

Living on the Hyperedge: Using *Brucheion* to Produce Digital Scholarly Editions as Hypergraphs

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The modelling of textual transmission lines as directed acyclic graphs, called stemmata, intimately connects the fields of textual criticism and graph theory. This paper argues that, despite this historic connection, advances in graph theory have not yet been widely implemented in the research of textual transmission and are underutilised. It showcases the *Brucheion* virtual research environment (VRE), which was developed by the author to produce and manage data that can be modelled more accurately as hypergraphs.

Brucheion also addresses other challenges faced by scholars producing digital scholarly editions (DSE), including: (1) the distributed state of the witnesses and editions, (2) the availability of copyright-protected material, (3) which character encodings and writing directions are supported by their VRE, and (4) modelling the transmission itself (traditionally the stemma). The VRE addresses these challenges, by (1) managing distributed material in collections that (2) can even include copyright-protected material and by (3) supporting Unicode natively and both left-to-right and right-to-left language editing. It also (4) enables an arguably better model for textual transmission by exploiting linked data and the distributed web. More precisely, *Brucheion* produces data that can be used to model a DSE as a bipartite hypergraph, where multiple information nodes are connected through hyperedges; essentially forming subsets of nodes. This is particularly important when dealing with complex manuscript transmission lines where the connection of a (hypothetical) manuscript set $\{A, E, R\}$ to a text O is a more accurate model than the individual connections $\{A, O\}$, $\{E, O\}$, and $\{R, O\}$ or the construction of a hyparchetype. Arguably, the hyperedges provide a more flexible way to model relationships between manuscripts, but they can also shift the focus from individual manuscripts to the effect a certain time, place, copyist, printer, or scholar had on textual transmission lines and thereby enable serendipitous findings.