The people DataViz's history ignores: a step forward to an intersectional history of Data Visualization

As pessoas que a história da Visualização de Dados ignora: um passo para uma história interseccional da Visualização

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data visualization,
history, data feminism

The history of Data Visualization, like history itself, has been told through the works of a narrow demographic group: white, cisgender men from high-income countries. While Florence Nightingale often features in such historical accounts and some recent literature has branched out to explore contributions from people with diverse gender and ethnical identities, a true feminist, intersectional, and decolonized History of Information Visualization is still missing. This paper attempts to jumpstart the effort of looking at women and people of color in Visualization's past and examine the oppressive structures that hampered the deserved dissemination of their contributions.

*visualização de dados,
história, feminismo de dados*

A história da visualização de dados, como a história universal, tem sido contada com base nos contributos de um grupo demográfico estreito: homens brancos e cisgênero, provenientes de países com rendimentos per capita elevados. Enquanto muitas perspectivas históricas incluem Florence Nightingale e alguma da literatura recente explore contribuições de pessoas com identidades étnicas e de gênero diferentes, ainda não existe uma história da visualização de informação verdadeiramente feminista, interseccional e descolonizada. Este artigo, fundamentalmente de revisão da literatura, pretende despertar o interesse sobre pessoas que contribuíram significativamente para a visualização no passado, questionando as estruturas opressoras que impediram a sua merecida disseminação.

1 Introduction

Few people have delved into the history of Visualization. Michael Friendly has been one of the most prominent authors in cataloging the advances in graphic representation through the ages, mainly in his Milestones Project (Friendly & Denis, 2001) and the many subsequent publications (2006, 2007, 2019; 2013; 2021). Before that, the work of Funkhouser (1937) (and of Helen Walker (1936), as we will see later) is foundational for the study of information visualization before the 20th century. Although most historical accounts for the visual and graphic representations of information come from Statistics and Mathematics (Beniger & Robyn, 1978; Hoff & Geddes,

1962; Tilling, 1975), authors like Sandra Rendgen (2018, 2019) and Manuel Lima (2011, 2014, 2017) have recorded the evolution of Visualization, as an independent discipline. Murray Dick (2020) also researched the history of the Infographic, but because it focuses on media, which often does not list the designers' names, we will not consider it.

As it happens in many arts and sciences, the history of Visualization boils down to the contributions of a handful of white cisgender men from high-income countries, such as England, France, or the United States. Amongst a list where William Playfair stands as the founding father, we can also name Renée Descartes, Michael Florent van Langren, Christoph Scheiner, Edmond Halley, Joseph Priestley, Jon Snow, Charles-Joseph Minard. Of course, these historical accounts rarely overlook Florence Nightingale. However, she more often appears as a token female figure, instead of an equal to her male counterparts (Evergreen, 2020).

The maleness in the history of Visualization is evident in the examples above, but it also seeps into literature. Hebbel E. Hoff and L. A. Geddes (1962, p. 287) stated: "It has been natural to seek the sources of graphics recording where sciences have overlapped, and among those men whom we recognize for the versatility of their interests and the adaptability of their methodology". While the authors rightfully acknowledge Visualization's multidisciplinarity, it is also clear that men appear as the natural representatives of this field, which, according to Caroline Criado Perez (2019, p. 16), reflects how "seeing men as the human default is fundamental to the structure of human society". And Simone de Beauvoir (1949/2011) famously argued that women are traditionally perceived as the other, while men are the perpetual subject.

In recent years, authors have questioned how traditional data collection methods, analysis, and design can harm minorities, cause disinformation, and lead to oppression and social injustice. Concepts like data humanism (Lupi, 2017) or data feminism (D'Ignazio & Klein, 2020) have surged and spread. We have learned that biased data collection leads to malfunctions in everyday objects and services (Perez, 2019), that popular algorithms and data analytics often exclude people of color (Noble, 2018; Williams, 2020), and that Big Data threatens freedom and privacy (Thorp, 2021).

The ways we learn, research, and work derive from our shared history. So, we can sustain that the biases of our current methods hold centuries-old prejudices and malpractices. When authors trace Information Visualization to 17th and 18th century Europe (Friendly et al., 2013), there is a disregard for ancient civilizations like Babylon, Egypt, or Mesopotamia and their alternative means of Visualization (Lima, 2017), like the Incan khipu: an indigenous system of statistical representations with strings and knots (Evergreen, 2021; Medrano & Urton, 2018) (Figure 1). This traditional and euro-centric narrative also ignores the oppressive structures limiting access to education, work, funding, or recognition in minorities, even in high-income countries. Unlike most men stated above, many of those we will explore in this paper struggled with systematic oppression. For example, W. E. B. Du Bois's research and visualizations about the black population in the United States at

Figure 1 Khipu fragment, 1400–1570 (Dallas Museum of Art, 2022).

the turn of the 20th century faced a culture with very recent ties to the institution of slavery, whose racist prejudices seeped into organizations and institutions that, often reluctantly, accepted, funded, and published his works (Battle-Baptiste & Rusert, 2018, p. 12).

