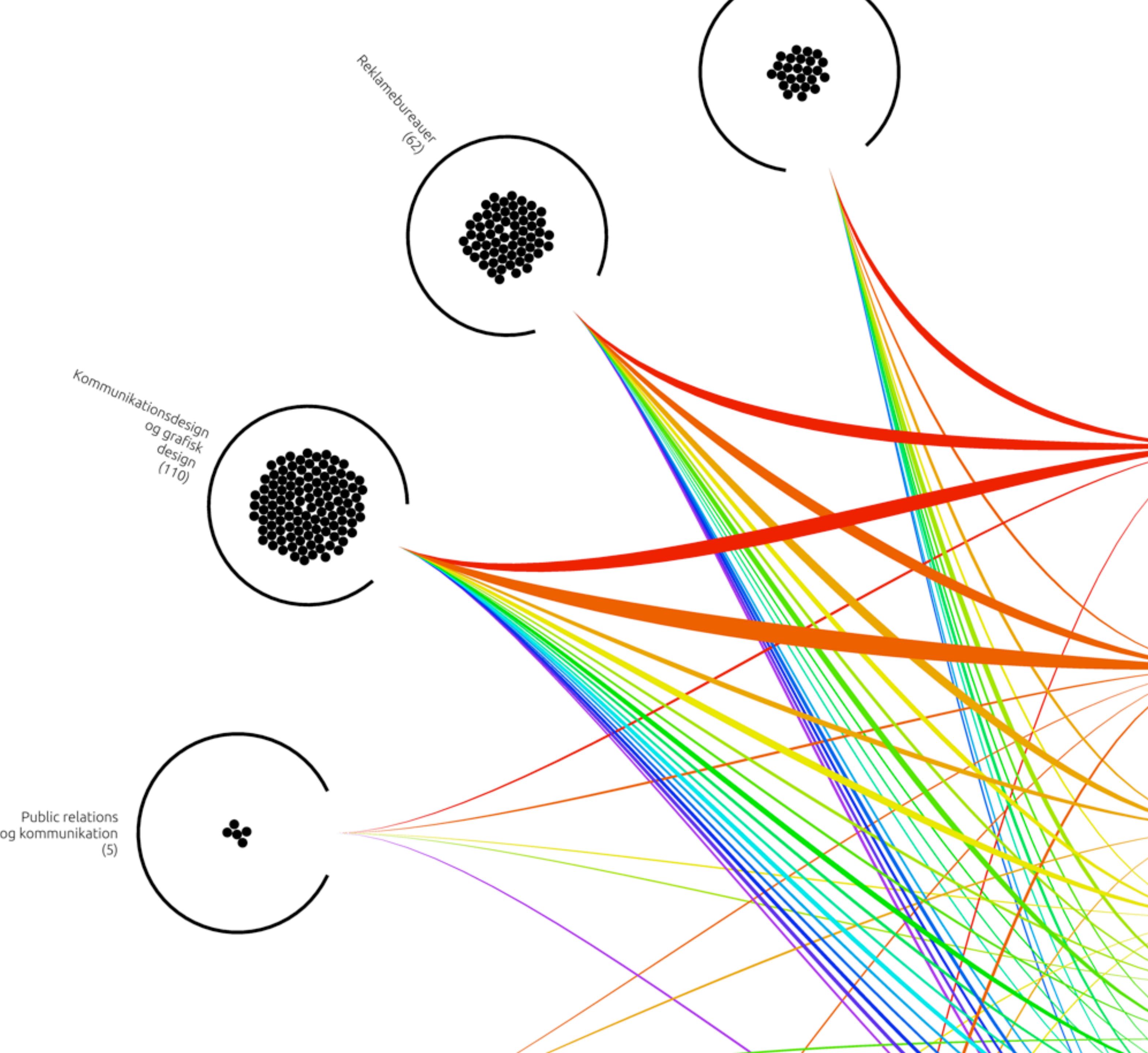


Workshop Introduction

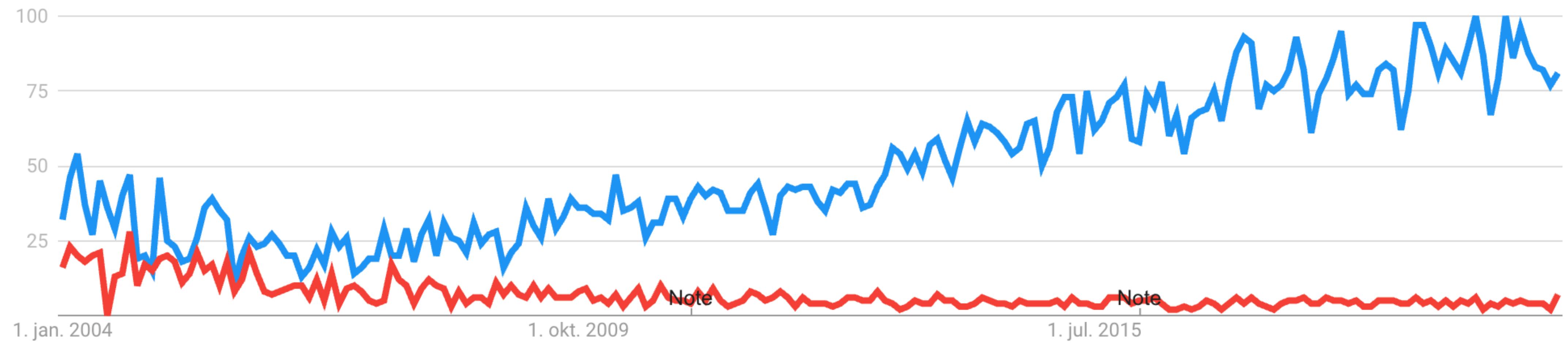
Data Vis @ KADK
Sept-Oct 2020

Carl Emil Carlsen
Artist, designer, teacher.
twitter.com/cecarlsen | cec.dk



Welcome round
Topic introduction
