

# Northumbria Research Link

Citation: Richardson, Andrew (2019) Mapping The Prelude: A Visualisation of Wordsworth's Poetry. In: IEEE VIS 2019 Arts Program 'Beyond Borders', 21-25 Oct 2019, Vancouver, BC, Canada.

URL: <https://visap.net/> <<https://visap.net/>>

This version was downloaded from Northumbria Research Link:  
<http://nrl.northumbria.ac.uk/id/eprint/41371/>

Northumbria University has developed Northumbria Research Link (NRL) to enable users to access the University's research output. Copyright © and moral rights for items on NRL are retained by the individual author(s) and/or other copyright owners. Single copies of full items can be reproduced, displayed or performed, and given to third parties in any format or medium for personal research or study, educational, or not-for-profit purposes without prior permission or charge, provided the authors, title and full bibliographic details are given, as well as a hyperlink and/or URL to the original metadata page. The content must not be changed in any way. Full items must not be sold commercially in any format or medium without formal permission of the copyright holder. The full policy is available online: <http://nrl.northumbria.ac.uk/policies.html>

This document may differ from the final, published version of the research and has been made available online in accordance with publisher policies. To read and/or cite from the published version of the research, please visit the publisher's website (a subscription may be required.)

# MAPPING THE PRELUDE: A VISUALISATION OF WORDSWORTH'S POETRY

**Andrew Richardson**  
Northumbria University  
Sandyford Building  
Newcastle-upon-Tyne  
NE1 8QE  
andrew.richardson@northumbria.ac.uk

## **Abstract**

Mapping The Prelude is an investigation which explores the potential for a creative code-driven approach to re-locate Wordsworth's epic autobiographical poem, The Prelude, in the context of the wider geographic landscape which informed and inspired his work. Situated between disciplines of creative data manipulation and digital humanities, the project begins to examine novel ways to re-map the 'landscape' of a literary text in relationship with its wider geospatial data: exploring the border area between literary and geographic spaces and creating new encounters of each. This annotated portfolio outlines the work produced during the investigation and considers areas of future research.

## **Authors Keywords**

Poetry, Visualisation, Text, Literature, Mapping, Walking, Geospatial, Computation.

## **Introduction**

The project emerged from a cross-disciplinary symposium hosted by the Wordsworth Trust, which brought together artists, designers and academics to examine the work of the poet William Wordsworth and in particular, his special connection to the landscape of the Lake District. Wordsworth regularly walked the paths and mountains around his home in Grasmere, using the landscape both as a source of inspiration and a place of poetic composition. The Prelude is one of the poet's most famous works, written over several years of his life, and gives an account of his life and his development as a poet. The Wordsworth Trust holds a number of original manuscripts and notebooks of the poem, which show its compositional journey as it underwent revisions and edits over many years. Visualising the connection between the physical landscape as a place of poetic composition, and the poem as a landscape of 'pathways' which express the writer's own creative journey formed the inspirational foundation for the work.

The investigation explored a variety of approaches and produced a range of novel data-informed textual environments and encounters across screen, print and interactive media. Outcomes from the project have been shown in a variety of public exhibition and academic settings [1].

Although creatively driven, the work has a wider value beyond visual experimentation, and continues to inform ongoing investigations exploring new applications of technology for visualising spatial relationships within literary texts. The work currently forms part of a multidisciplinary research project examining possible new ways of mapping and visualising fictional landscapes across a wide range of texts.

## Background

Literary mapping is a growing area of interest in digital and spatial humanities in which digital tools are created and used for close and distant study of literary texts; many of these employ scientific models of word analysis to process and generate visualisation of poems or prose based on internal document features e.g. word usage or word count [2]. They are often used by academics and specialist literary experts [3]. With the growing accessibility of digital technology, the field has begun to explore a wider range of digital tools which offer broader contextual information into the reading of literary texts. For example, there is a growing use of geo-located data to map specific place names mentioned within poems or novels to specific locations and this is used