We must question if the history of Visualization is solely composed of white and male figures or if historical accounts ignore personalities and bodies of work from diverse ethnical and gender identities. Lauren Klein (2017b) posed two very pertinent questions we have adopted to ignite this research: "What is the story we tell about the origins of modern data visualization?" [and] "What alternate histories might emerge, what new visual forms might we imagine, and what new arguments might we make, if we told that story differently?".

Authors like Stephanie Evergreen (2020, 2021) and R.J. Andrews (2019) have begun researching women who contributed significantly to Visualization. Lauren Klein (2017a; 2017b) revived and recontextualized Elizabeth Palmer Peabody's historical visualizations. Whitney Battle-Baptiste and Britt Rusert (2018) did the same with W. E. B. Du Bois. However, in this study, we are mainly concerned with the representation of women and people of color in Data Visualization's general historical accounts, of which there are only two recent examples: Sandra Rendgen's History of Information Graphics (2019) and Michael Friendly and Howard Wainer's (2021) A History of Data Visualization and Visual Communications. The first mentions the works of Emma Willard, Florence Nightingale, Marie Neurath, the women of the Hull-House, and Lisa Strausfield, although the introductions enumerate Paula Sher, Giorgia Lupi, and Stephanie Posavec. However, Rendgen lists 180 individual works by men, excluding groups, institutions, and anonymous designers, from which two are non-white: W. E. B. Dubois and Kisaburo Ohara. Nevertheless, the second book perpetuates the traditional male and Caucasian history of Visualization, mentioning only Florence Nightingale

as a woman and W. E. B. Du Bois, as a non-white man. So, it is safe to argue that Visualization still lacks a genuinely inclusive historical account.

We aim to do a literature review to trace an outline of an intersectional history of Data Visualization and gather the currently scattered information. However, we acknowledge that this article cannot be a complete feminist and decolonized historical account. Nevertheless, we will start by touching on Florence Nightingale's influence on this field. Then, we will examine how minorities often collected and designed data about minorities to solve life-altering problems and change legislation through the lens of W. E. B. Du Bois and the women of the Hull-House, with a brief nod to Gwendolyn Warren. We will then observe how Visualization was fundamental to education, particularly in history, and how Emma Willard and Elizabeth Palmer Peabody developed graphic teaching methods in the 19th century. Finally, we will recollect the contributions of Mary Eleanor Spear and Hellen M. Walker to the literature about Visualization in the 20th century. We will close this paper by acknowledging the women we would go on exploring if we could.

## 2 Florence Nightingale: beyond the rose diagram

Although Florence Nightingale is undoubtedly one of the most prominent figures in Data Visualization history, we will not elaborate on her contributions. Instead, we will note her influence on this field.

After the Crimean War erupted in 1853, Florence Nightingale was appointed Superintendent of the Female Nurses in the Hospitals in the East. During this time, she trained and oversaw a team of highly-skilled nurses, generated funding for the operation, and ran a hospital ward with laundry, kitchen, and supply lines (Andrews, 2019). All the while collecting the data she needed to prove that "for the British soldier the least dangerous aspect of the Crimean War was the opposing army" (Wainer, 1995, p. 47).

After meeting William Farr, who was a proficient mathematician and data designer, Nightingale produced numerous visualizations ("bar charts, stacked bars, honeycomb density plots, and 100% area plots"), the most celebrated being her pioneering rose diagram, today called a polar-area diagram (Andrews, 2019) (Figure 2). During this time, she learned the power of graphic methods and precise visual representations. Nightingale knew persuasion derived from a clear presentation of facts, she often included illustrations in her texts to increase engagement and disseminate "otherwise indigestible material" (Diamond & Stone, 1981). She also believed the only way to persuade government and military officials to reform sanitary policies in hospitals was to expose that most soldier casualties were easily preventable with simple hygienic solutions (Magnello, 2010).

