Family-Centric Visualization, 2.0

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Introduction

The irony of research is that we work to improve the state of technology, but when asked for the product we can seldom deliver. We first presented the Family-Centric Visualization as an idea in FHTW 2014 [2] and then fleshed it out in a Java prototype for the Information Visualization Journal [1].

However, as people have become interested in using the prototype over the years we decided to create a production-quality web-based version of the visualization. The result of interest, suggestions, and general use has led to the visualization being more usable, and providing more family overview and details. See Figure 1 for a screenshot of our latest web-based visualization.

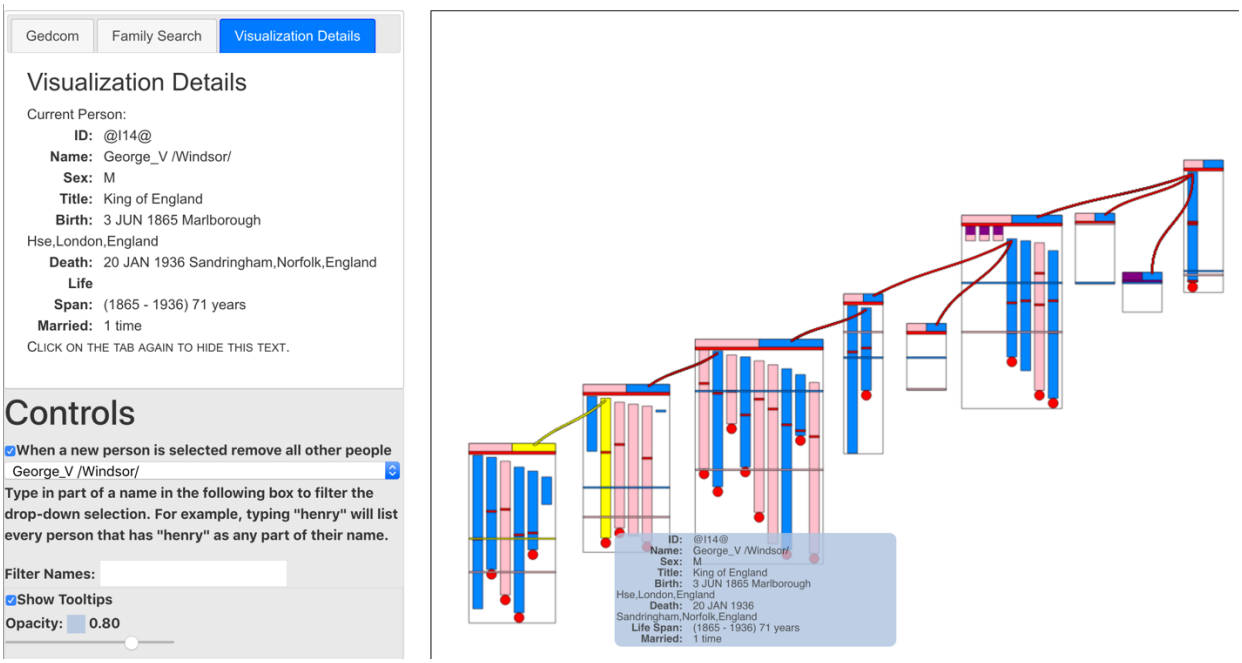

Figure 1. Screenshot of the Family-Centric Visualization from the live web-based visualization. The screenshot shows the paternal ancestry of five-generations of King George V (King of Britian from 1865 – 1936) above him and one generation below him. He is highlighted in yellow. The screenshot from bottom-left to top-right shows that King George V had only one marriage. His marriage (bottom-left) shows all of his six children (five boys and one girl). In that marriage only four of the children had children of their own (red circles under their life lines). The next right shows his childhood family showing an older brother that died young (right before King George V's marriage), three younger sisters, and one brother that died as an infant. The paternal line continues showing that King George V's Great-Grandfather had two wifes/marriages and that his Great-Great Grandfather had three wifes/marriages. Various parts of the data are unknown and are depicted in purple.

