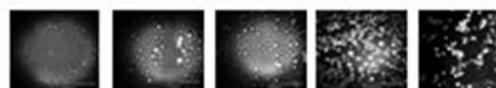


Figure 5(b)

EXPERIMENTAL DETAILS

All images are single channel fluorescence data acquired using a Zeiss LSM510. Confocal in Nissl red / ethyl-4-ethoxy benzalate was imaged using an $\times 40$ oil immersion lens. PEG-decton was imaged using an $\times 10$ objective, the decton was purchased FITC labelled from Alomorph. Decton-gelatin was imaged using an $\times 10$ objective, temperature quenches were carried out using a Linkam microscope hotstage. The gelatin was FITC labelled in house. Image analysis was carried out using Siron Image, Fontana programs and the programs described in ref 2.

Acknowledgements

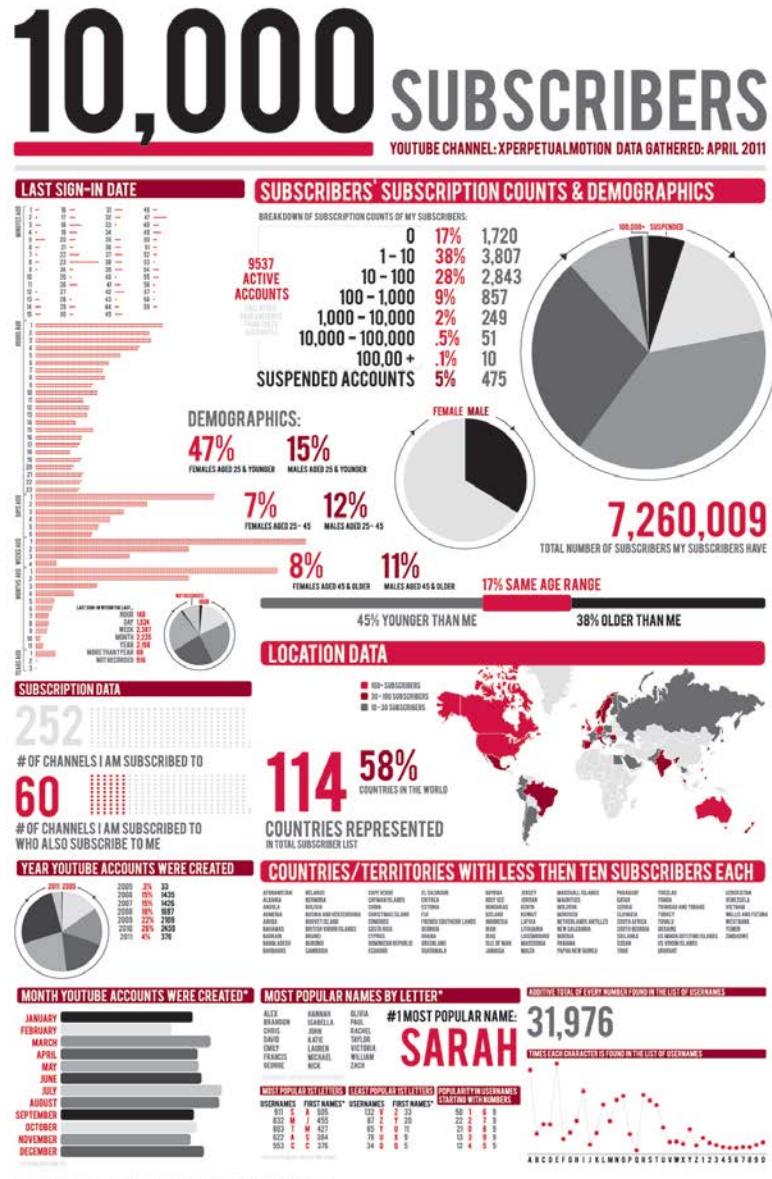
We are grateful to Unilever R&D and the EPSRC for funding an Industrial CASE studentship for M. Myatt and to Unilever R&D, Schering-Neuse and the EPSRC for purchase of a confocal microscope through a joint grant.