While Nightingale is best known for advocating for soldiers, she was also concerned with pregnant women, sex workers, orphans, and "colonial natives" (Andrews, 2019). Nightingale's care about those whom policy
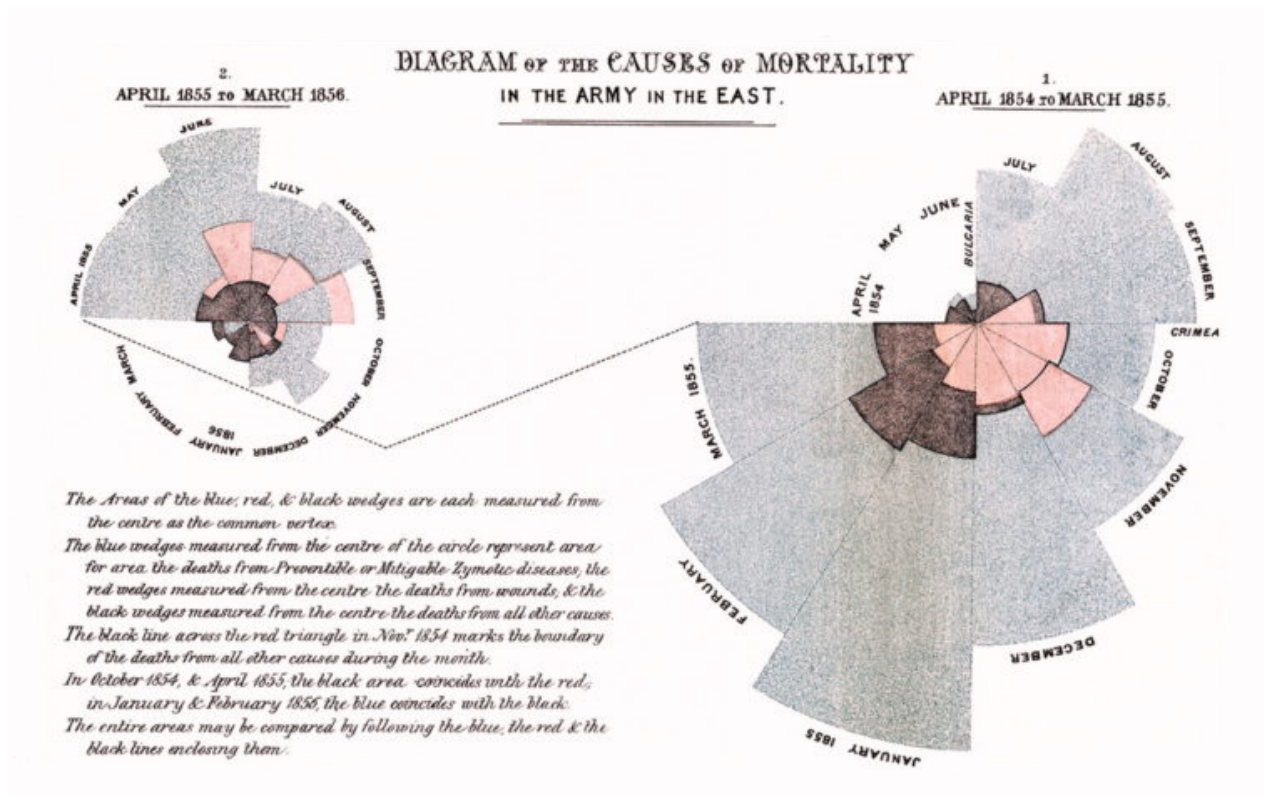
Figure 2 Diagram of the Causes of Mortality in the Army in the East, Florence Nightingale, 1858 (Florence Nightingale Museum, s.d.).

excluded, the knowledge that graphic representation was a fruitful way to demand legislation reform, and the awareness of the marketing power of Visualization were foundational for generations of visualizers to come.

## 3 The Women of Hull House and W.E.B. Du Bois: visualizing oppression

Visualization has a long history of serving as a visual aid in advocating for the betterment of people's lives. When it comes to social justice and labor legislation for minorities, it is paramount to account for two almost simultaneous contributions connected by friendship: Florence Kelley and W. E. B. Du Bois, the first black man to earn a doctorate from Harvard University.

Florence Kelley was a prominent political and social reformist in the late 19th and early 20th centuries in the United States. She was one of the early residents in the Hull-House, a social settlement founded in September 1889 by Jane Adams and Ellen Gates Starr, in Chicago. This community was mainly composed of like-minded and politically engaged women who developed the pioneering labor law in Illinois, regulating sweatshop work conditions. The bill proposed that:

[...] children under the age of fourteen could not be employed in manufacturing; women were required to have on file a physician's certificate of health and an affidavit of age for all children between fourteen and sixteen; the board of health was empowered to search and confiscate goods found in tenement workshops that violated the sanitary code; [...] manufacturers were required to furnish the names and addresses of their subcontractors and workers (Tax, 2001, p. 83).

Although Florence Kelley jumpstarted the bill, it resulted from the collaboration of nearly 30 other women-led organizations in Illinois (Sklar, 1985). Kelley was appointed chief factory inspector and took part in the Special Investigation of the Slums of Great Cities by the United States Department of Labor in 1893 after the bill became law. Because there was little to "no statistical information on Chicago industrial conditions", the women had to collect data that complemented their "general impressions of [the] neighborhood" (Adams, 1910, n.p.). So, they visited every single "house, tenement, and room in the Nineteenth Ward" to personally collect data by interviewing the district's inhabitants (Vaughan, 2018, p. 103). Then, they produced two incredibly detailed maps (Figure 3), four sheets each, which account for the nineteen ethnic groups and weekly wages of families in that fast-growing and industrialized district. Later, the women compiled the information into a book – Hull-House Maps and Papers –, where they state the maps were "an attempt on the part of some of the residents of Hull-House to put into graphic form a few facts concerning the section of Chicago immediately east of the House (The Residents of Hull-House, 1895, p. 5). Each map includes an extensive explanation of terminologies, structure, scales, design choices, and details on the social, economic, and housing context of specific areas in the slum. According to Laura Tilling (1975, p. 200), writing "lengthy descriptions of how [...] graphs were constructed and of how they were to be interpreted" was common in the 18th and 19th centuries.