Workshop introduction

Topic Introduction



data visualization

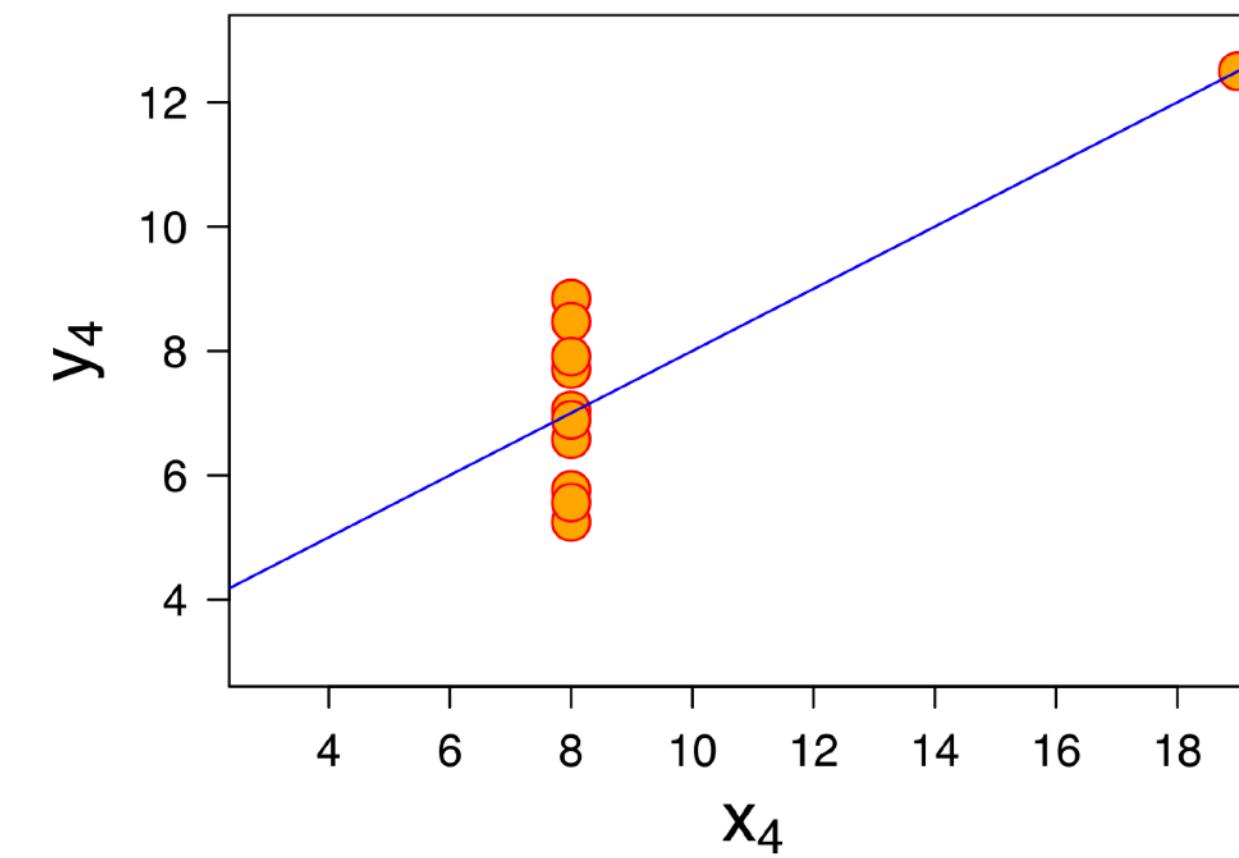
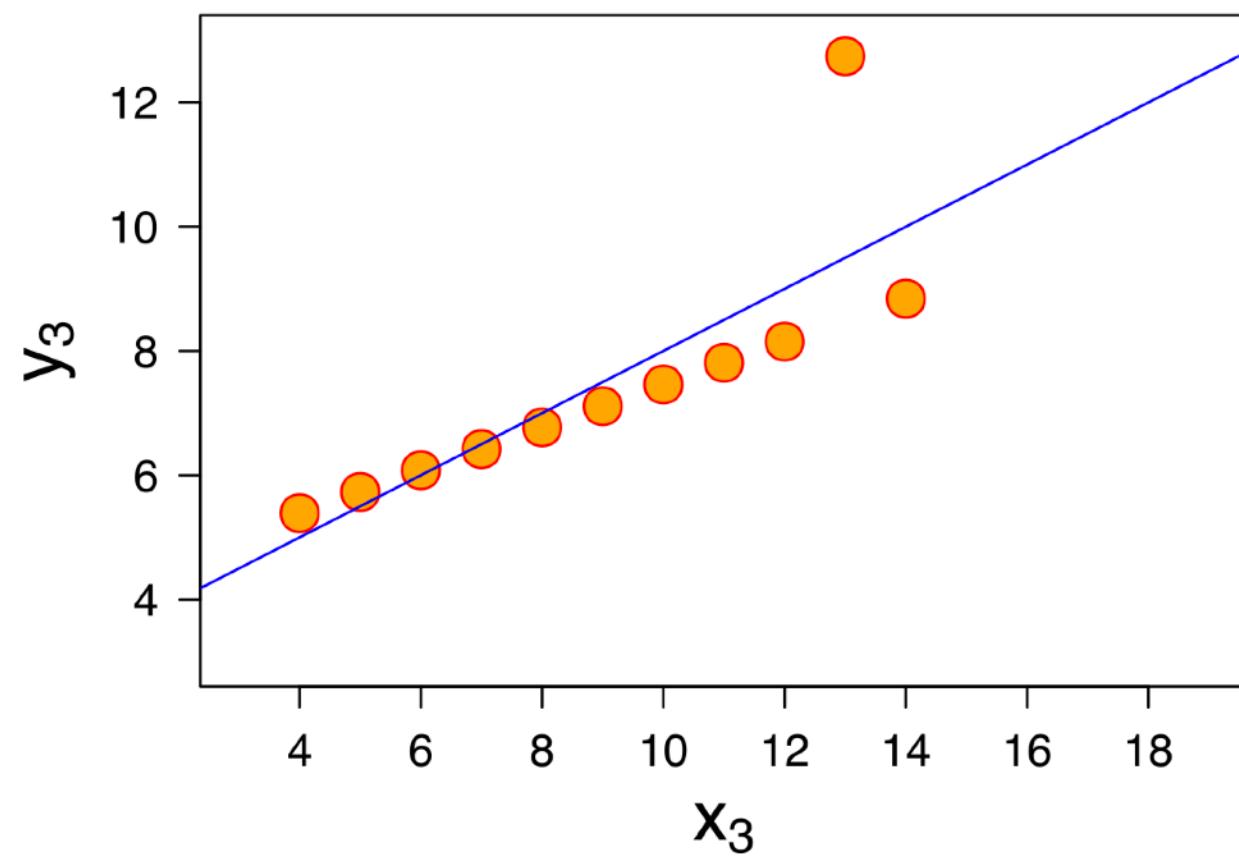
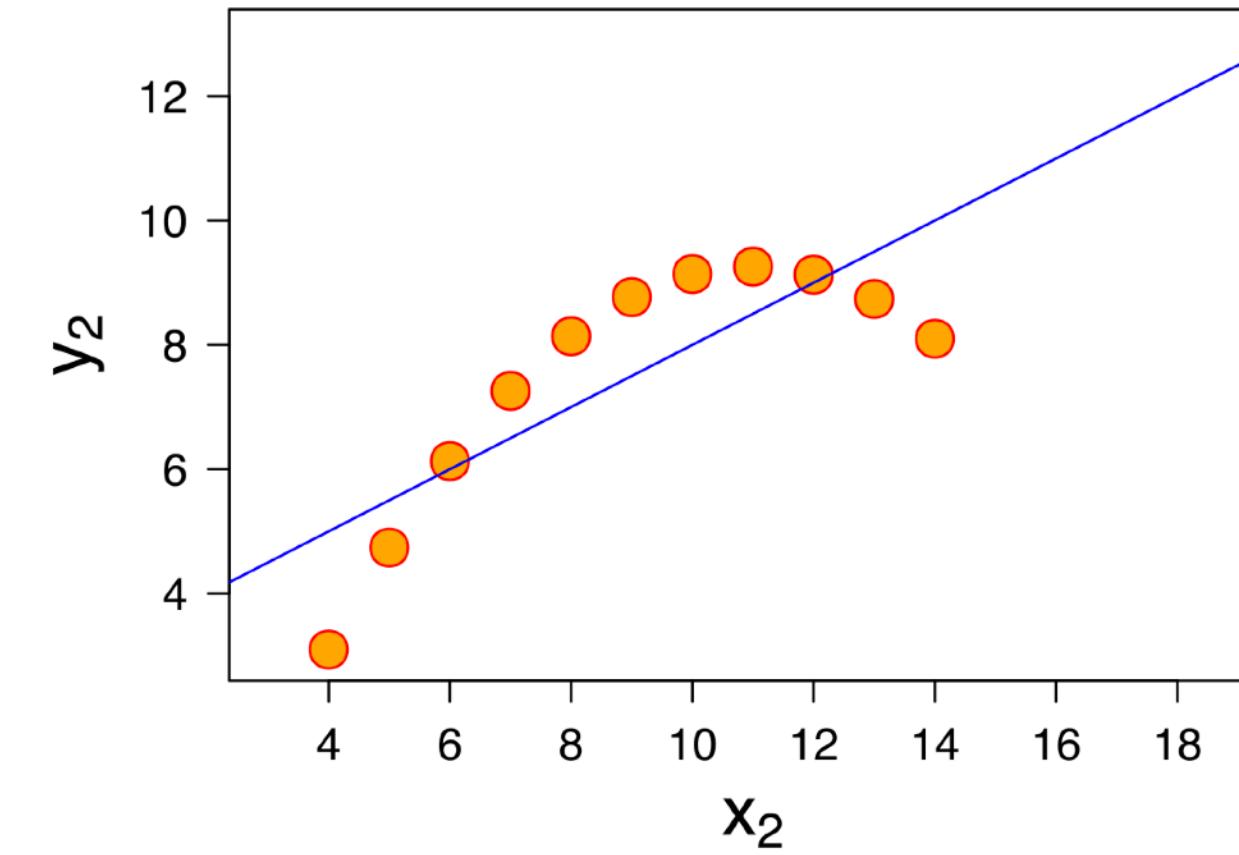
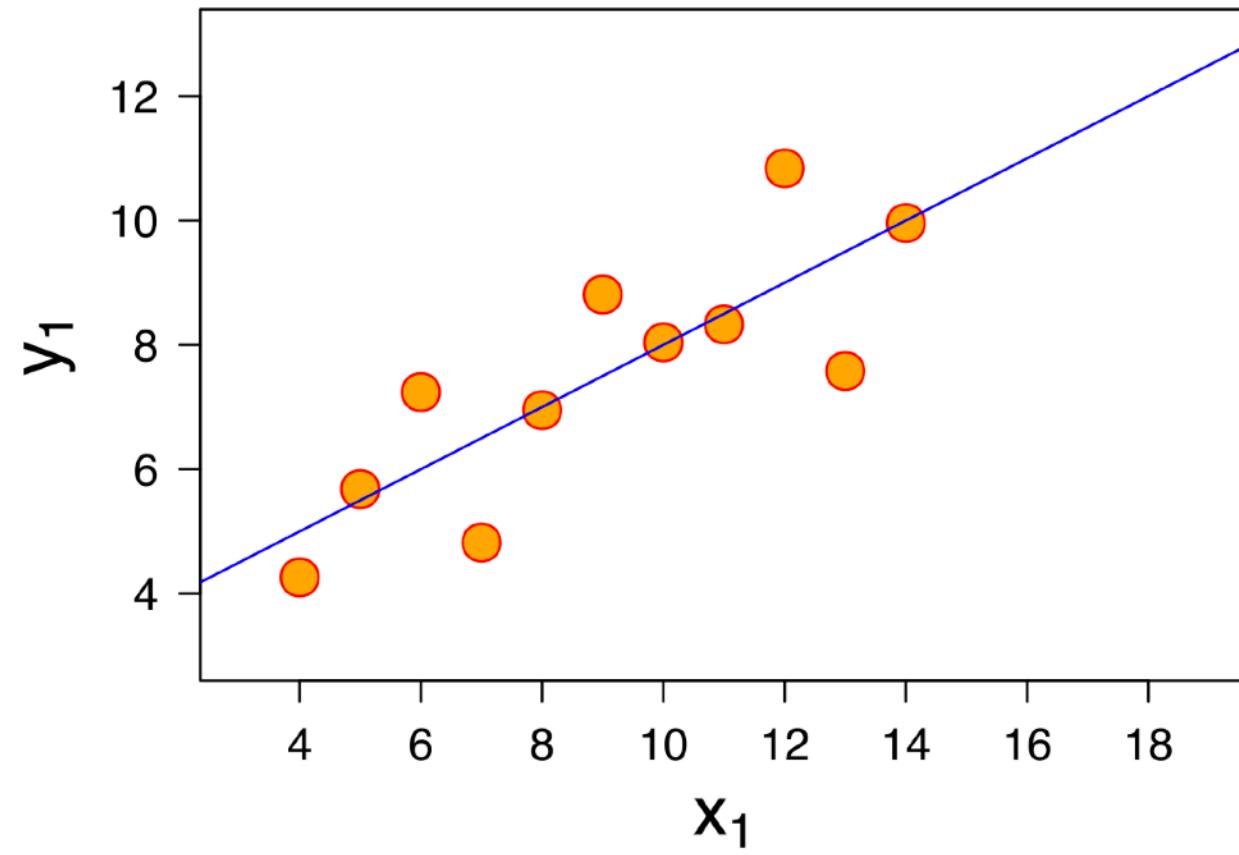
information visualization