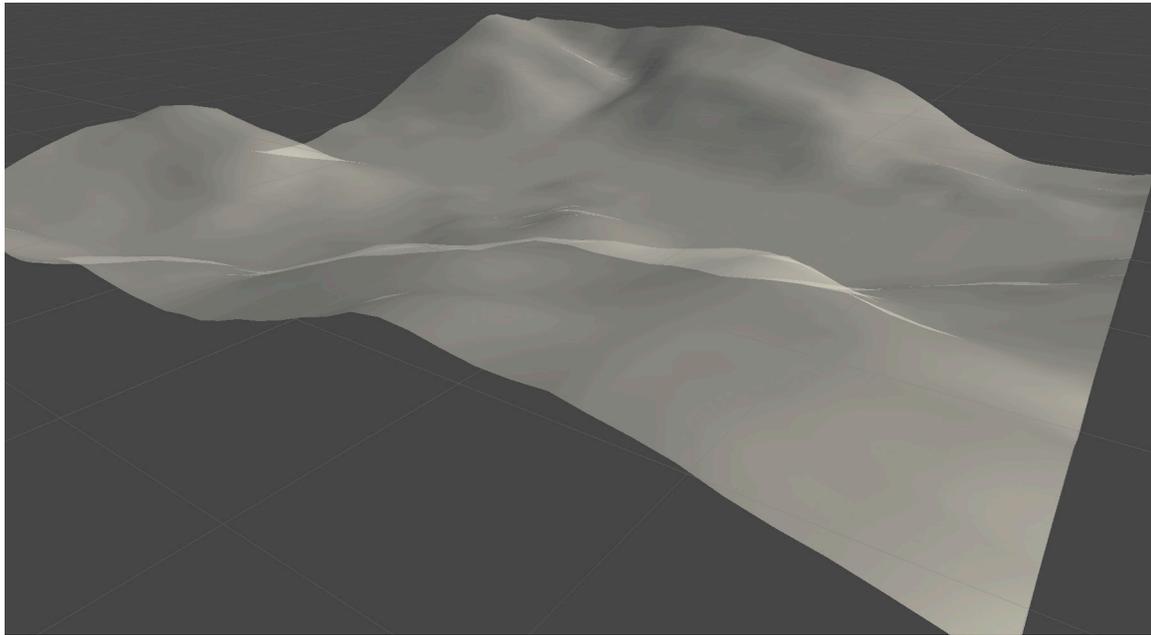


Grasmere, the landscape around Wordsworth's home.

to generate 'literary maps' of the narrative [4]. These digital processes have opened up avenues of enquiry and research into new ways of 'mapping' texts [5].

Other approaches to textual visualisation employ more 'traditional' data visualisation models to create diagrammatic representations of the structural elements in a text [6]. There is also a history of a creative exploration for visualisation of texts which explore the process of applying visual attributes, e.g. colours, shape or form to represent internal textual properties and structures. There have been a number of artists and designers who have done some very interesting and significant work exploring this field [7, 8, 9].

The experiments in this work seek to combine elements of these different approaches by using creative code-based methods for new ways of visualising the text - whilst also looking beyond the text as the sole data source, seeking to relocate it in a wider geospatial context. The work acknowledges the broader value of a text as a visual, experiential document; seeing it as something connected to a wider spatial context and explores creatively informed methods to re-locate words with wider geospatial data set, to create data-enriched visual representations of the text as a 'landscape'.



### Data Sources

A range of text and spatial data sources were gathered and explored through the development of the project. Text of Wordsworth's poem, including from notebooks, was extracted and formatted as XML data. Geospatial data was extracted from online sources as well as from data recordings of walked routes and journeys.

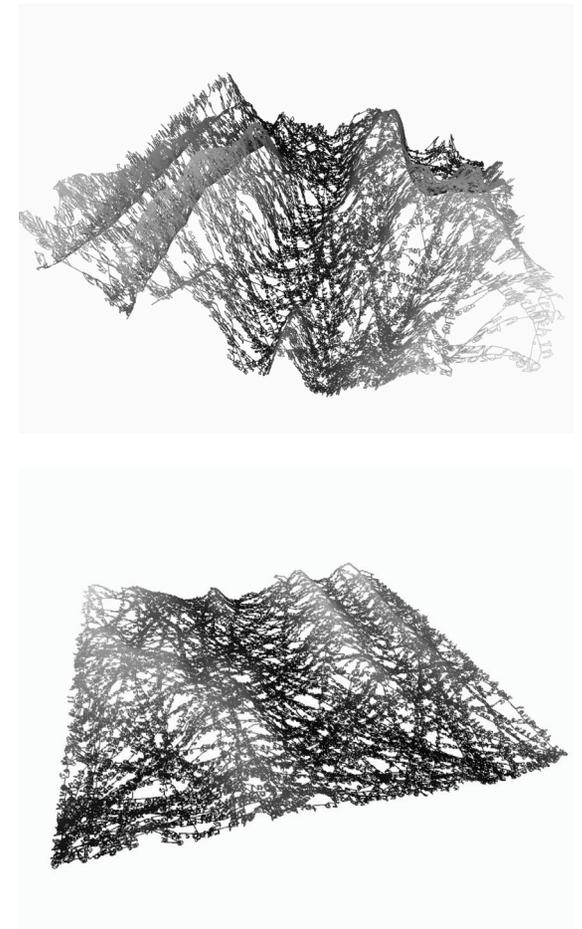
### Text of The Prelude (XML)

Wordsworth's epic autobiographical poem, *The Prelude*, details his journey as a poet beginning from his home in Grasmere. Source text of the full fourteen book version of the poem, transcribed into an XML format (not, at this point, using the Text Encoding Initiative guidelines), provided

the base text for each of the investigations. Transcription into XML was undertaken as part of the investigation process, and provided a useful way to develop the 'data' of the poem - creating access to the internal hierarchical structure elements of the poem, as well as the textual details i.e. words, stanzas, line length etc.

### Terrain Data of Grasmere

Terrain data detailing the topology of the landscape in and around Wordsworth's home in Grasmere was extracted from Google Earth data. The original geospatial (latitude, longitude and elevation) values were converted and exported as lists of screen (XYZ) coordinate grid values. These were used as the base layer (the 'canvas') onto which words could be mapped.



Above: Early development examples of experiments re-locating text onto the 'canvas' of landscape data.