Although the bill itself and the general strategy of the women of the Hull-House aimed for legislative reform, the maps had the intent "of stimulating inquiry and action, and evolving new thoughts and methods"
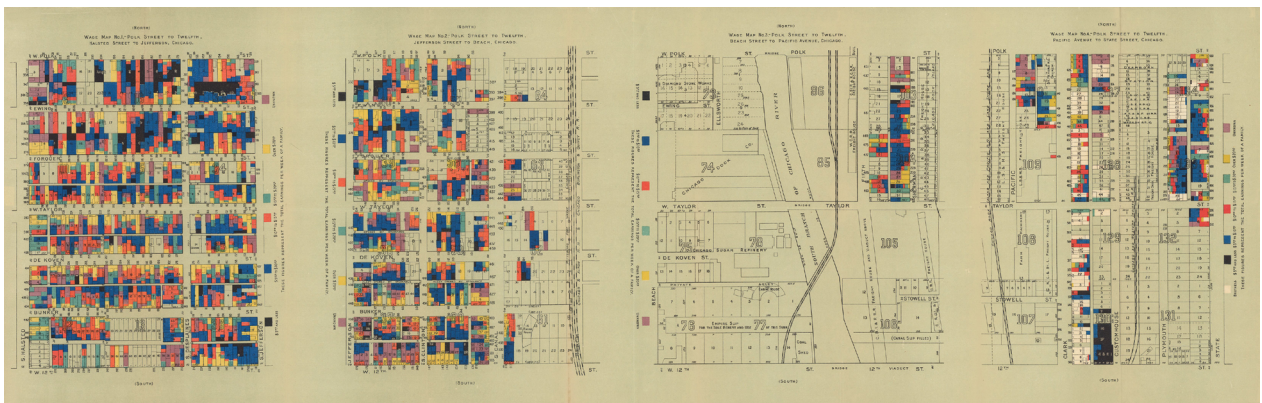

Figure 3 Chicago Wage Maps, The Women of the Hull-House, 1895 (Atlas of Places, 2019).

(The Residents of Hull-House, 1895, p. 13). What is impressive about the reform and legislation changes propelled by the Hull-House is that it preceded the women's right to vote, which would only pass in the United States in 1920 (Tax, 2001).

Around the same time, the University of Pennsylvania commissioned W. E. B. Du Bois to study Philadelphia's black population, particularly incomes, nature of service, housing conditions, organizations, and their relations to white neighboring communities. Although the University ordered Du Bois this investigation, it did not provide him with the necessary funding, installations, or recognition (Vaughan, 2018). Nevertheless, Du Bois conducted thousands of interviews alone, later translating that information into various graphical forms to illustrate the book The Philadelphia Negro (Du Bois, 1899/2007). Du Bois believed statistical investigation and graphical representation were fundamental to the "study of the Negro as a social group", alongside the historical study, anthropological measurement, and sociological interpretation (Du Bois, 1898).

In this project, Du Bois took inspiration from the women of the Hull-House in designing his own maps (Figure 4). He also used each lot as a unit, but Du Bois colored only the data about black people instead of differentiating between nationalities. However simple, this design choice highlighted the parts of the city with the highest concentration of black inhabitants, which "might have been seen as the 'ghetto'", and it showed how visible segregation was (Vaughan, 2018, p. 110). Du Bois stated that this mapping allowed him to understand the peculiarities of segregation, specifically that:

> [...] a Negro slum may be in dangerous proximity to a white residence quarter, while it is quite common to find a white slum planted in the heart of a respectable Negro district. One thing, however, seldom occurs: the best of the whites and the best of the Negroes almost never live in anything like close proximity (Du Bois, 1899/2007, p. 113).
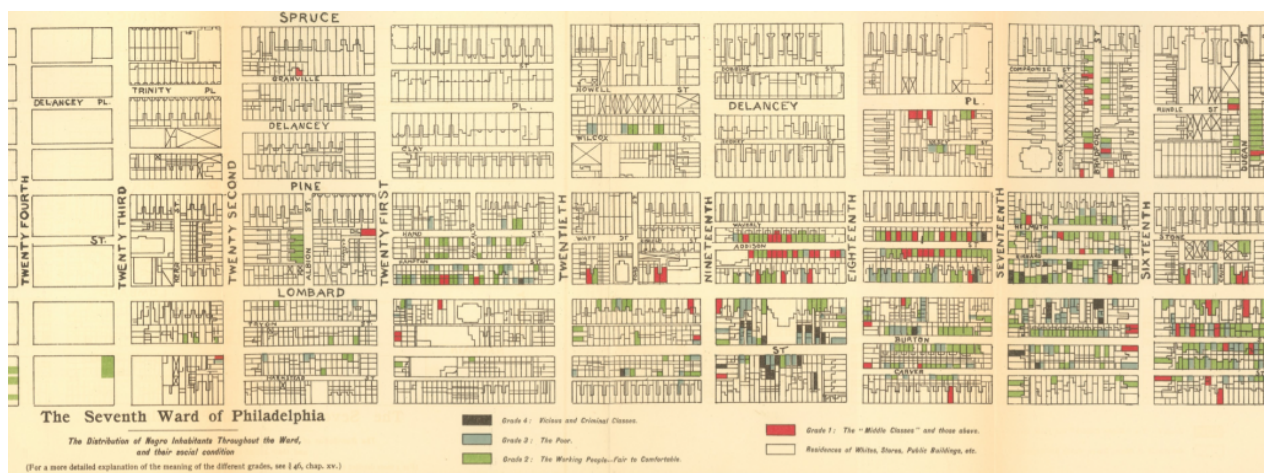
Figure 4 The Seventh Ward of Philadelphia: The Distribution of Negro Inhabitants Throughout the Ward, and their social condition, W. E. B. DuBois, 1899 (University of Illinois, 2019).