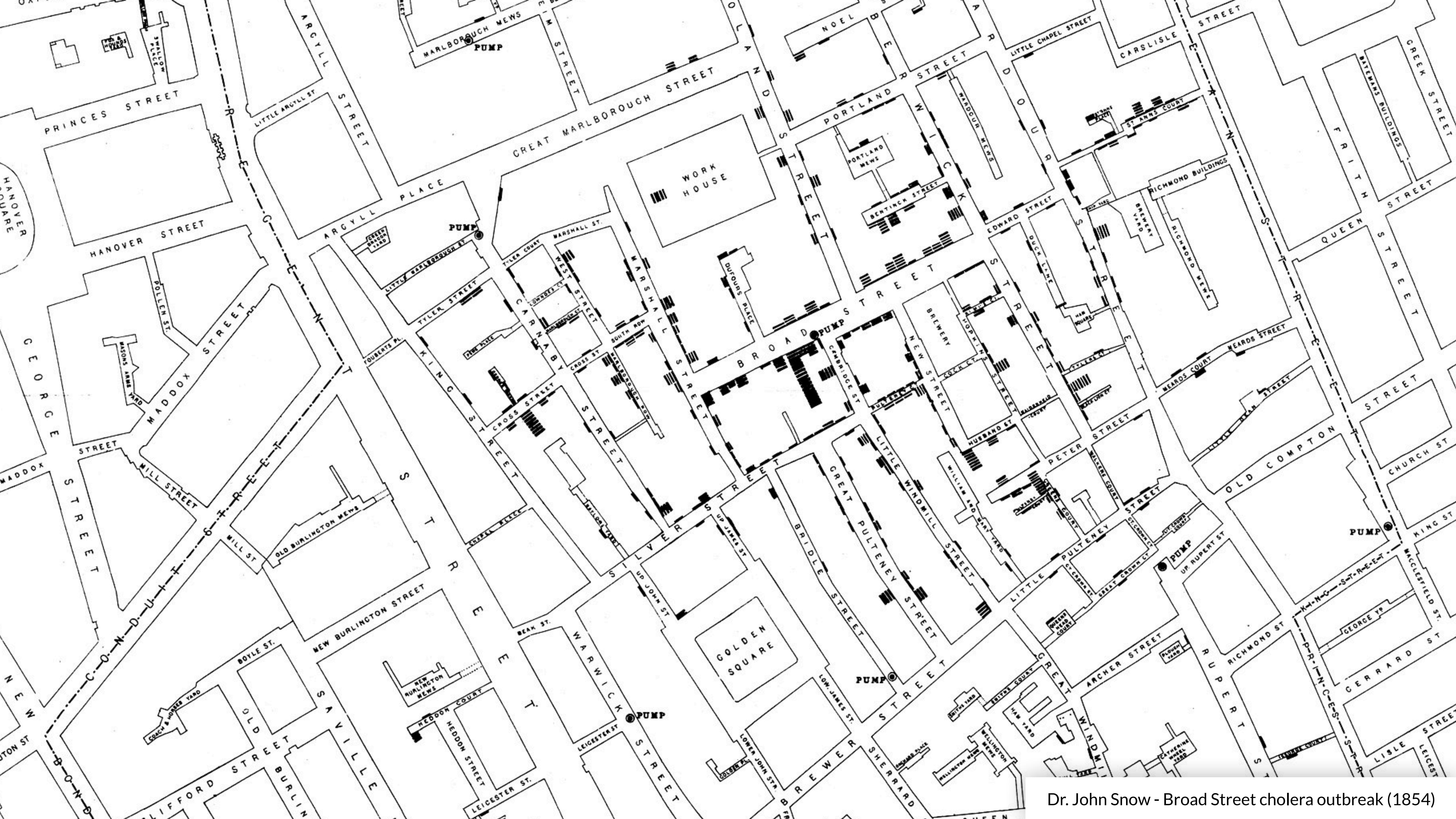


I		II		III		IV	
x	y	x	y	x	y	x	y
10.0	8.04	10.0	9.14	10.0	7.46	8.0	6.58
8.0	6.95	8.0	8.14	8.0	6.77	8.0	5.76
13.0	7.58	13.0	8.74	13.0	12.74	8.0	7.71
9.0	8.81	9.0	8.77	9.0	7.11	8.0	8.84
11.0	8.33	11.0	9.26	11.0	7.81	8.0	8.47
14.0	9.96	14.0	8.10	14.0	8.84	8.0	7.04
6.0	7.24	6.0	6.13	6.0	6.08	8.0	5.25
4.0	4.26	4.0	3.10	4.0	5.39	19.0	12.50
12.0	10.84	12.0	9.13	12.0	8.15	8.0	5.56
7.0	4.82	7.0	7.26	7.0	6.42	8.0	7.91
5.0	5.68	5.0	4.74	5.0	5.73	8.0	6.89

Property	Value	Accuracy
Mean of x	9	exact
Sample variance of x : σ^2	11	exact
Mean of y	7.50	to 2 decimal places
Sample variance of y : σ^2	4.125	± 0.003
Correlation between x and y	0.816	to 3 decimal places
Linear regression line	$y = 3.00 + 0.500x$	to 2 and 3 decimal places, respectively
Coefficient of determination of the linear regression : R^2	0.67	to 2 decimal places



Districts of London.	Population in 1841.	Deaths from Cholera.	Deaths to each 1,000 inhabitants.
West . .	300,711	533	1·77
North . .	375,971	415	1·10
Central . .	373,605	920	2·48
East . . .	392,444	1,597	4·06
South . .	502,548	4,001	7·95
Total . .	1,948,369	7,466	3·83



Dr. John Snow - Broad Street cholera outbreak (1854)



Dr. John Snow - Broad Street cholera outbreak (1854)

"Data Sonification"



Accustic aircraft detection at Fort McNair (1921)

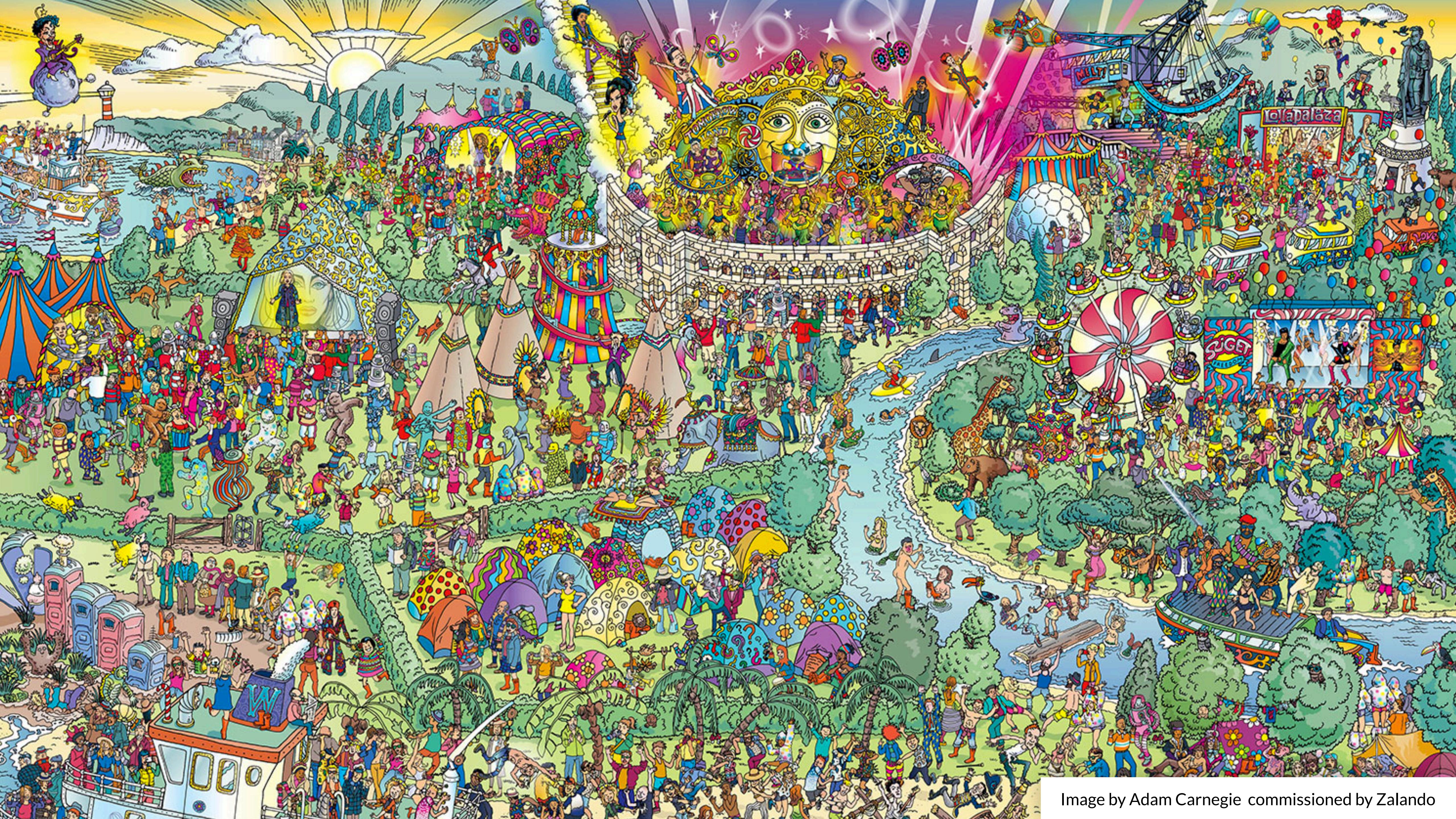
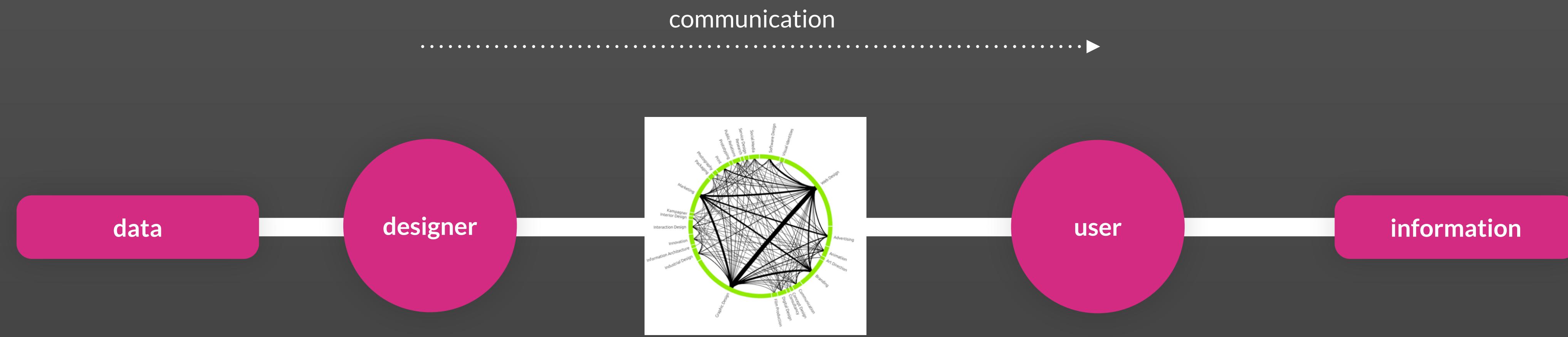