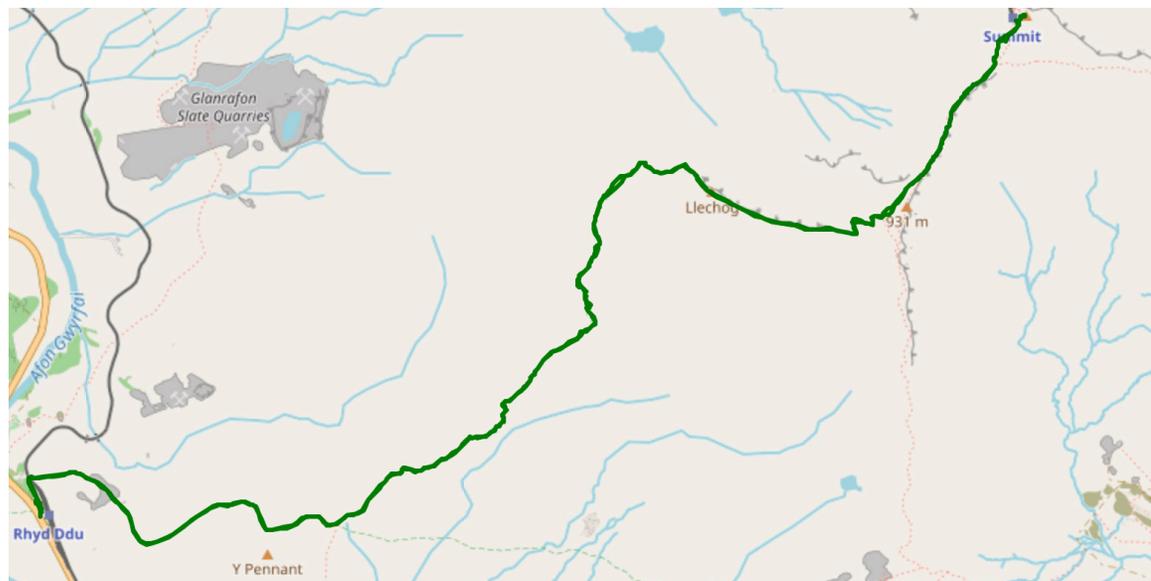
Top Left: A 3D terrain map of the landscape of Grasmere, used as a data base layer for the text.



## Ascent of Snowdon (GPX)

In addition to the broad topology of Grasmere, which describes Wordsworth's broad association with the Lakeland landscape, a specific mountain pathway journey was used as an additional data source.

The poet's dawn ascent to the summit of Snowdon, described in detail as a key event in *The Prelude*, was re-created by a research team including academics and Wordsworth experts. This 'experiential' data recording of the ascent, literally following the poet's footsteps, was recorded, the data extracted as GPX points and used as a base spine onto which text elements could be mapped.



Above: Following the poet's footsteps up Snowdon.

Top Left: Reading from *The Prelude* during the climb to the summit.

Left: The GPX data mapping the route of the ascent.

## Manuscripts and Notebooks

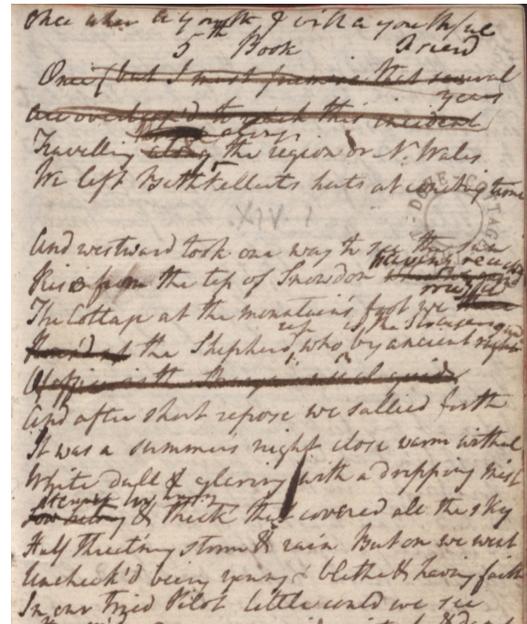
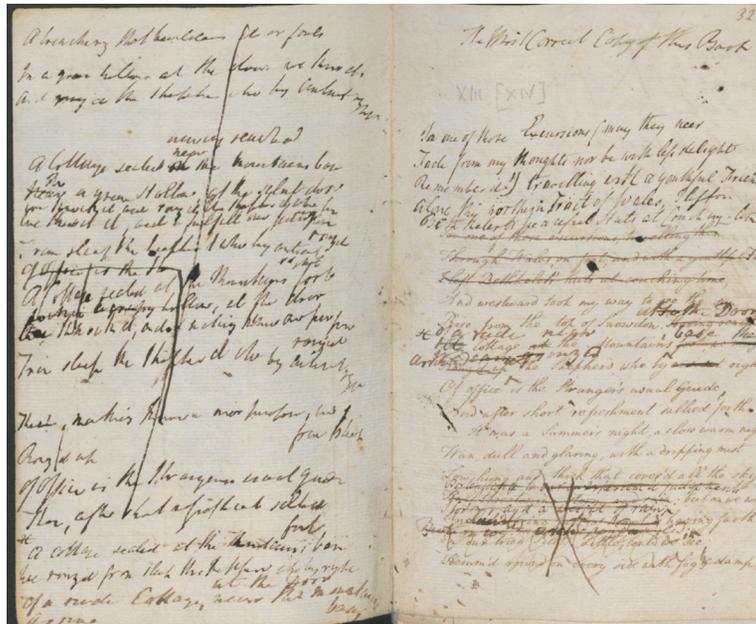
Sampled extracts from The Prelude which detail Wordsworth's account of his ascent of Snowdon, were sourced from the poet's original manuscripts and notebooks.