A few years later, Du Bois was invited by Thomas Junius Calloway to be a part of the Exposition des Nègres d'Amérique for the 1900 Exposition Universelle de Paris. He and his team designed a collection of around 60 graphs, charts, maps, and tables based on previous studies and records produced by him and his students at Atlanta University and official governmental reports (Battle-Baptiste & Rusert, 2018). These graphs were part of two distinct sets. The first, *The Georgia Negro: A Social Study*, was conducted precisely for the occasion because the Georgian black population was the largest and most diverse in the United States (Figure 5). The second part of the exhibition was a global overview of black lives in the country, focusing on education, literacy, and distribution. This segment was titled *A Series of Statistical Charts Illustrating the Condition of the Descendants of Former African Slaves Now in Residence in the United States of America* (Battle-Baptiste & Rusert, 2018).
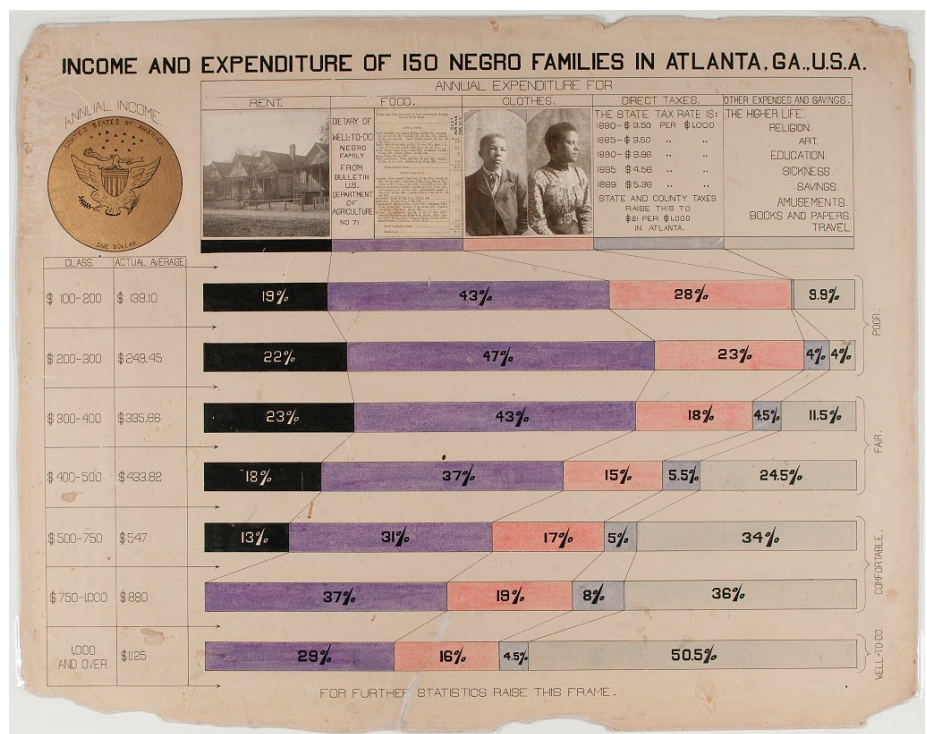
Figure 5 Income and Expenditure of 150 Negro Families in Atlanta, GA., U.S.A., W. E. B. DuBois, 1900 (Library of Congress, n.d.).

Because of the poignancy of his visualizations, Du Bois established the "modern approach to constructing a narrative argument based on evidence through his use of a series of graphic displays" (Friendly & Wainer, 2021, p. 241). Battle-Baptiste and Rusert (2018) argue that Du Bois and his team marked a point when various disciplines understood how simple visualizations could help audiences interpret complex social and scientific data, making them more accessible to the people that were subjects of that research. Arciniega (2021) adds that Du Bois's visualizations also

allow viewers to grasp and question racial hierarchies in the context of American liberalism and its pursuit of equal opportunity for all.

Sixty years later, Gwendolyn Warren and her team of "folk geographers" would follow Du Bois's lead and research the living conditions of the black community in Detroit (Warren et al., 2019). Warren was the co-director of the Detroit Geographical Expedition and Institute (DGEI). The team aimed to document racial inequalities in the city, focusing on the community's central problems: death, hunger, and housing (D'Ignazio & Klein, 2020). What is pertinent in this case for this study is that there are two diverging narratives of the dealings of the DGEI: one from William Bunge, its director (the one deemed canon), and one from Gwendolyn Warren (the one who was eclipsed) (Zwer, 2021).

There is one last example worth sharing when it comes to advocating for minorities. Thomas Clarkson (a white man) also used Visualization to record and criticize the inhumanity of the slave trade (Rendgen, 2019). One of his reports includes the famous diagram *Stowage of the British Slave Ship 'Brookes' under the Regulated Slave Trade Act of 1788*, which showed the inhumane conditions with which traders transported enslaved people to and from British colonies and served as evidence for the abolition of slavery during the British Parliamentary hearings.

4 Emma Willard and Elizabeth Palmer Peabody: Visualization for Education

While the Golden Age of Visualization (1840–1910) is commonly known as a period of significant advancement in visual representation (Friendly & Denis, 2001; Friendly & Wainer, 2021; Funkhouser, 1937), there are still two contributors ignored by the authors who proposed this: Emma Willard and Elizabeth Palmer Peabody.