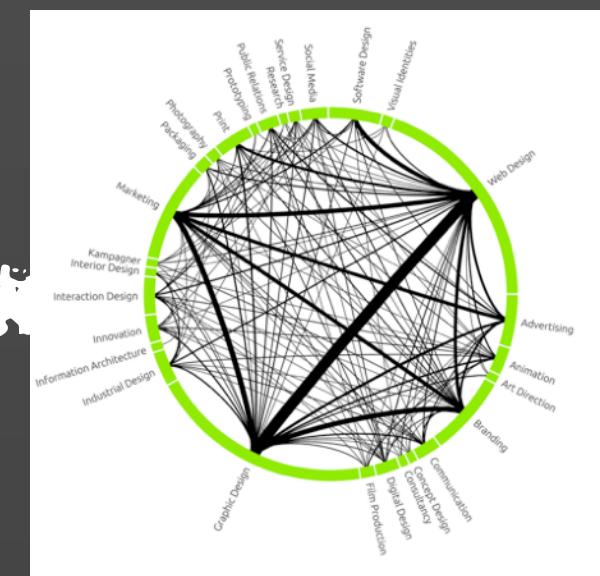
Image by Adam Carnegie commissioned by Zalando



Inspired by Shannon-Weaver model of communication

data

designer

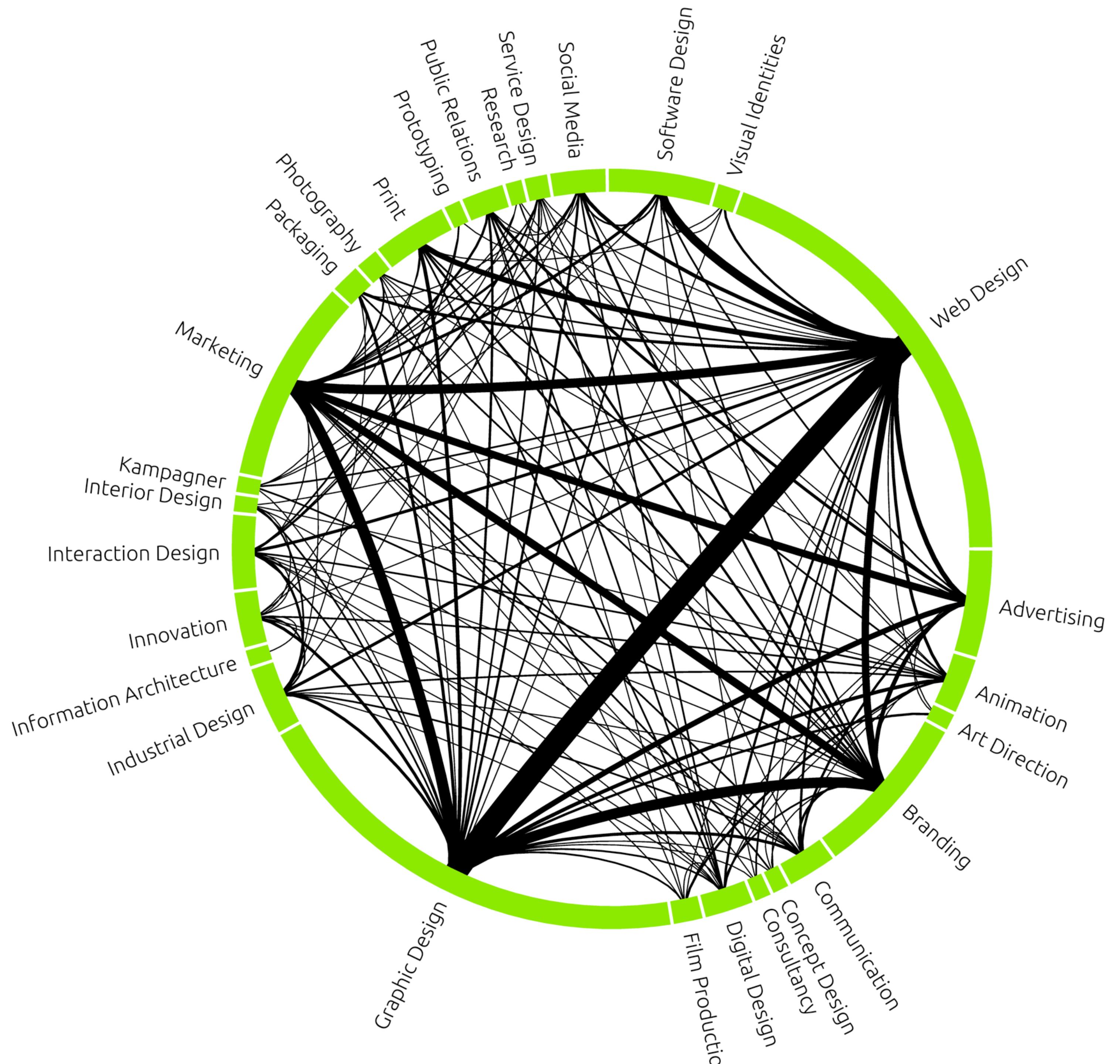


communication

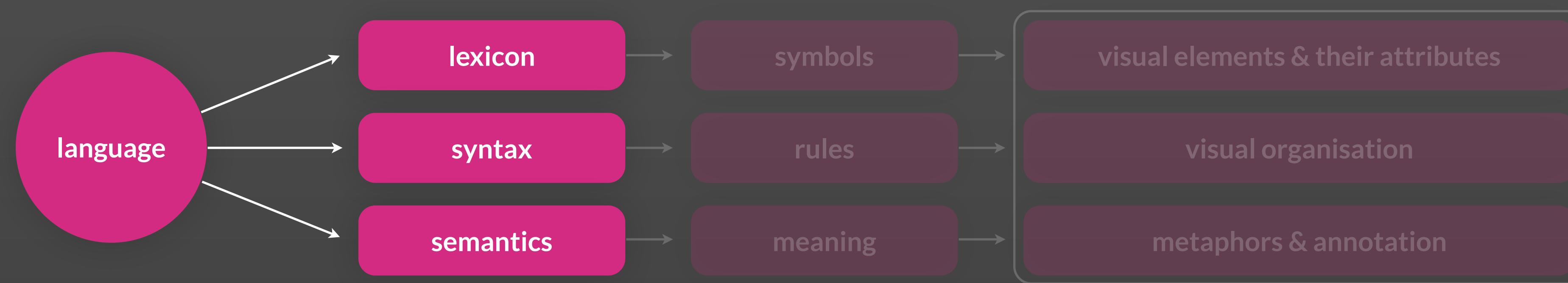
user

information

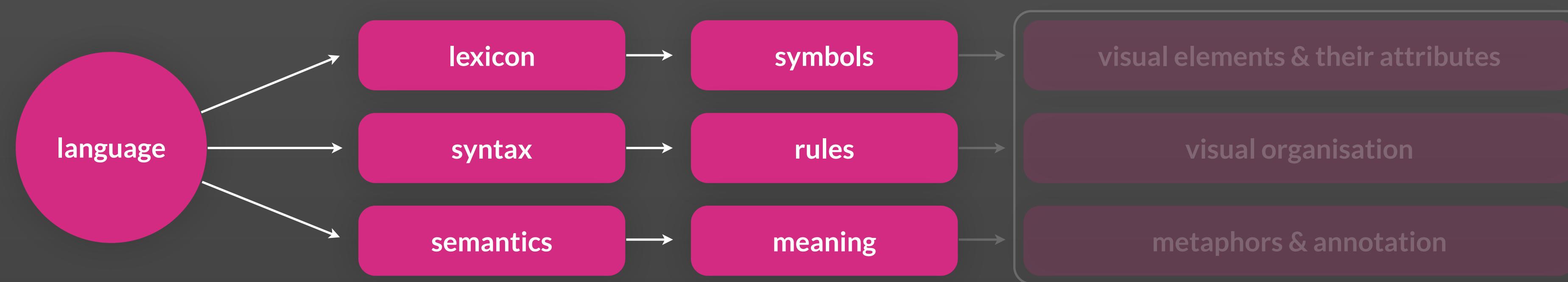
Inspired by Shannon-Weaver model of communication