Detailed XML formatted transcriptions of the manuscript were created to provide a more complex, layered data source, showing details of the annotations changes and additions made by the poet to the poem during its creative compositional 'journey'. Changes were recorded that occurred both within a single manuscript, and across different note books, as the poet continually revised and rewrote the poem during his lifetime.

```

46 <version>
47 <poemLine id="1">
48 <branch><aside wc="0" comments="5th Book">Once, but I must premise that several</aside>
49 years</branch>
50 </poemLine>
51
52 <poemLine id="2">
53 <branch><aside wc="0" comments="difference between versions">Are overleap'd to reach this
54 incident</aside></branch>
55 </poemLine>
56 <poemLine id="3">
57 <branch>Travelling <aside wc="1">Nalong</aside> the region of North Wales</branch>
58 <branch><note>Nthrough</note></branch>
59 <branch><note>along</note></branch>
60 </poemLine>
61 <poemLine id="4">
62 <branch>We left Bethkeleerts huts at couching time</branch>
63 </poemLine>
64 <poemLine id="5">
65 <branch>And Westward took our way to see the sun</branch>
66 </poemLine>
67 <poemLine id="6">
68 <branch>Ris'ning from the stop of Snowdon. <aside wc="6">NWhen we gaine'd</aside></branch>
69 <branch><note>e from</note><note>having reached</note></branch>
70 </poemLine>
71 <poemLine id="7">
72 <branch>The Cottage at the mountains foot we <aside wc="7">Nthere</aside></branch>
73 <branch><note>rouzd</note></branch>
74 </poemLine>
75 <poemLine id="8">
76 <branch><aside wc="0">Roused up</aside> the Shepherd/N who/N by antient <aside
77 wc="7">right</aside></branch>
78 <branch><note>up</note><note>is the Strangers guide</note></branch>
79 </poemLine>
80 <poemLine id="9">
81 <branch><aside wc="0">Of office is the strangers usual guide</aside></branch>
82 </poemLine>

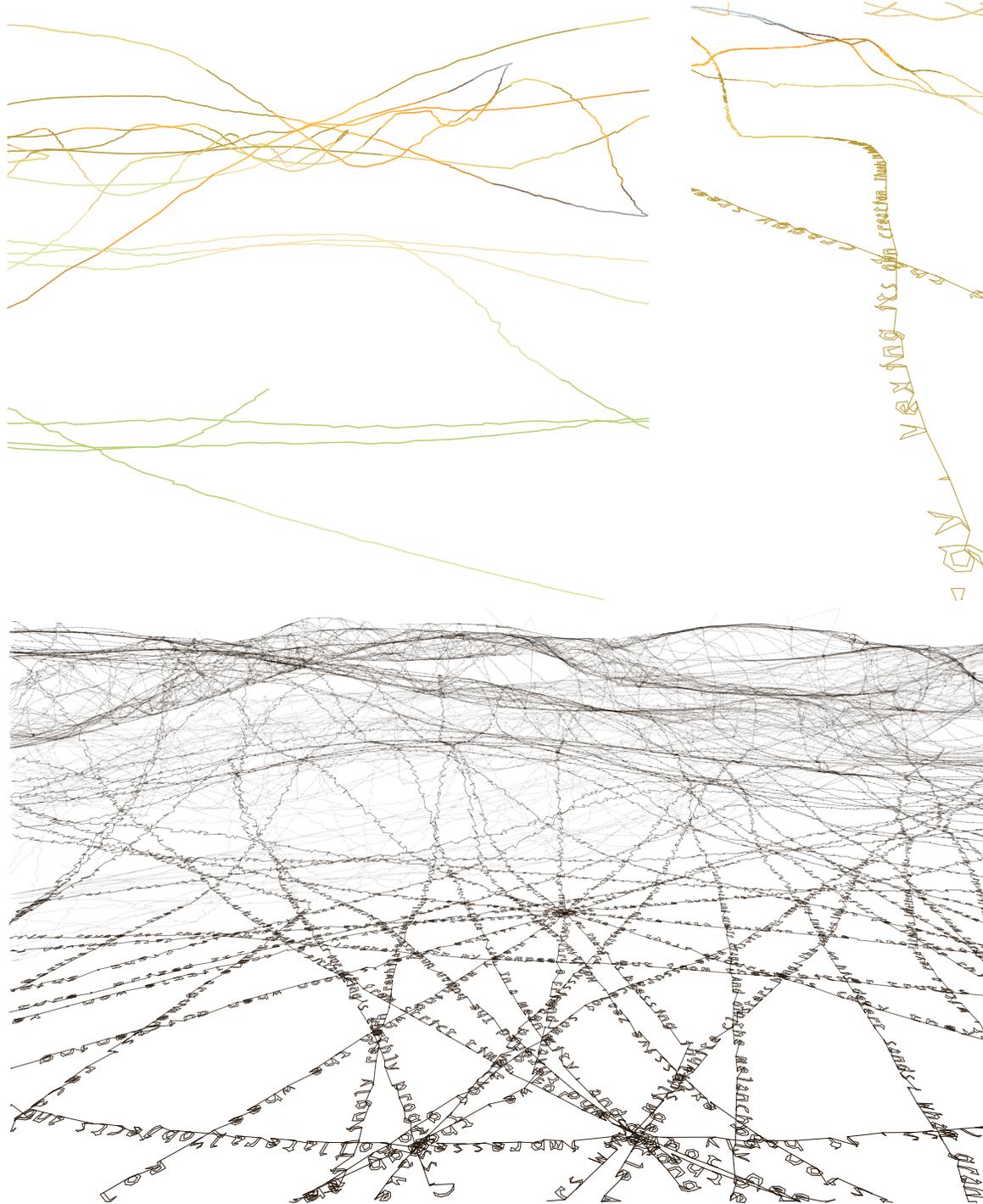
```



