Analysis and Visualisation of Complex Familial Relationships in Greek Mythology

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Abstract:

Family relationships in Greek myth are currently displayed graphically using conventional genealogical chart structures (e.g. Gantz 1993; Smith & Trzaskoma 2007; Fowler 2013). Such family trees privilege genetic models of inheritance rather than the messier intersections between human beings observable in actual family units; certainly they do not easily accommodate the complexities of mythic data. Although some attempts have been made to represent complex family relationships, e.g. polygamy (Hott et. al. 2018) and divorce/remarriage (Kim et. al. 2010), none is able to capture the instances of autochthony, parthenogenesis, and non-standard birth that occur in the Greek mythic storyworld. In addition, this tradition is rife with incest, intergenerational relationships, uncertainty and contestation, which likewise are not easily communicable.

This project uses data from MANTO, an expertly-curated relational dataset of entities with stable LOD identifiers from Apollodorus' *Library* and *Epitome* (2nd c CE). MANTO seeks to communicate the Greek storyworld as a cohesive (which is not to say necessarily *coherent*) web of interactions between places, people, objects and events. This project creates out of MANTO's genealogical ties, an authoritative list of mythic agents and collectives (a new LOD dataset) with references to the ancient source material via CTS URNs, accessible through a public web interface. Users will see "filecards" listing the immediate family members of Greek gods and heroes, and dynamically-generated graphs ("family trees") that visualise these relationships. These graphs will show the standard genealogies of these entities but will also draw attention to the relationships that are unusual. As a result, this interface juxtaposes the visual representation of these relationships with the source material in a way which highlights the more complex genealogical elements of Greek mythology.

The graph visualisation techniques used in this project are inspired by existing multipartite directed acyclic graph layout algorithms rather than the simple tree-based approaches used in more traditional genealogical representations (see Graham & Kennedy 2010 for a review). We analyse existing graph visualisation software such as D3JS and Legacy 9, and graph data formats such as GEDCOM and GraphLib for their effectiveness in communicating relational complexity, and various force-directed and hierarchical graph layout algorithms for their 'readability' by users familiar with existing genealogical diagrams. The pros and cons of these approaches are used as inspiration for the creation of a bespoke graphing tool that contains additional interactive elements for the user to explore the relational complexities.

This project's graphical language is more than just a useful tool for understanding and exploring the Greek mythic tradition; it will reveal the ways in which identity is bound up in

interactions between family members while revealing the gaps inherent in traditional conceptions of genealogy. We exist in a world in which artificial insemination, adoption, polyamory, and blended families are facts of life, and in which cloning and genetic modification are on the horizon. Conventional family trees are too narrowly constrained by linear, hierarchical conceptions to display the complexity of how human lives intersect one another, and this project explores new ways to address these challenges.

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