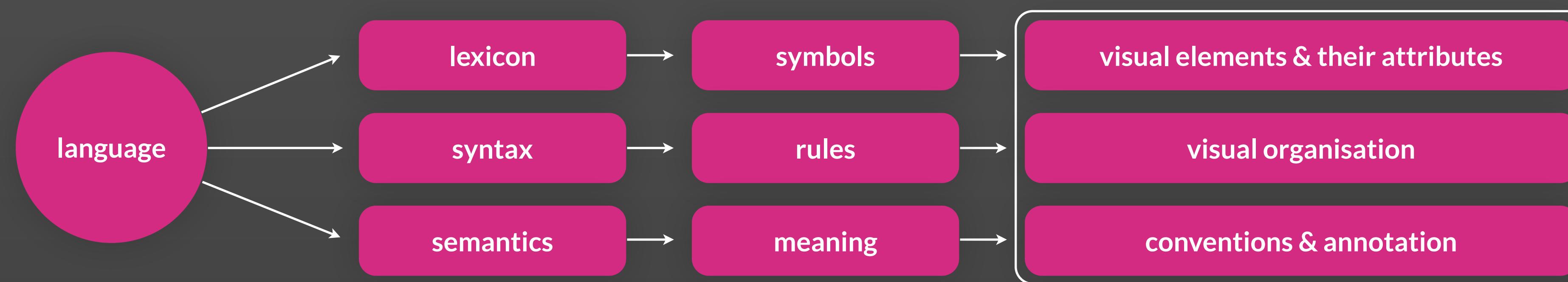
Diagram



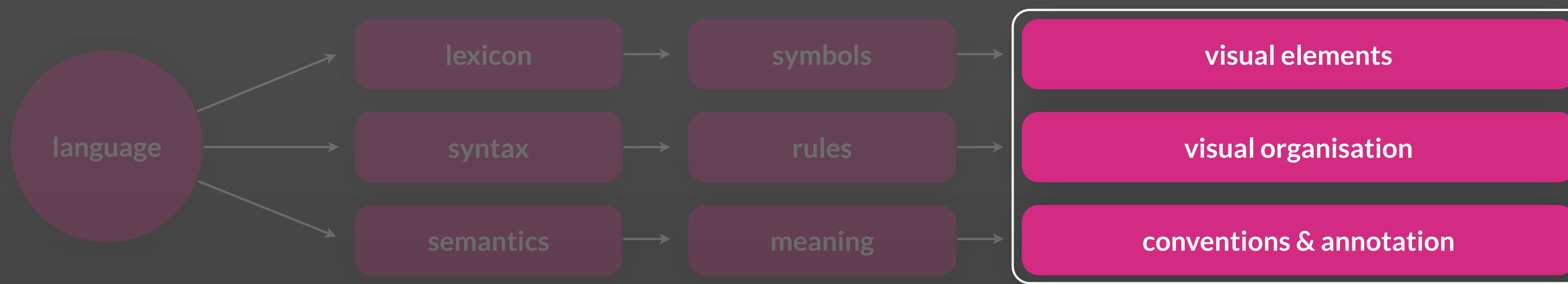
Diagram



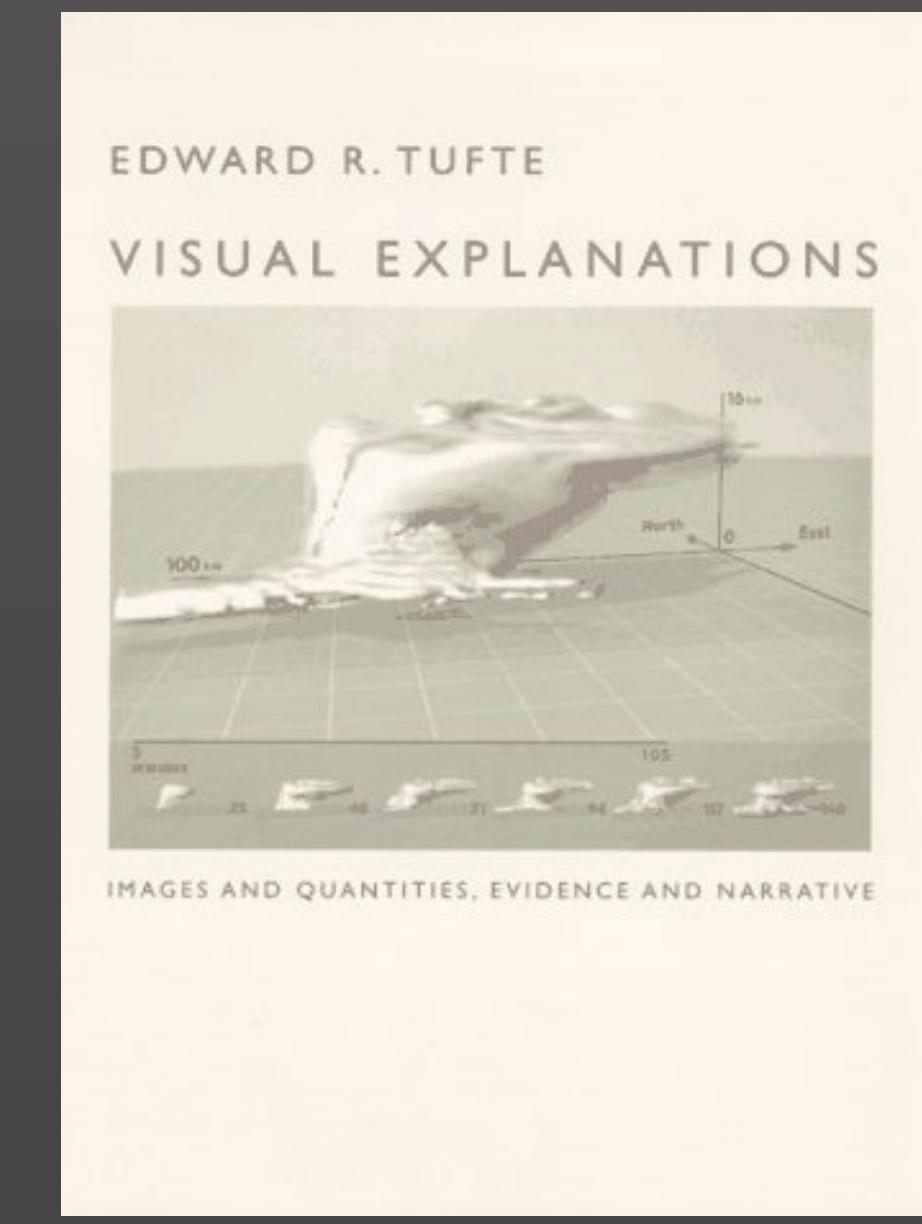
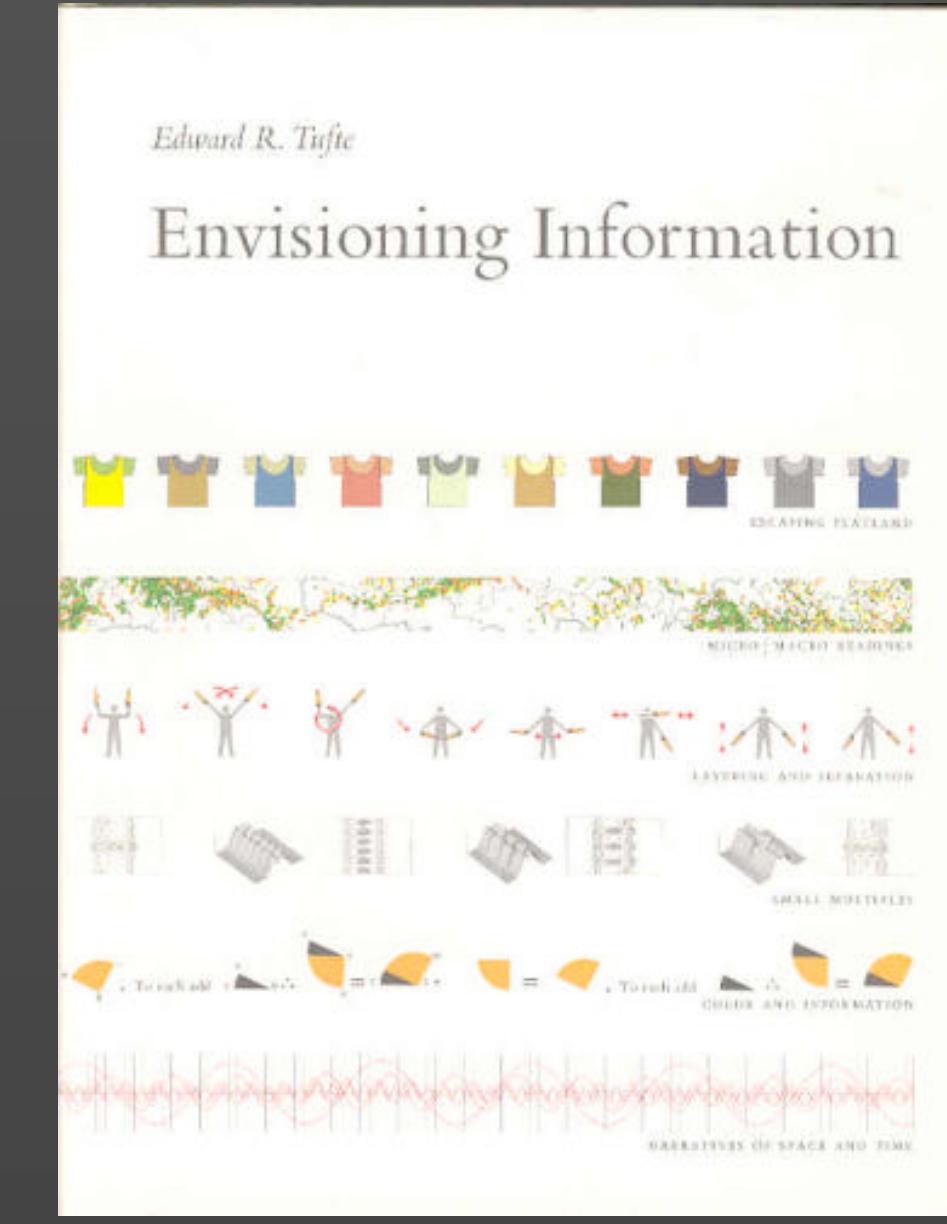
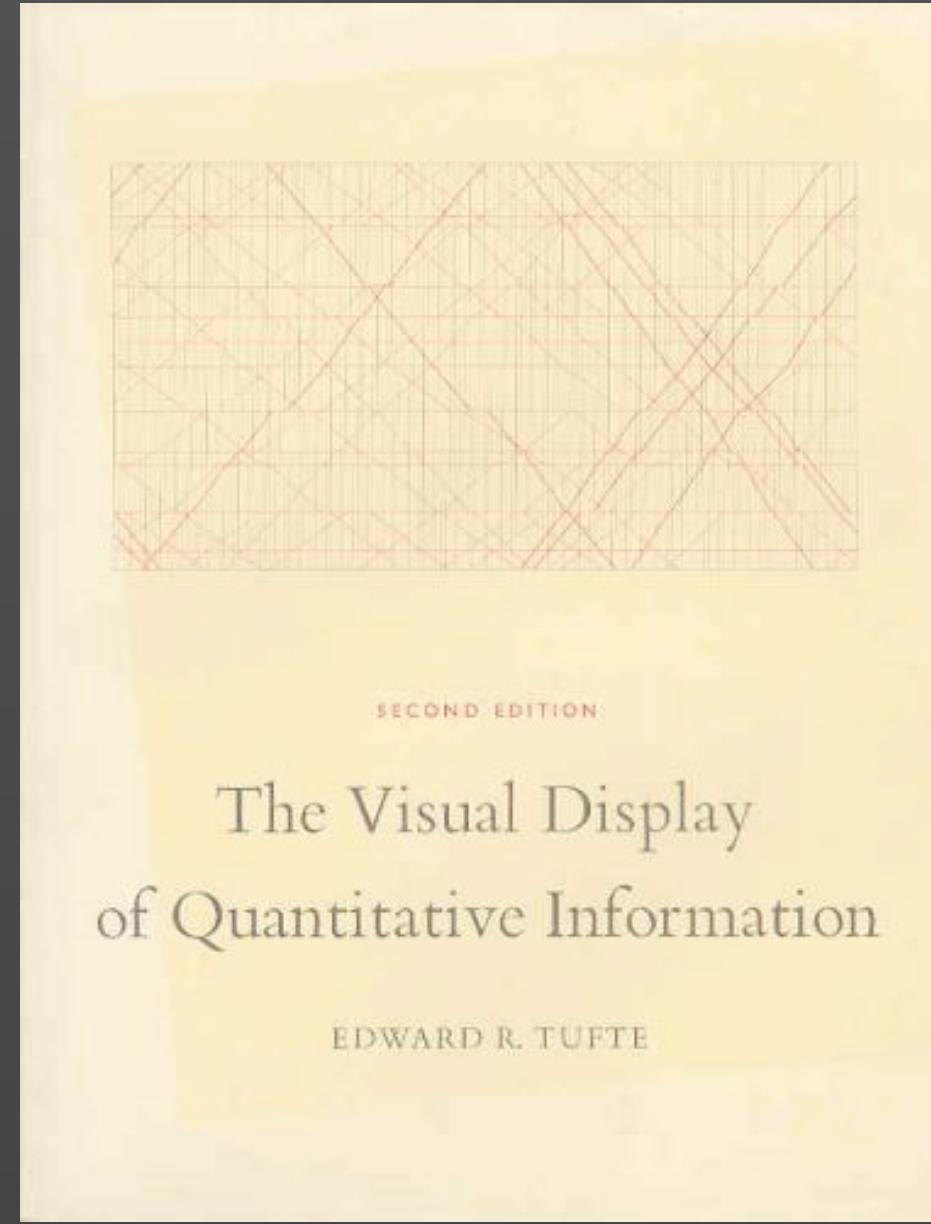
Diagram