Above: A sample of the XML transcription of The Prelude. 'Branch' tags indicate changes to the source text.

Far Left: William Wordsworth. Manuscript 'MS A' 'Most Correct Copy' of the Snowdon ascent (1805) by permission of The Wordsworth Trust

Left: William Wordsworth. Manuscript 'MS W' Early draft of the Snowdon ascent (early 1804) by permission of The Wordsworth Trust



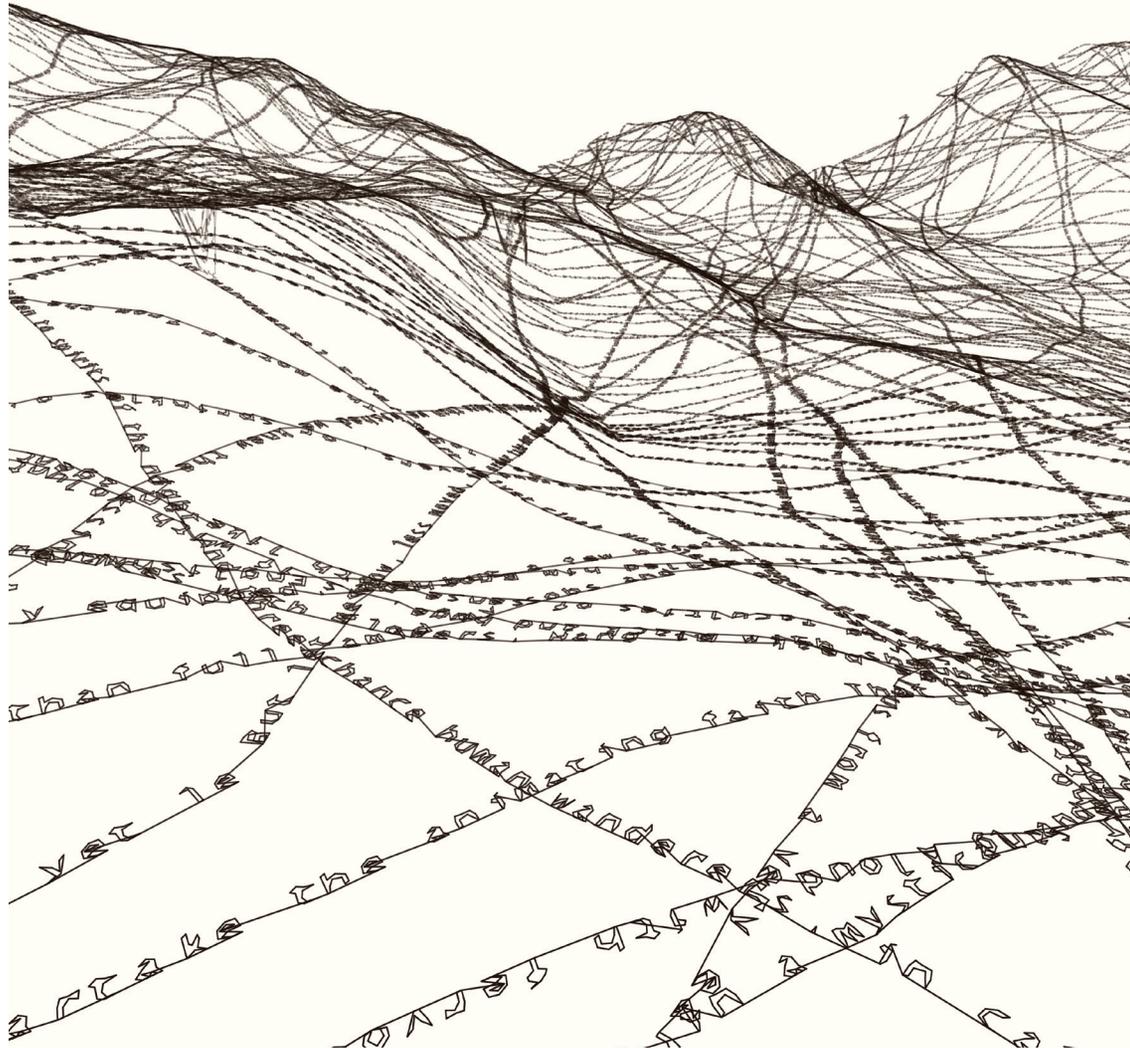
## Method

Text and spatial data sources were fused and combined so that each could inform the other. Words and letters were individually re-mapped and re-scaled onto a data landscape of geospatial points, to describe and recreate the hills and valleys of the Wordsworth's landscape. Working with data to fuse and generate textual visualisations involved an iterative process of data gathering and creative experimentation, to create sets of visually coherent outcomes. The pieces were built using the Processing environment [10] together with the Geomerative library [11], which allowed details of individual letters, words and typographic shapes to be deconstructed into large arrays of individual points, to be later manipulated by geospatial data.