Willard and Peabody were two American educators and pedagogical theorists in the 19th century. However, their focus was different. While Willard was more concerned with girls' education and its equity to that of a boy's, Peabody worked in the pedagogy of small children, mainly in kindergarten. Nevertheless, both cared deeply about history teaching, and took a practical graphic approach to it (Baym, 1991; Peabody, 1856; Schulten, 2007).

Before becoming a teacher, Emma Willard trained and worked as a geographer. Later, she would use this knowledge to design a series of maps and chronologies as a part of her textbooks about American history. In fact, "Willard was the first textbook historian in America to include historical maps in the textbook itself" (Baym, 1991, p. 6).

One of the most relevant of Willard's maps (The Temple of Time) presented historical developments since ancient times. But this chronology became more than a representation. Willard also used the imagery of the temple as an exercise of active learning, asking students to apply their knowledge to an empty version of the teacher's temple. As the student filled its structure, the visualization became a mnemonic exercise,

which referred to Willard's belief that the process of memorizing was in itself "a valuable intellectual performance" (Rosenberg & Grafton, 2010, p. 203). Peabody also believed that graphic exercises grounded knowledge. For her, visual abstraction and autonomous learning could impel students to construct a solid historical narrative based on their interpretations. This way, both placed the knowledge value of their Visualization not only on the graph itself but on the interaction between student and content and on the cross-referencing it demanded (Klein, 2017b).
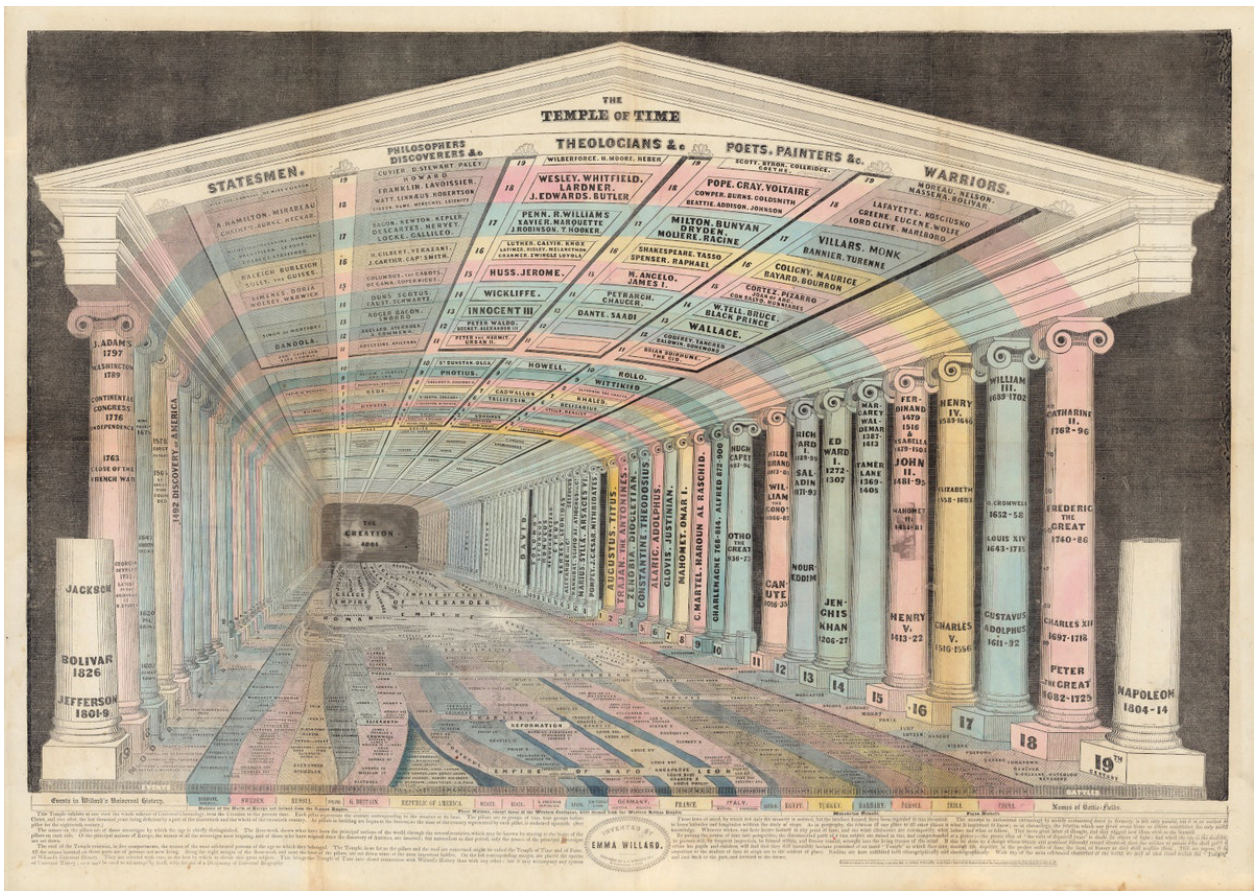

Figure 6 The Temple of Time, Emma Willard, 1846 (David Rumsey Map Collection, n.d.).