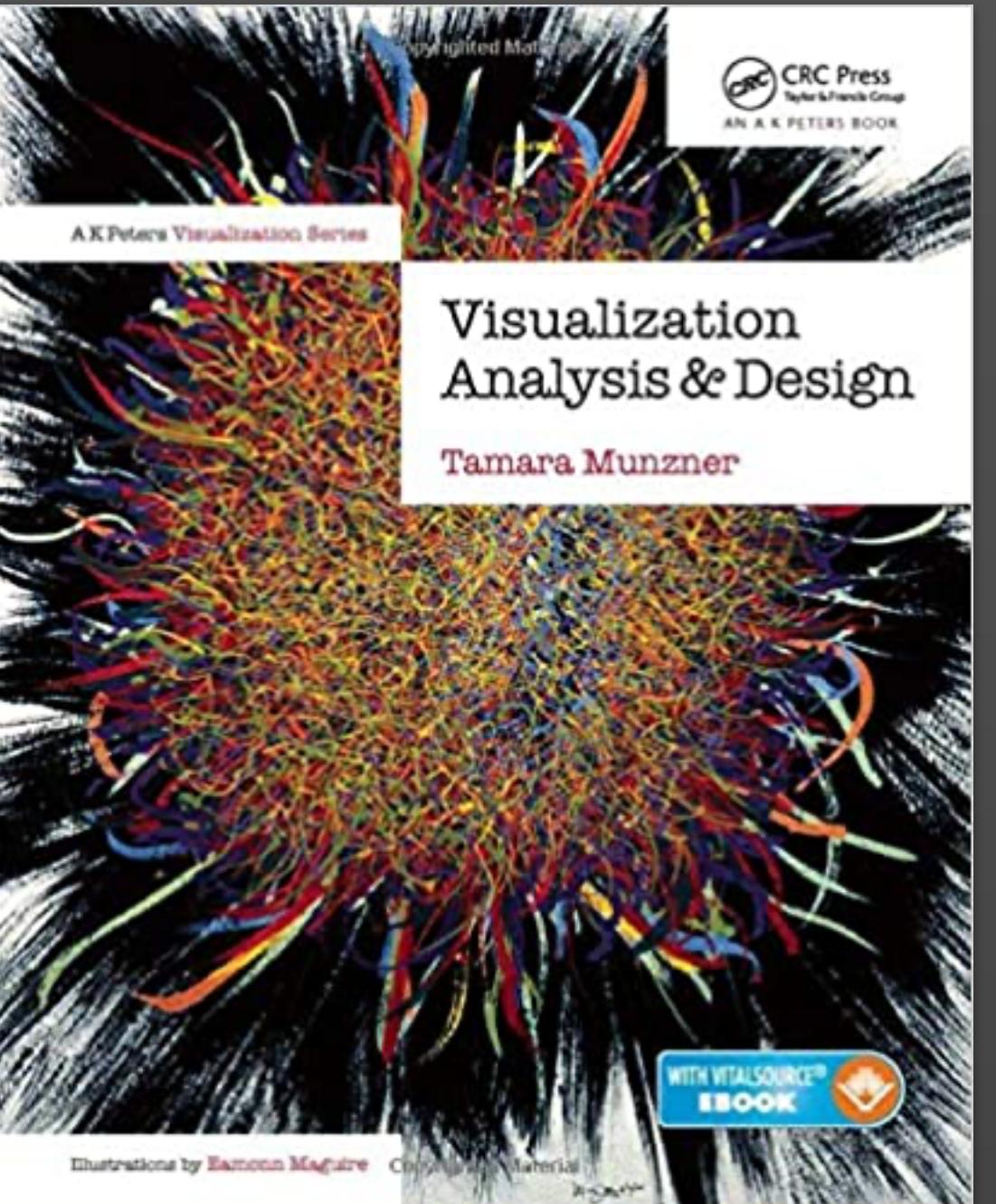
Diagram



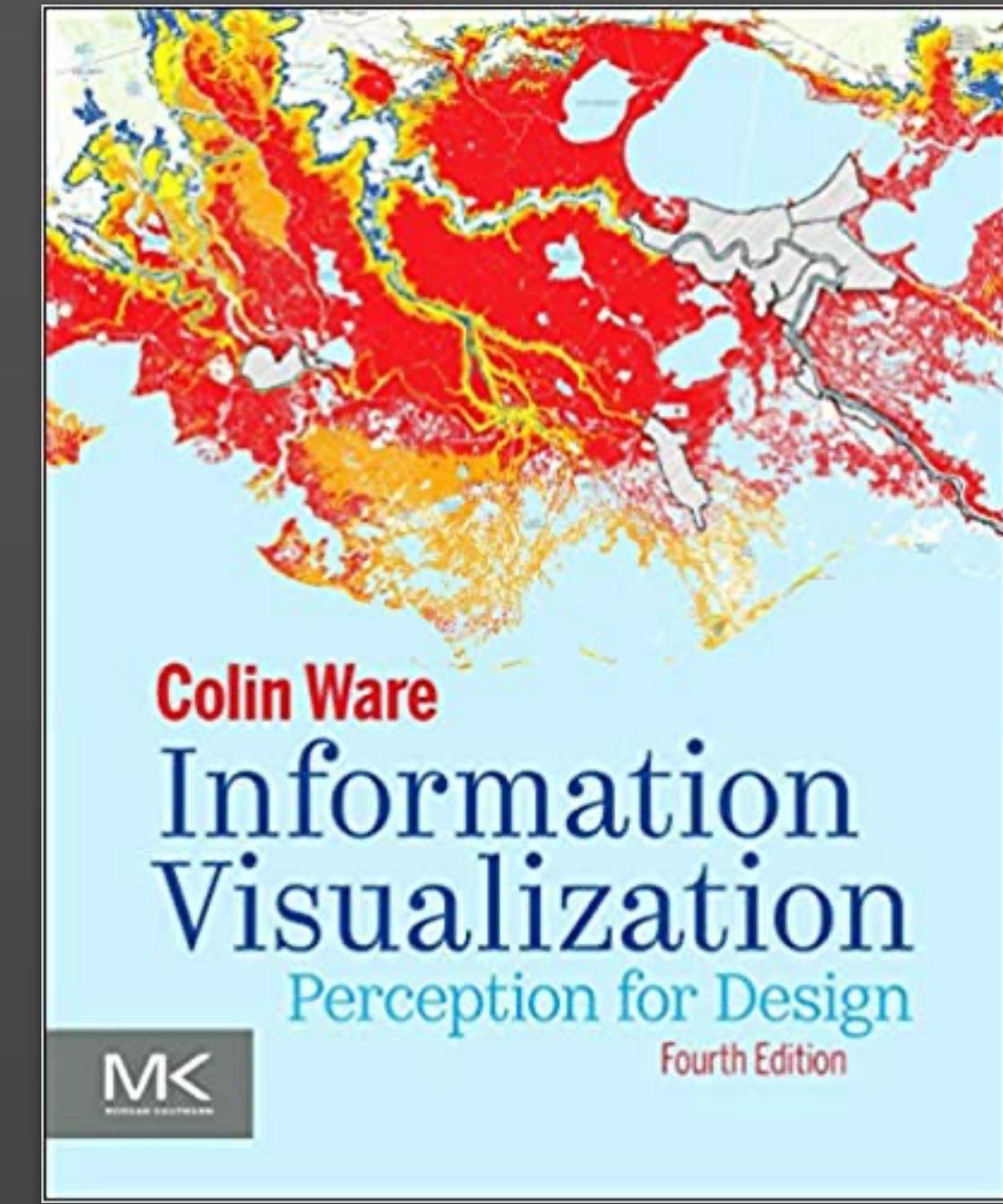
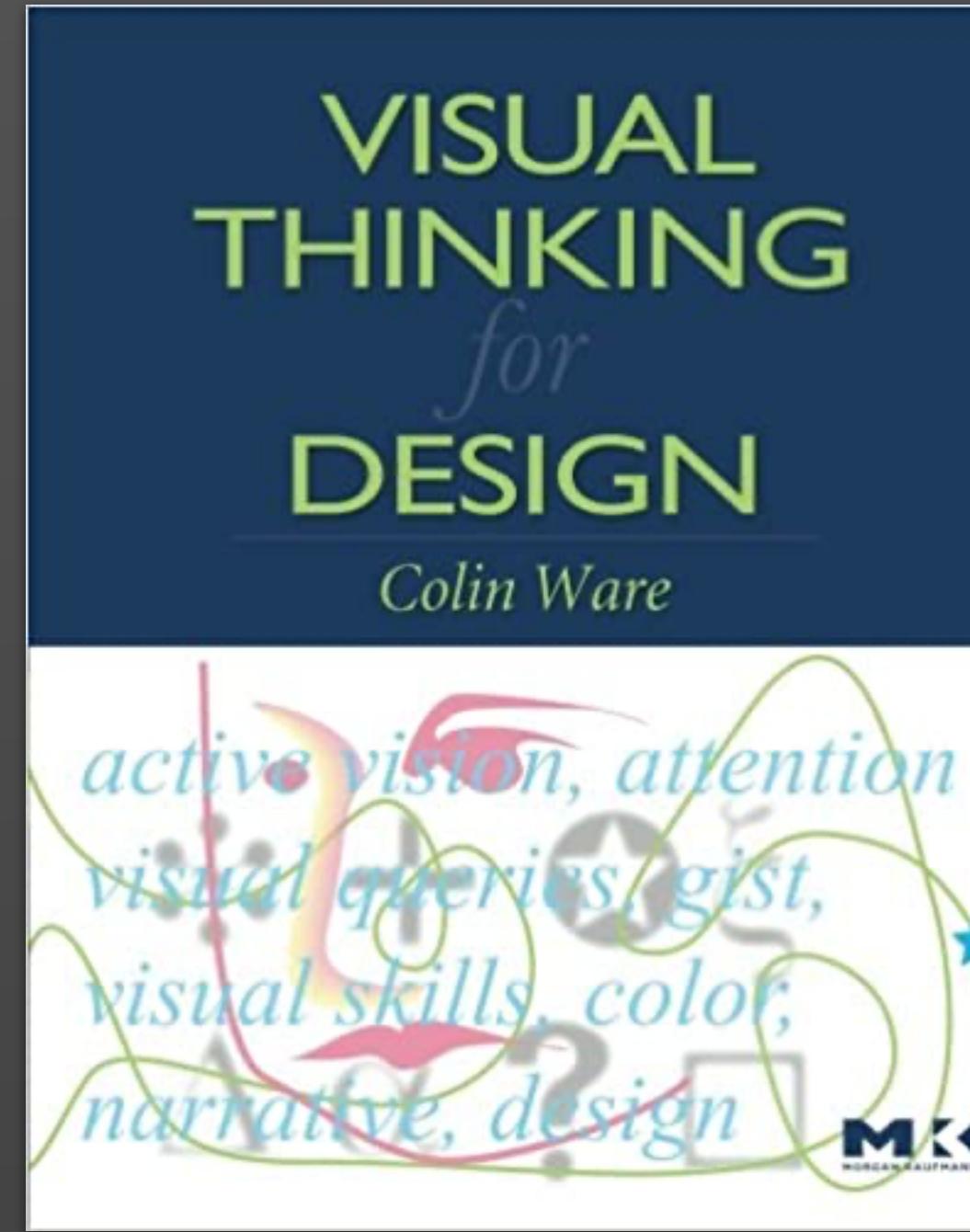
How to design diagrams?



“Graphical elegance is often found in simplicity of design and complexity of data”



“I was dissatisfied with teaching from original research papers”



““understanding” and “seeing” are synonymous”

Arbor.js A library of force-directed layout algorithms plus abstractions for graph organization and refresh handling.	CartoDB A web service for mapping, analyzing and building applications with data.	Chroma.js Interactive color space explorer that allows to preview a set of linear interpolated equidistant colors.	Circos A software package for visualizing data in a circular layout.	ColorBrewer A web tool for selecting colors for maps.	Cubism.js A library for creating interactive time series and horizon graphs based on D3.js	D3.js An small, flexible and efficient library to create and manipulate interactive documents based on data.	Dance.js A simple data-driven visualization framework based on Data.js and Underscore.js	Data.js A data representation framework providing a uniform interface to domain data.
DataWrangler An interactive web application for data cleaning and transformation.	Degrafa A powerful declarative graphics framework for rich user interfaces, data visualizations and mapping.	Envision.js A library for creating fast, dynamic and interactive time series visualizations.	Flare A set of software tools for creating rich interactive data visualizations in ActionScript.	GeoCommons A public community and set of tools to access, visualize and analyze data with compelling map visualizations.	Gephi A visualization and exploration platform for networks with dynamic and hierarchical graphs.	Google Chart Tools A collection of simple to use, customizable and free to use interactive charts and data tools.	Google Fusion Tables A web application that makes it easy to host, manage, collaborate on, visualize, and publish data tables.	Google Refine A tool for working with data, cleaning it up, reformatting it or extending it with web services.
