# BESHERO-BONDAR — Worldview

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# World-View from Poetic Structure: An ‘Anti-Social’ Network Analysis of Robert Southey’s and Eramus Darwin’s Epic Poems

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This paper applies network analysis to study literal and analogical relationships in literary texts, exemplified in annotated epic poems. The method is dubbed ‘anti-social’ because it screens out information about characters in order to study how texts reference places, because human readers tend to screen out complex information about places while attending to characters and their social interactions. Rather than plot a geospatial spread of places, the network analysis plots ‘closeness’ and ‘distance’ through closeness centrality measures, and studying which places are most frequently correlated in lines and stanzas of poetry and their footnotes. The network illuminates a text’s worldview by correlating its mythical and geographical places, and by distinguishing between literal and analogical place references. Network graphs will be plotted from Robert Southey’s ‘Thalaba the Destroyer’ (1801) and Erasmus Darwin’s ‘The Temple of Nature’ (1803), both encyclopedic and planetary in their scope, to compare the imagined world-view projected in each.

# Revised Proposal

The sociological roots of network analysis from the 1920s to the 1950s strongly assert themselves in contemporary digital humanities projects, which often deploy network graphs as a way to view human beings as aggregate particles based on broadly defined parameters of shared context.1 We in humanities fields have not tended so frequently to apply network analysis in the ways that biologists do, to illuminate interactions across small-scale structural units of a complex system, as, for example, the plotting of molecular interactions in protein synthesis.2 Nevertheless, digital humanities has welcomed borrowings from the biological sciences, such as Matthew Jockers’ ‘19th-Century Literary Genome’, designed to chart networks of literary influence from about 3,600 novels on the basis of topic modelling and stylometric measures, though as Jockers observes, the patterns of influence he models are ‘impossible’ to prove, despite the quantitative basis of his analysis (Jockers, 2012). Jockers’ work with prose corpora of thousands of texts must necessarily screen out formal complexities and microhistorical contexts in order to build a basis for comparison on a macro scale. By contrast, Franco Moretti’s intratextual network graphs of Shakespeare’s plays in *Distant Reading* (2013) have prioritized human interactions or the interactions of fictional characters, evoking in literary microcosm the macro-analytical scale of social network theory. Both approaches—macro and micro—are risky in literary studies: Either we strip network theory of its statistical significance to plot character dynamics in small scale, or we potentially overstate statistical significance in our plotting of literary graphs based on social network theory. By contrast, biologists who apply network statistics to study information exchanged between distinct molecular units work closely with cellular structures in a finely tuned model of close reading and locational analysis that might benefit a structurally grounded literary scholarship.

Inspired by the methods and tools of biological network analysis, I propose an alternative, pointedly ‘anti-social’ approach to networking spatial references in complex poetic forms. Unlike Moretti’s approach to literary networks, my investigation screens out characters and concentrates on the proliferation of place references connected by analogy and juxtaposition in annotated epic poetry. Though literary forms are not, of course, as complicated as biological structures, they nevertheless benefit from the combination of both micro- and macro-analysis built from XML markup and statistically processed to measure patterns of distance and proximity of prolific references that are difficult for human readers to trace without assistance. This paper’s ‘anti-social’ network analysis treats poems as structures designed to network concepts together, so that analogy and metaphor constitute a kind of edge that links nodes together in correlations and juxtapositions that give poetic language a distinctive conceptual structure.

My networks are drawn from scholarly encyclopedic long works of late 18th- and early 19th-century poetry by Erasmus Darwin and Robert Southey, poems that responded to an Enlightenment ‘Information Age’ to compile from voyage publications and travel narratives a knowledge base of the world’s places, cultures, species of life, and properties of nature. Southey’s ‘Thalaba the Destroyer’ (1801) and Darwin’s ‘The Temple of Nature: Or, the Origin of Society’ (1803) represent a poetics that modelled world-systems in layers, studying plant physiology in context with human belief systems, and incorporating empirical observations and experiments with speculative juxtapositions of ideas from the microcosmic to the macrocosmic, from the pollination of plants to the evolution of species.3 The complicated structural machinery of Southey’s and Darwin’s epics challenges readers now perhaps even more than readers at the turn of the nineteenth century. Without systematic computational assistance, our efforts to ‘read’ these poems might well expose us in our twenty-first-century weakness: we cannot easily assess their elaborate interplay of contexts, their investigative reading of a centuries-old archive of records on cultural encounters, their blending of ancient and contemporary sources from voyage logs and travel narratives. To examine such poems as a kind of relational database, considering their structural components—books, stanzas, prose notes, and scholarly apparatus—benefits from the methods and measurements of network analysis.