Generation vs Time

The Family-Centric visualization is a time-based visualization that has its roots in visualizations such as TimeLines by Plaisant [5]. TimeLines (and other time-based visualizations) ignore generations in favor of showing people in terms of time. They excel in showing the following:

- Showing when people actually lived and died in relation to other people.
- Showing if groups of people were alive at the same time.
- Showing people's lives in relation to historical events.
- Showing multiple marriages due to polymogy and/or divorce.

Generation-based visualizations, such as the traditional pedigree chart, ignore time and show generations. Generation-based visualizations help understand who their ancestors were without any time context. They excel in showing the following:

- Showing exact generation ancestry (e.g. my parents, my grandparents, etc.).
- Showing missing holes or gaps in ancestry to help identify missing data.
- Showing an easy to following tree or graph.

Neither time-based visualizations nor generation-based visualizations are "better" than the other. They both help the user understand their family history in different ways.

The purpose of the Family-History Visualization is to ultimately show entire family trees that lived at specific times. It is excels at understanding the history, or narriative, of families. In fact, most of our users have been historians or socialogists trying to visualize a family or groups of families during a specific period of time.

Gedcom vs Family Search

A Gedcom file is a stand-alone genealogical record of a family [3]. In the past this has been the only way to depict our visualization. However, Gedcom files are dated and are not as used like they once were.

One reason for creating the production-quality visualization is to connect it to the Family Search database. We have received a developer key from Family Search and are currently integrating our visualization with their latest JavaScript SDK. We hope to polish the website and become Family Search certified so that anyone that has a Family Search account can use our visualization tool.

Explanation of Visualization Changes

By using techniques introduced by McGuffin and Balakrishnan [4], we have extended our overview to include three generations of family-members in a glance instead of just two. Specifically, when a user brings up a person, it shows all the families that the person was associated with. Generally, this shows their childhood family and all marriages they might have been a spouse. Each family unit nows shows a red circle that depicts if a child in that family had descendants of their own. So, the three generations are: The selected person's childhood family

(one generation), the selected person's spousal marriages (second generations), and if any the children from the spousal marriage(s) had children (three generations).

Through usability testing we eliminated textual details in the visualization by favoring a linked details panel on the side of the webpage instead of putting text in the visualization. We found that users prefer to use tooltips for exploring family trees.

In addition, we added important dates in families, such as the mother and father deaths, divoces, and when children got married.

Lastly, we greatly increased our use of showing "unknowns." For example, we show different colors to depict unknown dates (purple in Figure 1). For instance, if a person is known to have gotten married and had children, but only half of the children's marriages dates are known, we use a color to depict known dates and another color to show estimated dates. (All colors can be changed in the website by the user.) Figure 1 shows a screenshot example of the web-based visualization depicting King George, five generations above him on his paternal life and one generation below him.

Working link: icarus.cs.weber.edu/fhist/apps/FamilyCentricVisualization/index.html

Biographical Statement

Dr. Robert Ball, Joshua Jensen, and Dr. Kyle Feuz are all enthusiastic about software and family history. They all teach in the School of Computing at Weber State University.

References

1. Ball, R. (2017) Visualizing Genealogy Through A Family-Centric Perspective. *Information Visualization Journal*, Volume 16, issue 1.
2. Ball, R. and Cook, D. (2014) A Family-Centric Genealogy Visualization Paradigm. In *14th Annual Family History Technology Workshop*. Provo, Utah.
3. GEDCOM. https://en.wikipedia.org/wiki/GEDCOM. Wikipedia article.
4. McGuffin, M.J. and Balakrishnan, R. (2005) Interactive visualization of genealogical graphs. In Proceedings of *IEEE Symposium on Information Visualization, 2005*.
5. Plaisant, C., et al. (1996). LifeLines: Visualizing Personal Histories. In Proceedings of the *SIGCHI Conference on Human Factors in Computing Systems 1996.*