Communicating Visually

Visual Communication is not a Natural Skill

The concept of visual communication being a skill one must work to learn and master should not be a huge revelation to anyone who has lived through the Geocities and MySpace eras of the Internet. Yet, many of those who would shudder at the thought of bringing back the <blink> tag to our web browsers have virtually no issues schlepping a column or two of data into an Excel spreadsheet and walking away with a default chart image that can be cut and pasted into a PowerPoint presentation for an upcoming meeting. What causes this dichotomy between the acts of perception and creation and what can we do to fill in the gap?

In 1969, John Debes, co-founder of the International Visual Literacy Association, coined the term1 “visual literacy” and offered the following definition for it:

*“Visual Literacy refers to a group of vision-competencies a human being can develop by seeing and at the same time having and integrating other sensory experiences. The development of these competencies is fundamental to normal human learning. When developed, they enable a visually literate person to discriminate and interpret the visible actions, objects, symbols, natural or man-made, that he encounters in his environment. Through the creative use of these competencies, he is able to communicate with others. Through the appreciative use of these competencies, he is able to comprehend and enjoy the masterworks of visual communication.”*

From that definition, we see that comprehension is not a passive act but a very deliberate one, with our eyes taking in images and our brains interpreting, processing and deriving some meaning from them—a process also known as *decoding*. While humans may have wrapped a definition around this process in the 20th century, this is old news…approximately 60,000 years old (give or take a century).

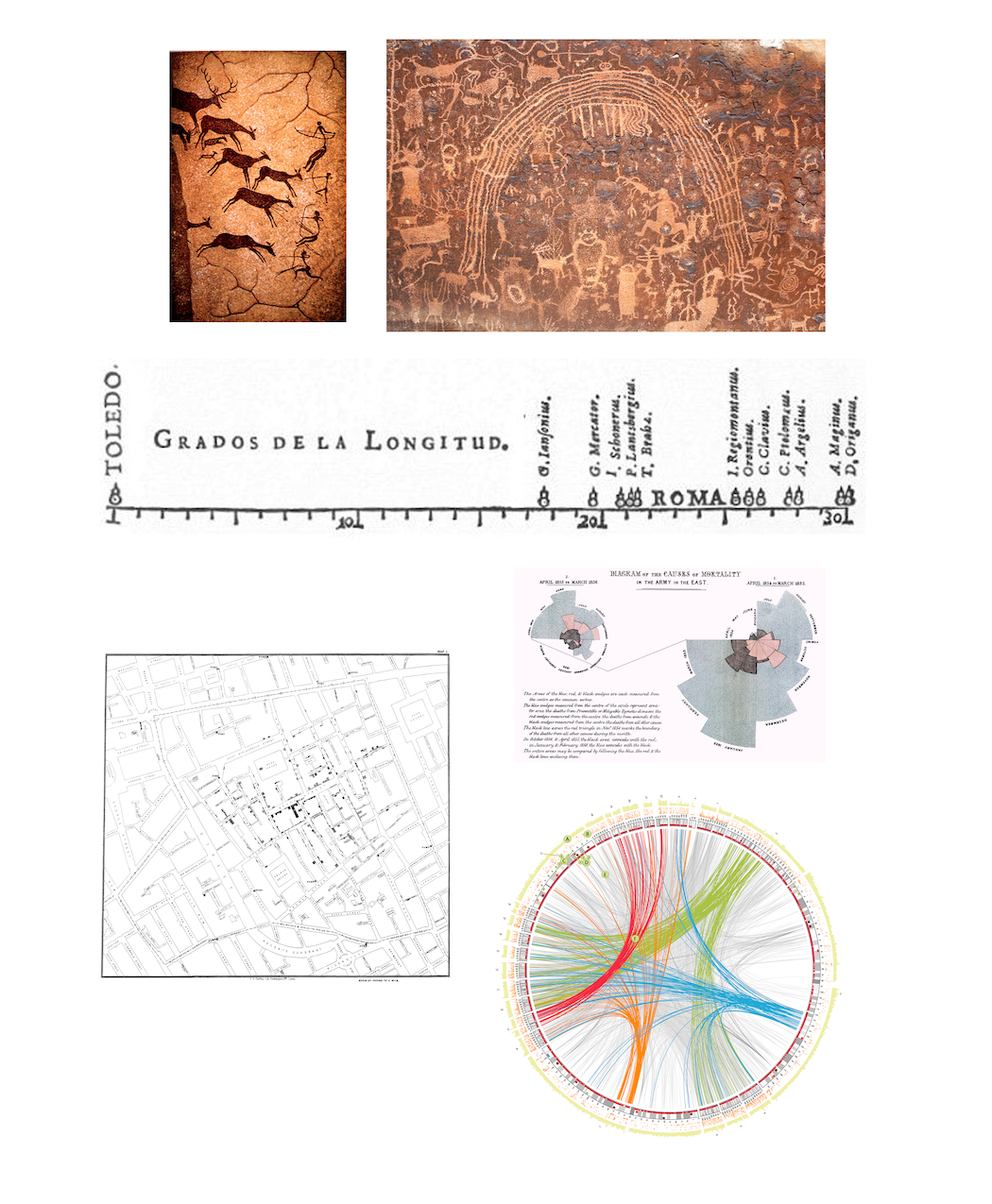


Figure 1 Increasingly complex visualizations. 60,000 BC cave painting (top left); petroglyph (top right); van Langren's longitude chart (middle); Snow's cholera map (bottom left); Florence Nightingale's coxcomb chart (middle, right); human genome relationships

Cave paintings remain to this day sole artifacts of the first foray into visual communication, and experts theorize these visuals were created by a small subset of the population. While it’s impossible for our modern minds to derive definitive meaning from these images, they do serve as evidence of the notion of *visual literacy* in action. A spark occurred in the minds of some prehistoric PowerPoint creators that both drove *and enabled them* to translate items from their three dimensional world into two dimensions with as much precision as implements at that time would allow.

Fast-forward 50,000 years or so to when the first petroglyphs were created and we see a creative evolution occurring which produced images that are more intricate and complex, demonstrating that the visual literacy of both the senders—still limited in number—and receivers increased significantly.

As we push up through the ages to the 17th century, we find evidence of a dramatic increase in the visual literacy of humans of that era in van Langren’s 1644 graph of determinations of the distance, in longitude, from Toledo to Rome.

This first known instance of a graph of statistical data did not just “happen”. The creator (van Langren) wanted to tell a story of distance and fused the ideas and concepts from predecessors such as Nicole Oresme, Albert of Saxony, Leonardo da Vinci, Nicholas of Cusa and, no doubt, many others. He relied on the fact that his audience was also familiar with the teachings of these esteemed scholars and apparently felt confident that it would take just a bit of extra decoding for the message to be received as intended.

Since that time, mankind has had a wealth of opportunity to both evolve our encoding capabilities and investigate the science behind how we go about decoding these images.

Cognitive Science: Decoding the Decoding Process

Paul Thagard defines cognitive science as “*the interdisciplinary study of mind and intelligence, embracing philosophy, psychology, artificial intelligence, neuroscience, linguistics, and anthropology*.”2 The core tenet of cognitive science is that how we think is best defined by how our minds represent things and what operations they perform on those representations.

Signal Detection and Magnitude Estimation

Comparing and Ranking Elementary Perceptual Tasks

Encoding Multiple Attributes

Understanding Gestalt

Visual Processing