The hybrid or composite constructions of poetry with frequent prose appendages (or extensive footnotes) was especially marked by the late 18th century in the elaborate scientific poems of Erasmus Darwin and the historical-cultural-mythopoetic syntheses of Robert Southey. Gerard Genette has theorized the paratext as transactional with readers, a boundary of exchange, and as such in the complicated long poems of the early 19th century—with their complex formal verse patterns bordering on prose discourses of authority—the paratext interface is especially challenging to the processing powers of an unassisted human reader (Genette, 1997). As Clare Kinney observes, the formal structures of poetry with embedded prose generate patterns of meaning through ‘cross-referencing of motifs over the spread of a narrative’, but the multiplying reference points of such poems from levels of analogy to annotations are very difficult to follow systematically, and scholarship has tended to flatten discussion of such poems to a discussion of main plots and salient ideas without the benefit of systematic study (Kinney, 1992, 13). If we apply network analysis tools to the structure of these complex texts, we might study them as systems of information exchange in a way related to the network plots of cell biologists, and we may thus be able to observe systematically how references to the world’s geographic and mythical places are held together within an ornate literary structure.

The long poems of Darwin and Southey synthesize world-views—visions of the earth as a planetary system—based on comparisons and contrasts between and among places referenced in poetic language and prose annotation. Places are not always referenced for geospatial accuracy, but more significantly are layered together by analogy. In long poems that elaborate upon non-European cultural contexts through place references to Arabia, Persia, Malaysia, Polynesia, China, and Peru in both main text and paratext, we can examine how these places are patterned by relation to each other in the British global and imperial consciousness of these poems. We can plot with network graphs which analogies—which locations—are most frequently referenced together as measure of ‘closeness centrality’. We can also see which locations are plotted remotely, many path steps removed from centrally plotted locations and with few comparative reference points, and thus mark what places are outlying and remote on the imagined horizons of a world of locational and cultural associations.

To produce an ‘anti-social’ network of locations in these long poems, I have begun with structural and contextual markup in TEI, to collect place references and their positioning within main text line groups and within paratext notes. After extracting this place data and its precise structural position within the poems systematically using XSLT and XQuery, I work with Cytoscape’s tools for network visualization and statistical analysis, originally designed for microbiology, to produce network graphs and tables of statistical information that indicate patterns of relatedness across complex structural units of texts. My project investigates the following questions:

a. How can we study the way complex literary texts layer and cross-reference places by analogy with each other?

b. Can the TEI’s (and XML’s) structural and contextual markup be productively deployed in literary studies to study networks of correlated concepts?

c. In correlating concepts of place in a long scholarly epic, what patterns can we see in networking geographical with mythical places—that is, place connections that cannot be literally mapped with latitude and longitude coordinates but that nevertheless help to construct an imagined topography for readers of poetry?

d. Can we apply the statistical measurement tools of network analysis—stepwise distance between nodes and closeness centrality—to understand how geographic and mythic places are linked by ‘closeness’ and ‘distance’ conceptually, not just geographically?

At the time of drafting this proposal I have begun an ‘anti-social’ networking study of Southey’s ‘Thalaba the Destroyer’, a 12-book epic poem with especially prolific annotations and complex place-time referentiality. To survey the work in progress, please see my project site http://ebeshero.github.io/thalaba/. An early record of the project, designed to introduce students and literary scholars to network analysis, appears on my blog, http://digitalromanticist.wordpress.com/2013/08/23/spectacular-intersections-of-place-in-southeys-thalaba-the-destroyer/.

**Notes**

1. For example, see the Six Degrees of Francis Bacon (http://sixdegreesoffrancisbacon.com/) and the Kindred Britain (http://kindred.stanford.edu/#) projects, drawn from the Oxford Dictionary of National Biography to map human relationships spanning centuries.

2. See, for example, the network visualizations used to predict probable locations of proteins produced by the Washburn Lab and Proteomics Center: http://research.stowers.org/proteomics/ProtNetAnal.html.

3. On the scientific bases and the layering and juxtapositioning of worldviews in these poems, see Fara (2012) and Smith (2010). On Southey, see Majeed (1992). See also Porter (2011), which addresses how Southey’s commonplace book documents a systematic use of Enlightenment scientific methods to collect evidence of cultural patterns that he would apply in his long poems. Without using computational methods, however, neither Majeed nor Porter can study how those patterns were plotted in the long poems within the space of a chapter or an article.

**References**

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