References

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Good Design

Hierarchy
grid
color
font



Design: RAD



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(Fra 07.11.2004)

< [Frithjof i sin Fly-Bil](#)



Fje

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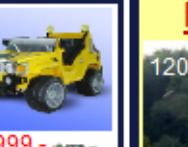
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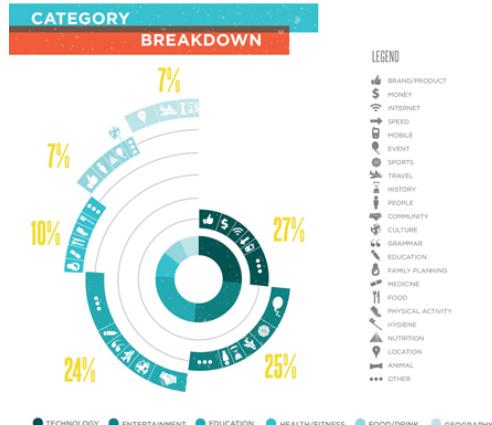
[Web-kamera](#)



Good Design

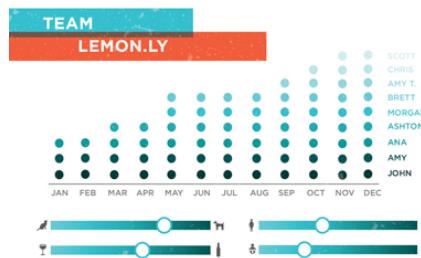
ONE SWEET YEAR

A DATA VISUALIZATION OF 2012 AT LEMON.LY



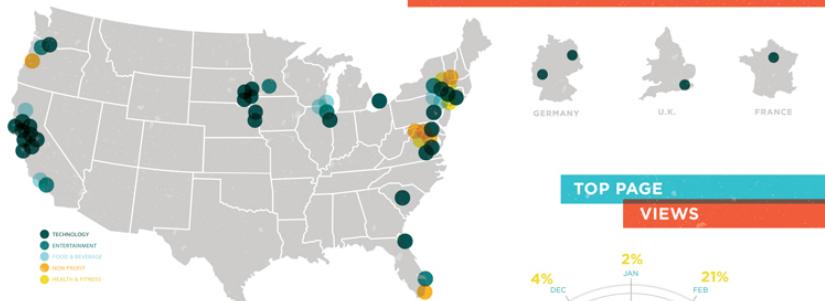
MARCH & OCTOBER

BUSIEST MONTHS
OF THE YEAR



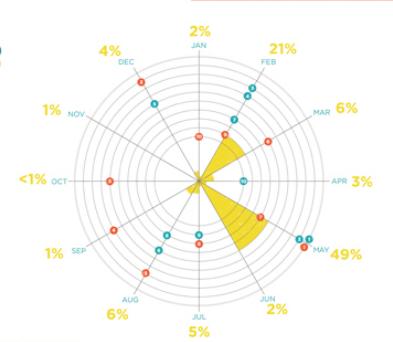
CLIENT LOCATION DISTRIBUTION

& INDUSTRY TYPE



TOP PAGE

VIEWS



FREQUENTLY
USED VISUAL AIDS



Typography - Bad



TYPE CRIME: WHO'S ACCOUNTABLE FOR THIS?

A slightly squeezed variant of the primary font has been used to make the second line fit better (as if we wouldn't notice). Yet another weight appears on the bottom line.

Typography - Bad

Letters that
are too
close together
confuses the
eye and
is jumbly

Typography - Bad

Oh dear.

When you use ***too many fonts***
see how they ~~All fight~~ for attention?