Fragmenting the text into individual points afforded opportunity for creative data manipulation. Letters are unshackled from their uniform typographic rigidity, into dynamically fluid letterforms which can be re-worked and re-scaled using geospatial data: transformed from words on a page to journeys and pathways describing the landscape of Grasmere.

Top: Experimentations with colour, to change with elevation values.

Left: Text rendered as pathways on the landscape. Each book begins at the same location. The 'resolution' of text is changed with proximity to the camera.



## The Poem as Landscape

A textual terrain version of The Prelude was created by mapping the text of the poem onto the terrain data of Grasmere. Individual letters and words were deconstructed into individual points and generatively drawn onto the '3D canvas' of the landscape.

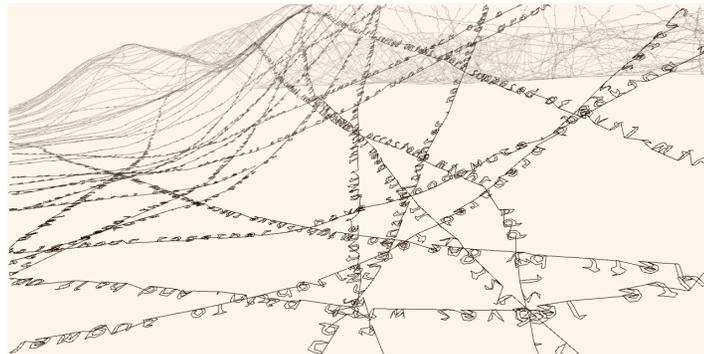
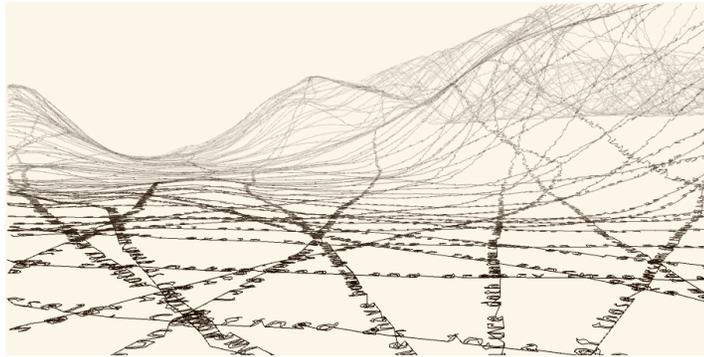
Each of the fourteen books of the poem was visualised as one single continuous line, each starting from the location of the poet's home. The internal textual structural details within each line of the poem (e.g. letter count and line length) were used to determine the direction of the pathway. Geospatial elements were also used to inform other visual attributes of the text - for example the altitude values at each point of the terrain were explored to be used to determine the colour of each letter - adding an extra visual dimension.

The words 'wander' across the hills and valleys, echoing the poet's own compositional wanderings. The landscape becomes viewable as a creative poetic 'journey' in which the words of the poem literally and conceptually describes the terrain. The result gives a new impressionistic view of both the text and the landscape, allowing us to see each in the light of the other - and creating new visualisations and experiences of both.

Left: Sample view of the The Prelude, rendered as a textual version the landscape of Grasmere.

Right: Interactive touch screen application shown in Dove Cottage gallery, Grasmere.

Below: Stills from the interactive 'fly through' of the poem.



### Interactive Terrain Map

An interactive version of the poem allowed viewers to take their own journey across, and through, the landscape of the text, exploring the environment from a number of different perspectives, following an individual line of text as it travels across the mountains and hills.

The touch-screen interface allowed viewers to interact with the map: moving to different points in the landscape, altering the point of view or travelling along an individual path of words. Users were able to view the text either as a top-down fly through or choose to select and follow specific pathways of text. New views of the landscape and the poem are revealed as viewers travel and explore the environment.

The detail and legibility of the text was altered according to the viewer's distance from it. The number of points used to create each letter changed depending on the distance from the camera. Words viewed at a distance were seen as illegible gestural lines; by moving closer the legibility gradually increased until the letters were rendered as a detailed typographic form, adding a sense of 'perspective' to the image.