Impure / Quadrigram A visual programming language aimed to gather, process and visualize information.	JavaScript InfoVis Toolkit A Javascript library that provides tools for creating interactive data visualizations for the web.	Kartograph A simple and lightweight framework for creating beautiful, interactive vector maps.	Leaflet A lightweight JavaScript library for making tile-based interactive maps for desktop and mobile browsers.	Many Eyes A web application to build, share and discuss graphic representation of user uploaded data.	MapBox A web platform for hosting custom designed map tiles and a set of open source tools to produce them.	Miso Dataset A client-side data transformation and management library to load, parse, sort, query & manipulate data.	Modest Maps A display and interaction library for tile-based maps in Flash, JavaScript and Python.	Mr. Data Converter A web application that converts Excel data into one of several web-friendly formats, including HTML, JSON and XML.
NodeBox A desktop application that lets you create generative, static, animated or interactive visuals.	Paper.js A vector graphics scripting framework in a well designed, consistent and clean programming interface.	Peity Peity is a simple jQuery plugin that converts an element's content into a simple mini pie, line or bar chart.	Polymaps A library for making dynamic, interactive maps with image- and vector-based tiles.	Prefuse A set of software tools for creating rich interactive data visualizations in Java.	Processing An open source programming language and environment to create images, animations, and interactions.	Processing.js The sister project of Processing that makes projects work using web standards and without any plug-ins.	Provis A library that composes custom views of data with simple marks such as bars and dots.	R A software environment for statistical computing and graphical techniques.

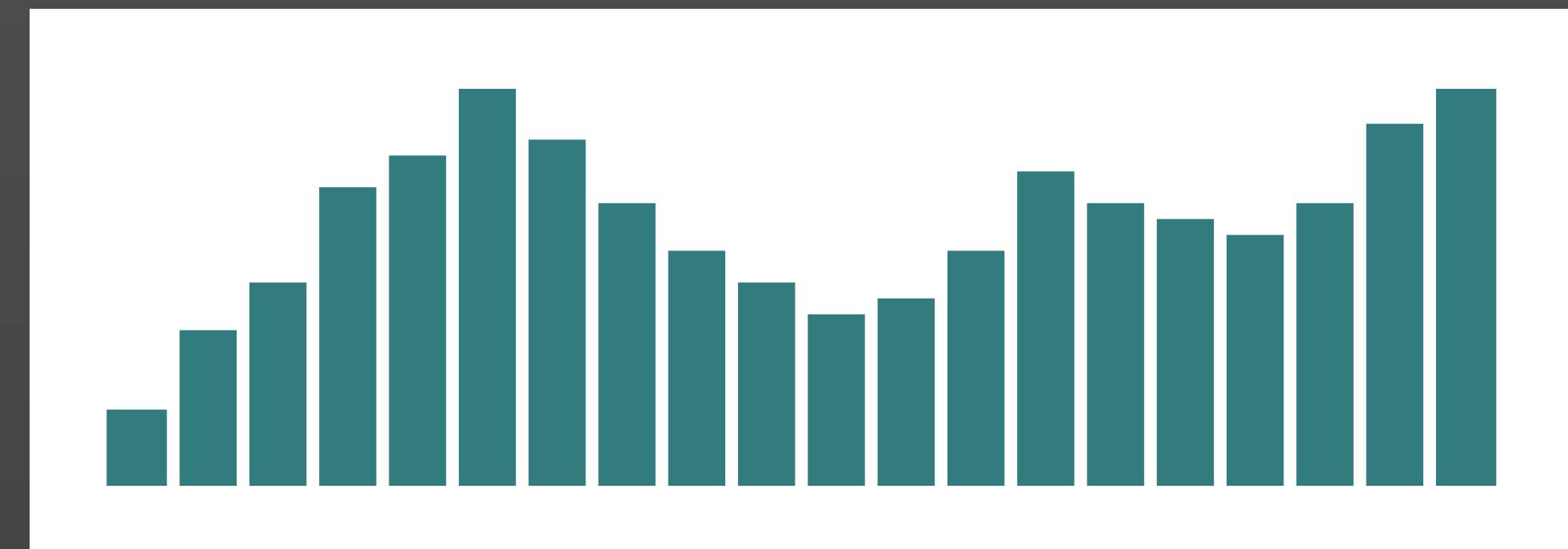


Input

```
var dataset = [ 5, 10, 13, 19, 21, 25, 22, 18, 15, 13,
                11, 12, 15, 20, 18, 17, 16, 18, 23, 25 ];

d3.select("body").selectAll("div")
  .data(dataset)
  .enter()
  .append("div")
  .attr("class", "bar")
  .style("height", function(d) {
    var barHeight = d * 5;
    return barHeight + "px";
});
```