Elizabeth Palmer Peabody is accountable for opening the first English-speaking kindergarten in the United States, based on the philosophy of Friedrich Froebel, the German educator founder of kindergartens (Edwards, 1934/2002). Her main contribution to Visualization, which was recreated by Lauren Klein in her project *The Shape of History* (2017a; Klein et al. 2017), derived from General Bem's Franco-Polish Method (Peabody, 1850). Unlike Willard, whose representations are mainly figurative, Peabody takes a completely abstract visual system, leaning on a quadrangular grid, squares, and triangles of various colors to depict historical events across centuries (Figure 7). However, like Willard's
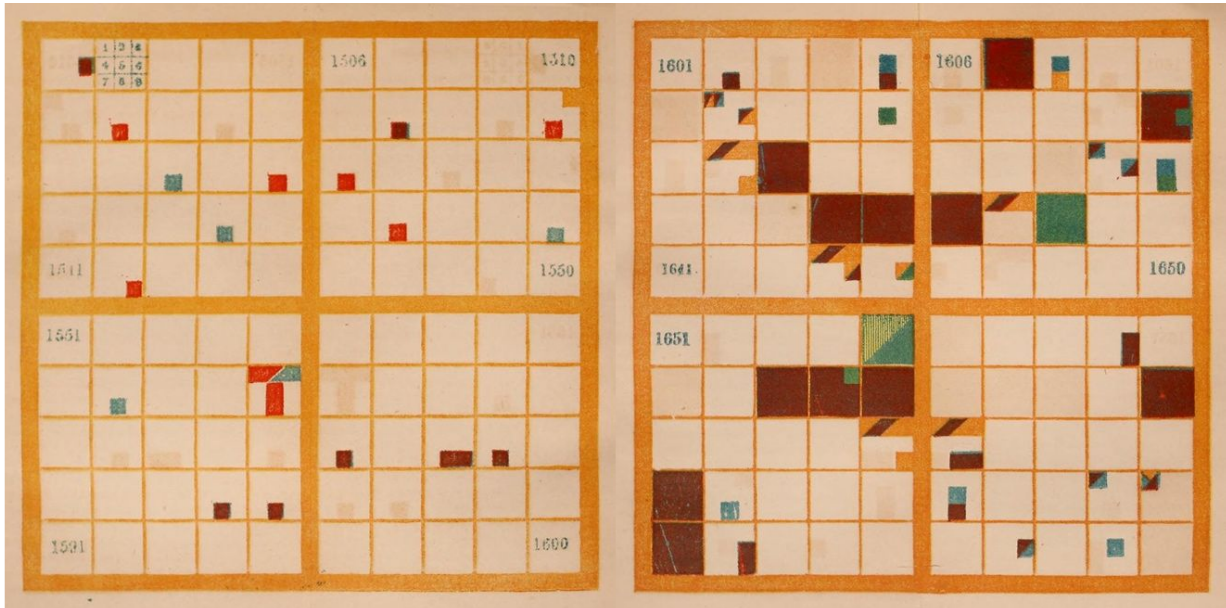
Figure 7 Two charts published in Chronological History of the United States, Elizabeth Palmer Peabody, 1856 (Library of Congress, n.d.).

exercises, Peabody's method also expected students to fill out the spaces according to their perception of historical evidence and the connections between influential events. Due to this level of personalization to each student's intellectual framework, no surviving copies of Peabody's charts look alike (Rosenberg & Grafton, 2010). Although this method is "mostly forgotten today", it was prevalent in Europe and North America in the 1830s and again in the 1850s and 70s after Peabody's revisions (Rosenberg & Grafton, 2010).

5 Mary Eleanor Spear and Helen Walker: overlooked and out of print

The essential literature about Visualization in the 20th century is mostly by white cisgender men from high-income countries, like the United Kingdom, France, and the United States. Besides Edward Tufte, we can also name Jacques Bertin, John Tukey, Peter Sullivan, Darrell Huff, John Allen Paulos, and Howard G. Funkhouser.

Mary Eleanor Spear published two now out-of-print books: *Charting Statistics* (1952), and *Practical Charting Techniques*, in 1969, currently unavailable. She was also a Visual Information Specialist for the Federal Office of Statistical Standards in Washington DC for around thirty years (Jones, 2019). The books assemble and convey the practical knowledge of the graphical representation of statistical data Spear acquired while working for the United States government. Like Alberto Cairo (2013), Spear (1952) viewed Visualization as a "functional form of art" whose primary purpose was to present a subject visually, allow for clear interpretations, illuminate complex problems, and identify mistakes,

outliers, and hidden facts in the data. The author (1952, p. v) explains that her instructions teach the design of simple charts, which can be made more complex or adapted to specific purposes or subjects, adding that "imagination is priceless, provided it is used to obtain a new arrangement without distortion of the facts and provided the results are pleasing".

Among the graphs listed in Charting Statistics, one has generated much discussion in the last few years. Jones (2019) affirms Spear rarely appears in the history of the invention of the box-plot chart, which is attributed to John Tukey. On the other hand, Stryjewski and Wickham (2011) argue that Spear was solely responsible for its creation. Tufte (1983/2001) poses a middle ground, presenting Spear's range-bar chart and Tukey's box-plot as distinct approaches. Although it is true that Spear introduces the then-called range-bar chart in the 1952 book Charting Statistics, there is at least one earlier reference to it. Haemer (1948, p. 23) not only explains this chart as a common way to visualize comparisons and variations, but he also adds that the "range idea is not new: it is widely used in picturing time series data, especially in the form of familiar high-low-closing stock price charts". However, John Tukey (1977) does not refer to Mary Eleanor Spear or Kenneth W. Haemer.

