What makes a “good” visualisation?

Clearly the term *good* can’t really be applied to a visualisation (let’s not get philosophical here!) but what we really mean is “**what makes a visualisation successful or effective?”**. That is, the message is clearly communicated through the medium (and the associated design choices) from the sender and understood and acted upon by the receiver (audience). We will return to this again when we look more at:

- How humans see and therefore what impact design choices can have,
- How to encode data (numbers) into visual languages and
- How to gain and lose attention.

For now let’s consult some experts (statisticians, data journalists, visualisation consultants and authors) and see what sort of terms and concepts they say are important for good visual communication starting with a visualisation.

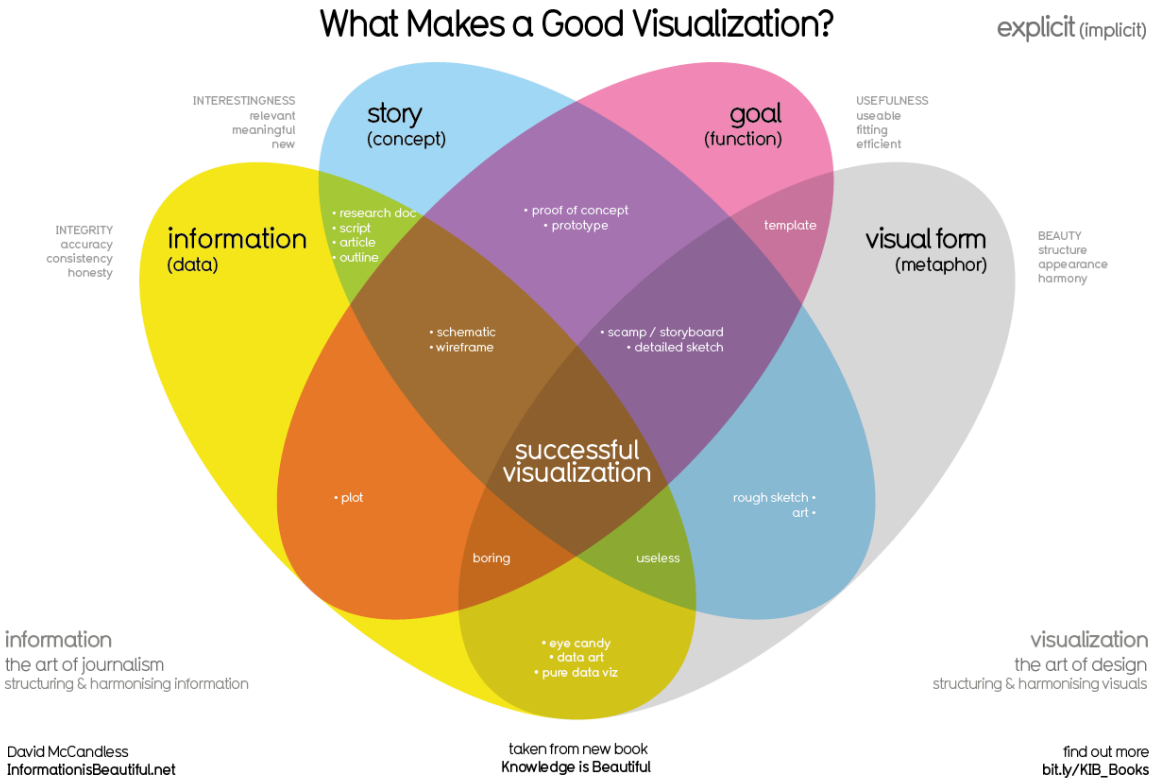

Figure: Information is Beautiful graphic on What Makes a Good Visualization? (David McCandless, 2014).

The image above is a visualisation (specifically a Venn diagram) created by **David McCandless** from his book “Knowledge is Beautiful” (2014) that tries to capture the important aspects (as he views them) of a successful visualisation. He defines these as the intersection of information (data), story (concept), goal (function) and visual form (metaphor). Notice that the intersections that don’t include all options are still useful and valid outcomes (art, template, prototype, etc.) except for two combinations (boring, useless). Can you see which combinations McCandless feels don’t have value? Explore a larger version of this graphic here.

What do other data visualisation experts and practitioners have to say about "good" visualisation?

Edward Tufte: statistician who is widely regarded as a pioneer in the field of information visualisation. Tufte states that the:

> "Viewer should "think about substance rather than methodology …"
>
> "Graphical excellence … gives the viewer the greatest number of ideas in the shortest time with the least ink in the smallest space".

Stephen Few: data visualisation consultant and author

> Well told stories - simple, seamless, informative, true, contextual, familiar, concrete, personal, emotional, actionable, sequential. ("Show Me the Numbers" (2012))

Cole Nussbaumer Knaflic: data visualisation consultant and author, formerly worked in banking, private equity firms and Google.

> "Data visualization is the process of turning information into pictures for a specific purpose." The important components are Process, Information, Pictures and Purpose (2020).

Interview with Knaflic and Andy Cosgreave (Tableau evangelist) giving 3 tips for storytelling with data and Knaflic's response to an earlier version of the above graphic by McCandless.

Stephanie Evergreen: data visualisation consultant and author

> use a "research-based approach to visualization and design".

Alberto Cairo: visual data journalism, read a profile of his work here.

> "Above all else, visualizations — when done right — are a vehicle of clarification and truth."

Gregor Aitsch: former graphics editor of the New York Times, now Co-Founder/CTO at Datawrapper.

> "Know the rules, before you break them …"

Andy Kirk: freelance data visualisation specialist, author of "Data Visualisation" (2016).

According to Kirk (2016) the principles of Good Data Visualisations are:

1. Trustworthy
    a. Don't use inappropriate colour palettes or fonts
    b. Don't include unnecessary chart junk (decoration)
2. Accessible
    a. Useful and understandable
    b. Reward vs Effort (complexity is sometimes okay!)
3. Elegant
    a. Thorough (get this little details right)
    b. Stylish

There's a huge number of resources, opinions, blog posts, interviews, twitter accounts, books, videos, training seminars and more on data visualisation. Even within this small selected group of practitioners there are dissenting opinions on what makes a good data visualisation. This is why it can be tricky to create a definitive and absolute list of what makes a "good" visualisation. Is it the simplicity of Tufte/Few or the data-driven focus of Cairo or the storytelling of Knaflic?

Can you identify a few key principles that you want to remember? Is there anyone else who you are aware of that's doing interesting work in data visualisation?

References

Kirk, A., 2016. *_Data visualisation: A handbook for data driven design_*. Sage.

McCandless, D., 2014. *_Knowledge is beautiful_*. London: William Collins.