Design Dissection

Groups

- 1) Where does your eye go?
 - 2) What is the visual hierarchy and how were these elements used to create that?
- Contrast
 - Fonts
 - Colors
 - Grids
 - Layout
 - Grid
 - White space
 - Directing the eye

Design

Design: visual hierarchy

Importance

Navigation

Flow

Supports ‘story’

Big Darned Title

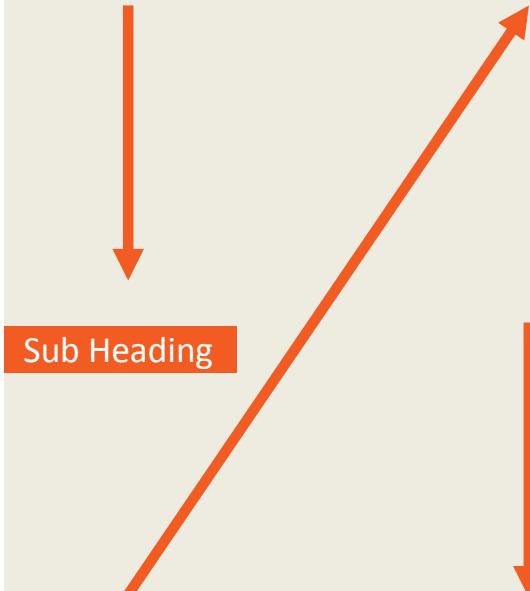
Jeff Hemsley
jjhemsle@syr.edu
Team Mate
teammate@nothing.edu

Once upon a time, stuff happened. People started to notice. This study asks: why did it happen? Who was involved? How did the world change?

Sub Heading

Much smaller text. Often bullets are best.

Sub Heading



Sub Heading

Thanks NSF

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School of Information Studies

Design: visual hierarchy

Headings

Font sizes

Title: 90 – 200

Story text: ~48

Headings: ~60

Text: 24 – 36 (18)

Sources: ~18

Visual elements

Size of pics

More/less colorful images

Big Darned Title

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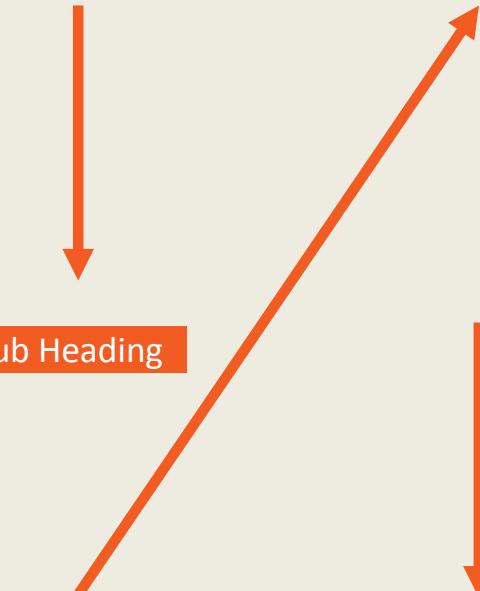
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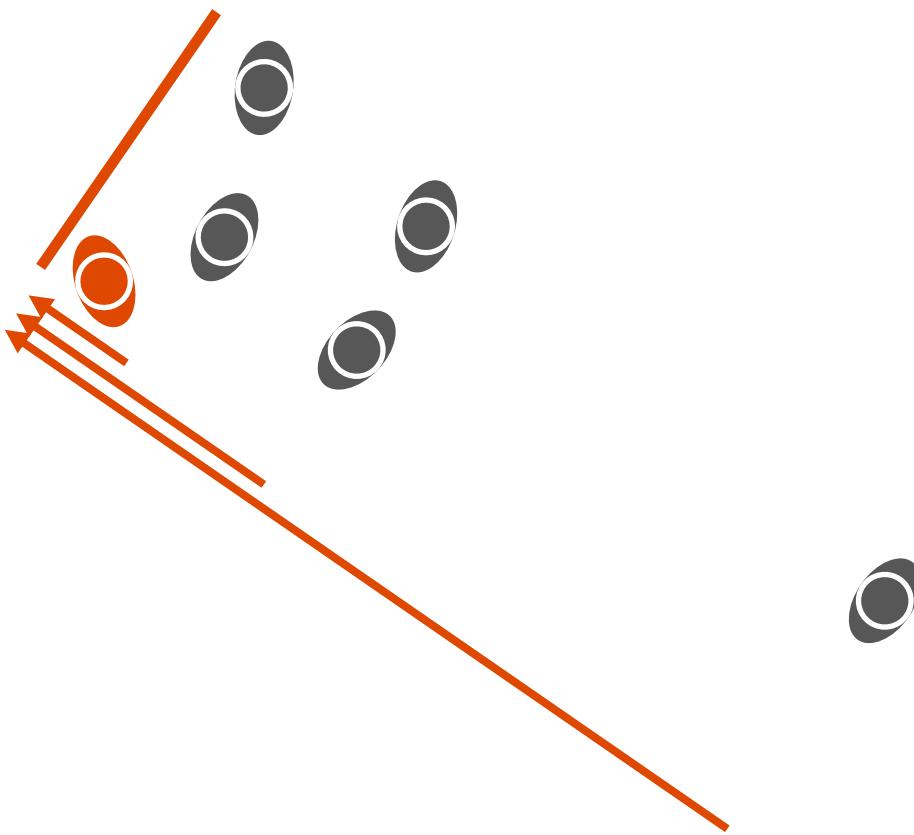
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Design: visual hierarchy