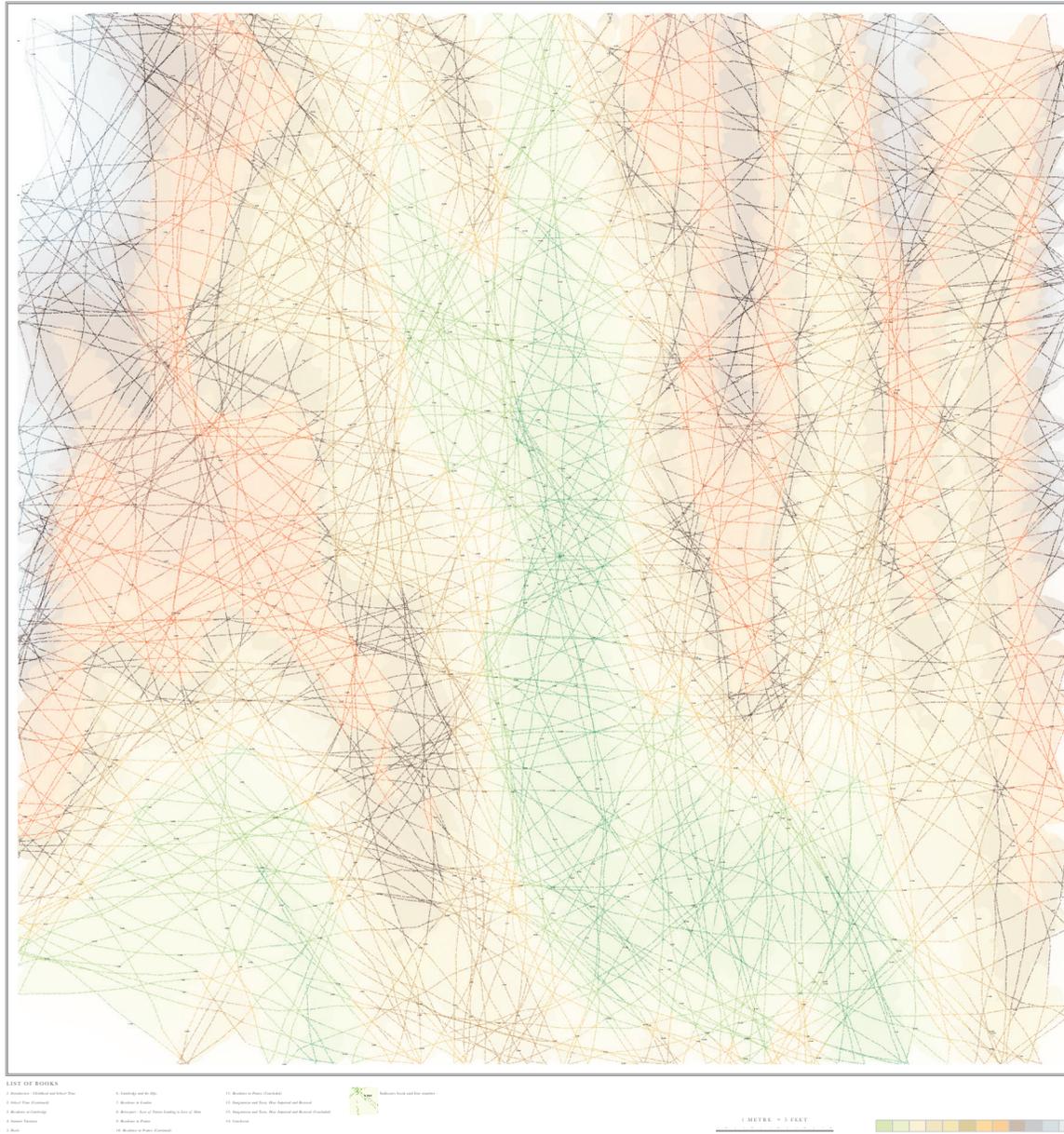
## Printed Walking Map

The landscape of text was subsequently visualised from a single top-down perspective to create a single large 'walking map'. Each letter point was assigned a colour according to its elevation on the map using values aligned to those used on a typical 'ordnance survey' map of terrain. Details referencing the book number and line number of the poem were computationally added at regular points in the poem as literary 'waypoints'. The top-down landscape of letters was exported as a single image and folded into a map-style format. This walking map visualisation presents another new perspective on the poem, offering a way of reading and experiencing it which is different to that of the screen-based terrain.

Right: The poem rendered into walking-style map format.

Below: Text details from the printed map.