While the methods and tools Spear presents are particular to their time and have long become obsolete, her explanations and definitions of the various chart types are clear and resonate today. It is also interesting to note that Spear advises designers to beware of colorblindness and accessibility and introduces guidelines to design graphs for television and exhibitions.

William Playfair is often portrayed as the founding father of modern [and mostly male] Visualization. He is, after all, responsible for creating the bar chart, the line graph, and the pie chart, which he designed for the Commercial and Political Atlas, 1786. However, Playfair's contribution to the graphic method received little recognition upon the Atlas' original publication. It was not until 1935 that Playfair received full credit for the advances he proposed when Helen M. Walker and Howard G. Funkhouser (1935, p. 103) described him as "the man who invented outright the graphic method of representing statistical data". In the following years, Funkhouser (1937) would explore the history of the graphical representation of data before William Playfair, tracing it back to ancient times, while Walker continued her studies and teachings on Statistics. Helen M. Walker was a professor at Columbia University in New York City, the first female President of the American Statistical Association and the American Educational Research Association (AMSTATNews, 2016).

One of the two of Walker's doctoral researches was titled *Studies In The History Of Statistical Method: with special reference to certain educational problems*. Although this document "regretfully" excludes the study of graphic methods, she viewed them as an integral part of Statistics and Mathematics (1929). Walker argued that visual representations of data, such as charts and graphs, were prevalent in the education of Statistics, and should be a part of any level of education since primary school (Walker, 1929). Walker believed charts made teaching more vivid and that, therefore, the education of teachers should

include graphical representations since they are some of the fundamental communicative skills (Walker, 1950).

Helen M. Walker was also vocal about women's issues and roles in society. Besides finishing her doctoral dissertation with an ode to Florence Nightingale and her advancements in Statistics and Visualization, she stated that women:

> [...] must work for a wider and more sympathetic understanding of problems faced by women [...]; must give earnest consideration to the broad social implications of such movements as those for protective legislation or quality of opportunity and pay; [...] must approach these problems in a spirit so free from personal annoyance and selfish bias that they can truly seek the good of all groups (Walker, 1936, p. 2).

Edward Tufte (1983/2001) also recommends reading Clara Francis Bamberger, who authored the book *Interpretation of Graphs at the Elementary School Level* in 1942, and Ann C. Rogers, author of *Graphic Charts Handbook*, 1961. However, we were unable to access these titles.

6 Conclusion: who is still missing?

Although we acknowledge the limits of this study, it is still fundamental to establish what personalities we would cover, given that we could.

- Marie Neurath, wife to Otto Neurath and one of the proponents of Isotype (alongside Otto and Gerd Arntz). After her husband's death, she published a series of children's books with visual explanations and diagrams (Forrest, 2021; University of Reading, 2019).
- Annie Maunder was one of the Victorian astronomers who was "barred from professional status" and deemed "obligatory amateurs" due to the gendered policies of 19th century Britain (Ogilvie, 2000). Annie and her Husband Walter created the butterfly diagram, which represents the cycles of sunspots over time. This diagram of "three desiccated butterflies" derives from a dense collaboration and decades of observation and analysis (Dalla & Fletcher, 2016).
- Marie Tharp and Bruce Heezen did pioneer research about the ocean floor. Although Heezen was responsible for the data collection (women were not allowed to work on ocean vessels (Maxwell, 2013)), Tharp transformed raw bathymetric data into "ocean-floor contour maps" and other visual aids (Tharp, 1999). Although their research contributions are justly attributed to both, Tharp "was the first person to interpret the depth-sounding data in visual form and speculate on trends that they suggested" (Barton, 2002, p. 218).
- Anne Laura Clarke, or "the traveling lecturer", was, like Willard and Peabody, a teacher aware of the impact of visual aids on the education of history, and so she included colored charts in her lectures and texts. Granville Ganter (2014) argues that Clarke not only based her

chart on Joseph Priestley's works, but she also "significantly improved [his] infographics".

- Maria Sibylla Merian was a naturalist whose primary means of expression were diagrams and detailed illustrations. Sharon Valiant (1993) states that Merian was the first to make large-scale representations of small animals and insects. Although she is habitually described as an artist and a painter, her works, which often include written descriptions, show a high degree of scientific research on diverse species of insects (Tomasi, 2008).

We also acknowledge that although we explored several women who should feature in Visualization historical accounts, they belong to a somewhat privileged realm of society, given their ethnicity, social status, and provenance.

In a communication to her fellow Pi Lambda Theta, Hellen Walker asks: "If our world is so different from that of our mothers', what will our daughter's world be like? What do we want it to be like?" (Walker, 1936, p. 2). Furthermore, although this question is vague, when it comes to the history of Visualization, it is essential to remember and reinforce that Visualization is not made solely of white, cisgender, educated, and wealthy men, no matter how outstanding their contributions were. Moreover, it is ever more critical to let Data Visualization be a field that welcomes all, despite our disservice to many peoples across centuries.

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