Distance



Big Darned Title

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Design: real estate

Attention Diminishes
Culturally dependent
The one big take-
away????

Big Darned Title

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Design: engage

Entry points

Pics

Plots

Contrast

Circles

Barriers

Text

Tables

Unnecessary clutter

Low Quality

Alignment

Raster vs vector

Big Darned Title

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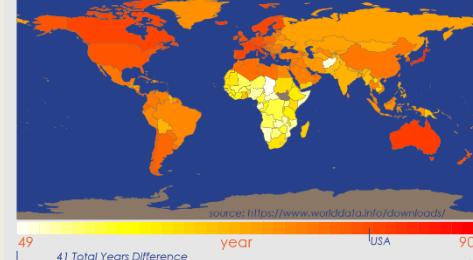
Overview

Much smaller text. Often bullets are best.

- The world is round
- People eat food
- People get sick
- Those may not be related
- But they might

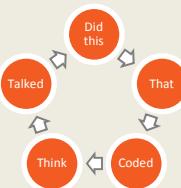
Findings

Life Expectancy Around the World



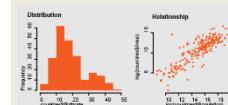
Methods

If you can avoid text, it might be a good idea.



Data:

We got our data from earth and from people willing to give it to us



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Design: text

Simple

Less is more

Bullets

~~Full Sentences~~

Effect

Emphasis

Contrast

Food & Life Around the World

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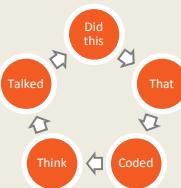
Overview

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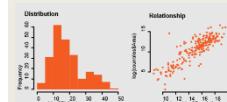
Methods

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Data:

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Design: Final Words

No right answer

Iteration

Landscape

Syr Logo?

Sure!

Food & Life Around the World

Once upon a time, stuff happened. People started to notice. This study asks: why did it happen? Who was involved? How did the world change?

Overview
Much smaller text. Often bullets are best.

- The world is round
- People eat food
- People get sick
- Those may not be related
- But they might

Things should line up well.

Methods
If you can avoid text, it might be a good idea.

Did this
Talked
That
Think
Coded

Findings
Life Expectancy Around the World

source: <https://www.worlddata.info/downloads/>

49 year USA 90

Some Detail
Always give eyes a place to rest. So don't worry about a little empty space.

Australia
America
Central America
South America
Oceania
North America
Europe
Asia
Africa

Data:
Got data from earth. Looked like this.
Don't need full sentences.

Distribution
Relationship

Future Work
We need some grant money to do more work. See our donation box at right.

Thanks NSF

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Design: Final Words

The poster is about you

Design is invisible

End