

From Atoms to Eternity: Visualizing Space and Scale in Emily Dickinson

Lang, Anouk

anouk.lang@ed.ac.uk

University of Edinburgh, United Kingdom

Digital humanists who use spatial technologies have found common ground with scholars in geography who have, for some decades, been engaged in problematizing the positivistic assumptions such tools rest on, and conceiving alternative practices for using these technologies as a means of “understanding people’s lived experiences in an interpretive manner rather than for conducting spatial analysis that relies largely on quantitative geographical information” (Kwan and Knigge 1999). Cross-disciplinary collaboration in the spatial humanities thus offers the opportunity to repurpose digital mapping applications for humanistic ends and interrogate the assumptions underlying these tools.

This paper takes up this challenge by considering how digital tools for identifying and visualizing place, size and scale might be used to simultaneously understand and defamiliarize the workings of spatiality in the poems of Emily Dickinson. Dickinson is an apt writer with which to conduct such a study, as her poems are almost completely unmappable in conventional cartographic ways: they are almost entirely devoid of specific geographical references, but many are preoccupied with literal and metaphorical space and her work is suffused with a vocabulary of scales, sizes and spatial contrasts. As Helen Vendler observes, there is “an almost illimitable set of templates” on which Dickinson maps her poems, including “a circular geometry of center, circumference, and the ‘spokes’ connecting them”, “a vertical scale extending from ‘under the beetle’s cellar’ to the stars” and “a horizontal scale extending from the East of dawn to the West of sunset”, with Dickinson disorienting the reader by mapping these templates over the top of each other, and “leap[ing] from plane to plane” (10). These leaps and shifts between different scales are a key part of the poems’ metaphorical resources as they explore abstract themes such as existentialism, human attempts to access the numinous, and the relationship between the human and animal worlds.

To visualize space and scale in Dickinson’s work, I began with a collection of poems in which scale and space were thematically prominent, and in which there was a move from one scale to another. Using a log scale from 10 pm through to 10^{15} m , I distributed the various entities mentioned in the poems across it, designating for example 10 pm as roughly equivalent to “an Atom” (–11 on the axis), 100 km as “the sea” or “the skies” (as seen from the ground; 12 on the axis), and 10^8 m as “the firmament” (8 on the axis). I then plotted each poem according to where each line or half line fell on the scale, producing visualisations such as figure 1 below. Creating these plots is, obviously, a highly interpretative process, and would vary from one reader to the next, but the role of the poetic interpreter in computational poetic analysis is part of what this project seeks to explore.

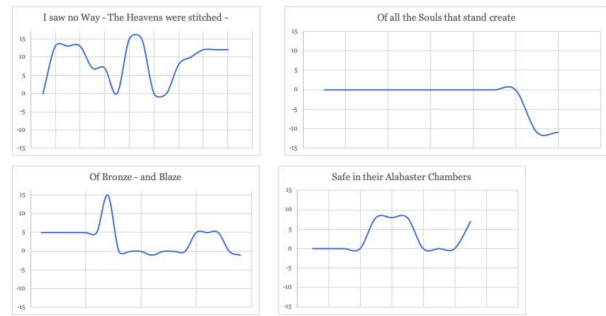


Figure 1: Four of Emily Dickinson’s poems plotted according to shifts in scale

There are three key challenges here for the spatial humanist. The first is finding visualisation methods that can encompass the dramatic differences in scale from “the Atom” to “the Universe” that can be contained in a single short poem. The second is finding a visualisation method capable of registering and visualising the often vertiginous *shifts* in a poem between these scales dynamically, ie. to give a sense not just of scale but of the movement between them that occurs in a poem. The third challenge is to ascertain the analytical utility in visualising these poetic shifts. What are the opportunities offered by collaborative efforts to engage spatial technologies to better understand Dickinson’s poems, given that they so obviously resist being tied down to quantitative scales? In presenting visualisations such as these, which give no meaningful quantitative information but instead allow an instant grasp of the shape of Dickinson’s swoops and plunges between scales, I seek to make an argument both about the way such shifts provide Dickinson with the metaphorical resources to represent and interrogate of existential themes, and also to address the wider question of how computational approaches might be used in the study of poetry, and whether the costs that such collaborative efforts involve—labor, environmental, and more—are worth the opportunities they present to scholars of poetry. One possible answer to the question of analytical utility is that approaches like these might be able to function as a Turing test of sorts for text generated by machine learning methods, ie. to see whether a model trained on Dickinson’s corpus might be able to replicate this kind of “spatial extravagance”, given that she expresses it using words such as “eternity” and “dip” that do not necessarily connote space or distance. The initial “training set”—gathered through domain expertise of poetry more generally rather than a close knowledge of all of Dickinson’s extensive oeuvre—allowed me to gather a vocabulary of words with which to search the entire corpus of Dickinson’s poems for other examples, so there is also the potential for such approaches to be used for discoverability.

Finally, I used this list of terms in conjunction with the Women Writers Vector Toolkit (<https://wvp.northeastern.edu/lab/wwvt/>), an offshoot of the Women Writers Project (WWP), to explore whether a word embeddings model could find terms that, to a nineteenth-century audience, might have connoted space, scale and shifts between them, and thus obtain further words with which to query the Dickinson corpus. This represented the opportunity to collaborate, so to speak, with the experts and scholars who built the WWP word embeddings model. The WWP corpus is, of course, built from fiction texts rather than poetry: any equivalent poetry corpus would not be sufficiently large for machine learning analysis. This part of the project was useful in suggesting how portable the lexical patterning around space and scale in one genre (longform literary fiction published mostly in Britain) was when applied to another genre (poetry written in the United Sta-

tes): while there are clear generic differences between these two genres, a model trained on pre-twentieth century literary fiction would seem to be a better match than a one trained on vast databanks of text harvested from the twenty-first century internet.

Bibliography

Kwan, Mei-Po / Knigge, LaDona (2006): “Doing qualitative research using GIS: An oxymoronic endeavor?”, in: *Environment and Planning A* 38, 11: 1999-2002.

Vendler, Helen (2010): *Dickinson: Selected Poems and Commentaries*. Cambridge, MA: The Belknap Press of Harvard University Press. DOI: 10.1068/a38462.

Women Writers Project. Women Writers Project, Northeastern University, 1999–2022 <https://www.wwp.northeastern.edu> [2.11.2022].