Output

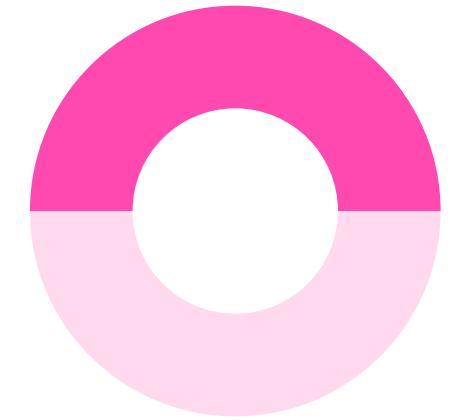




Workshop Introduction

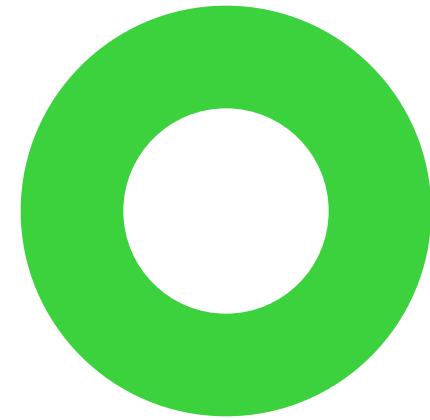
Workshop

09:00



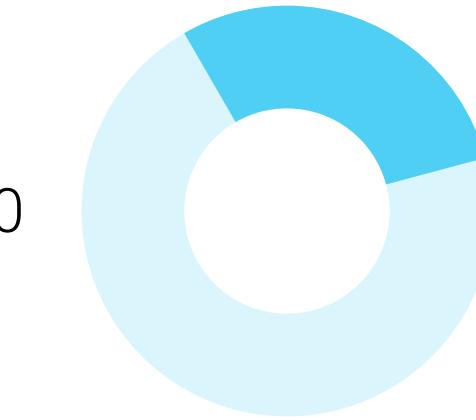
15:00

Self study



Presentation

11:00



14:30

Thursday Sep. 17th

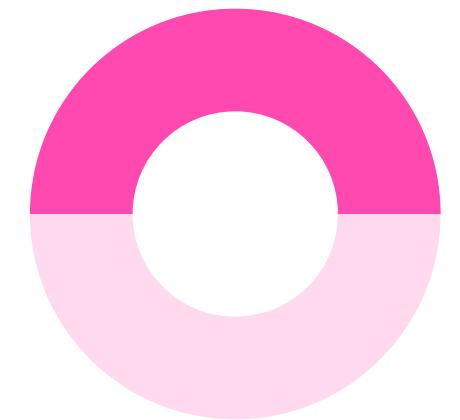


Wednesday Oct. 7th

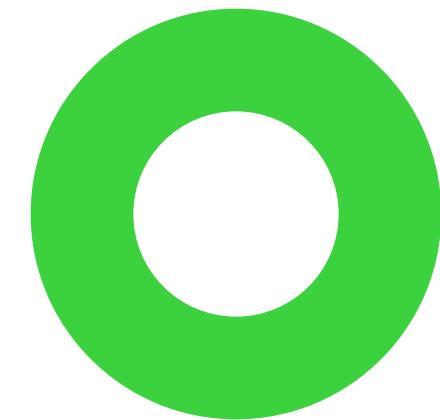


Workshop

09:00 15:00



Self study



Presentation

11:00 14:30



Thursday Sep. 17th



Wednesday Oct. 7th

Skills



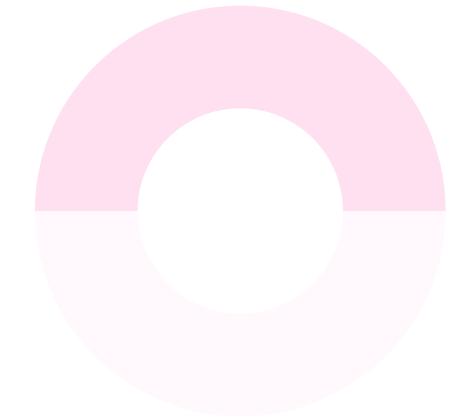
Project



- ▶ Data visualisation
- ▶ Information design theory
- ▶ Object-oriented programming in C#
- ▶ Working with data
 - ▶ Collecting, parsing and filtering data (mainly CSV)
- ▶ Graphics programming
 - ▶ Graphics in Unity
 - ▶ Practical math: vectors, quaternions, and matrices.
 - ▶ Immediate and retained mode drawing.
 - ▶ Shader programming (ShaderLab, HLSL)
 - ▶ GPU Compute (depending on class level)
- ▶ Procedural graphics.
 - ▶ Basic geometry, layout, and triangulation techniques.
 - ▶ Selforganisation (force-directed graphs)

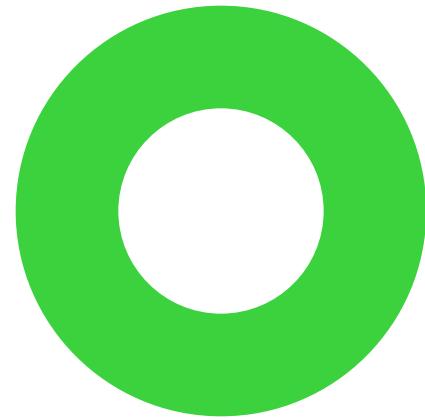
Workshop

09:00 15:00



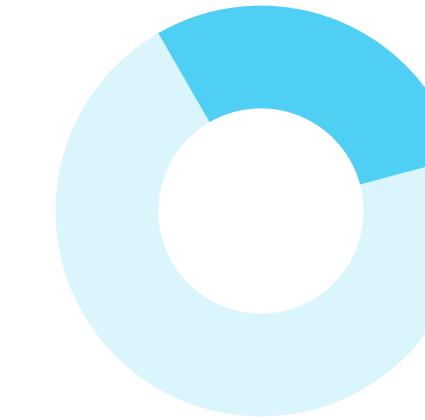
Self study

11:00 14:30



Presentation

11:00 14:30



Thursday Sep. 17th



Wednesday Oct. 7th

Skills



Project



- ▶ Attendance is mandatory. Please inform me via email if you are going to miss a class. Each day builds upon the previous one. Miss a day and catch up hard.
- ▶ The skills plan will shift slightly to accommodate the learning pace of the students (do not expect all topics mentioned to be covered).
- ▶ This class is participatory. You are expected to participate in discussions and give feedback to other students both in class and participate in their projects.
- ▶ The teacher leaves 15:00, but count in at least one hour for daily homework.

- ▶ It takes years to get familiar with code so expect to hit your head against your computer for many hours. Anyone with will and persistence can become experts.
- ▶ When the teacher is busy, ask your fellow students. Explaining your problem may reveal the solution.

cecarsen/DataVizWorkshop

github.com/cecarsen/DataVizWorkshop

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Readme.md Many updates plus gitignore 20 hours ago

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About No description, website, or topics provided.

Readme

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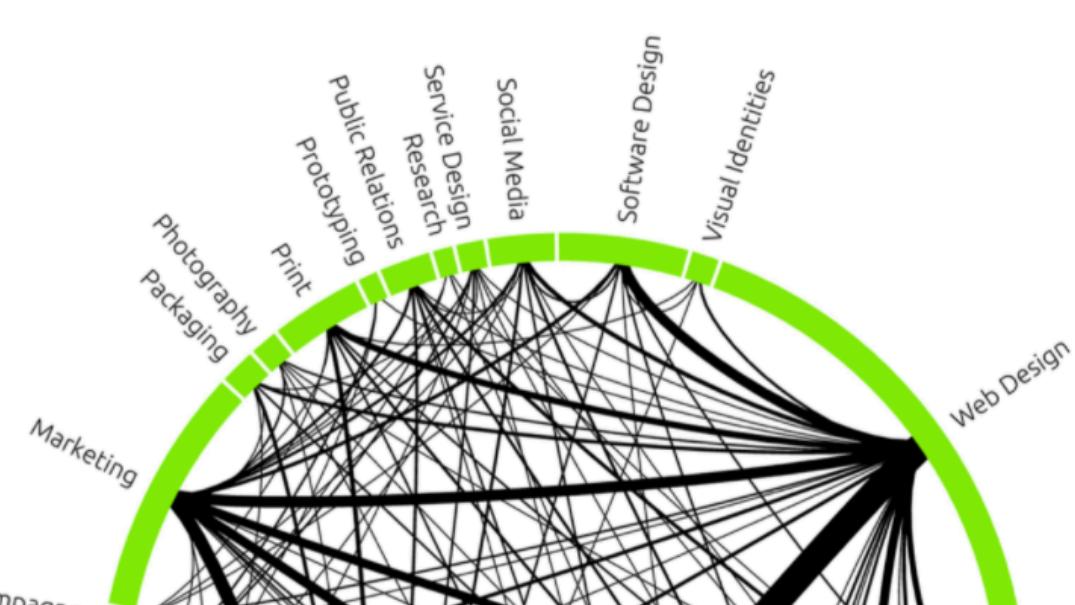
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Readme.md

Data Visualisation Workshop

Taught by [Carl Emil Carlsen](#) at the [The Royal Danish Academy of Fine Arts](#) (KADK), Visual Design department.
Thanks to [Annelie Berner](#) for sharing inspiration for the workshop.

September 17th – October 7th, 2020.
10 in-class days, 2 self-study days and 1 presentation day.



A screenshot of a GitHub mobile application interface. At the top, there's a header bar with a green circular icon on the left, followed by the repository name "cecarlsen/DataVizWorkshop" with a cat icon, a close button (X), and a plus sign (+). Below this is a navigation bar with a back arrow, a refresh/circular arrow icon, and a lock icon followed by the full repository URL "github.com/cecarlsen/DataVizWorkshop". A red oval highlights the URL. The main content area shows the repository details: "cecarlsen / DataVizWorkshop" in blue, a "Private" status badge, and tabs for "Code", "Issues", "Pull requests", "Actions", "Projects", and "Security".

cecarlsen / DataVizWorkshop Private

Code Issues Pull requests Actions Projects Security