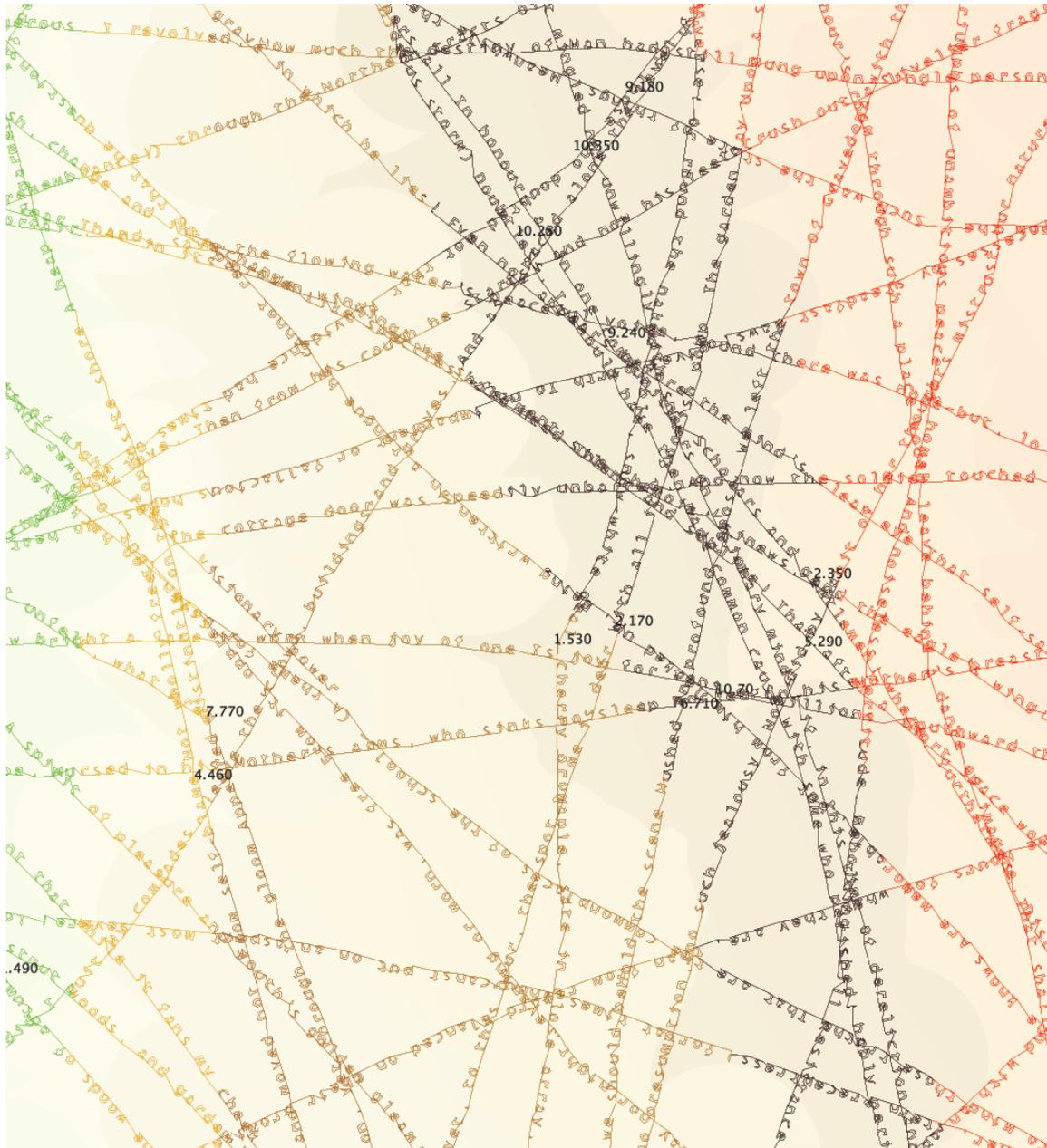




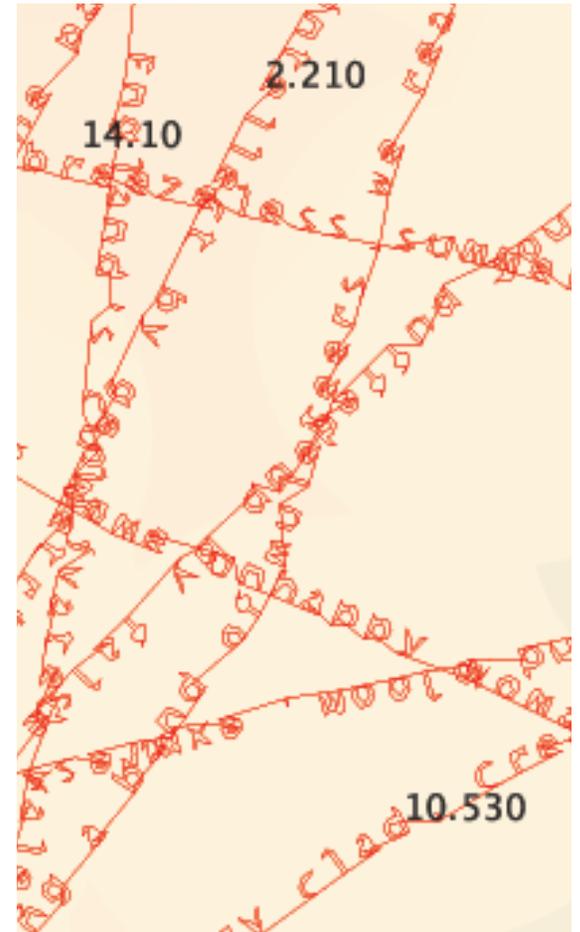
The 3D pathways of text mirror the idea of exploration by creating an experience of the poem as a journey, encouraging users to explore and read sections of the poem as they interactively 'wander' across the hills and valleys of the landscape. The physical printed walking style map, in contrast, presented the same source text from a single 'birds eye' perspective, allowing users to see the entire text in a single glance, inviting a broader visual experience of the whole poem. Closer inspection of the lines criss-crossing the map reveal the detail of each of the lines and words of the poem mapped across the Lake District terrain.

Visualising The Prelude in the form of a traditional walking map re-enforces the significance of the walked landscape to the composition of the poem, and allows viewers to see and read the text in the context of Wordsworth's own relationship to the landscape of Grasmere. Not only is it a new map of the poem, but it is also a new map of the landscape, offering a unique way of seeing the terrain as a series of compositional pathways created from the poet's own words.

Left: The entire map of the poem printed as a single image walking map format, with a key reference to height, book and line references. The colour illustrate the hills and valleys around Wordsworth's home.



Left and Below: Close-up details of the text from the map.  
Text is created as single, continuous lines drawn as pathways.  
Number values reference the book and line number within the poem.

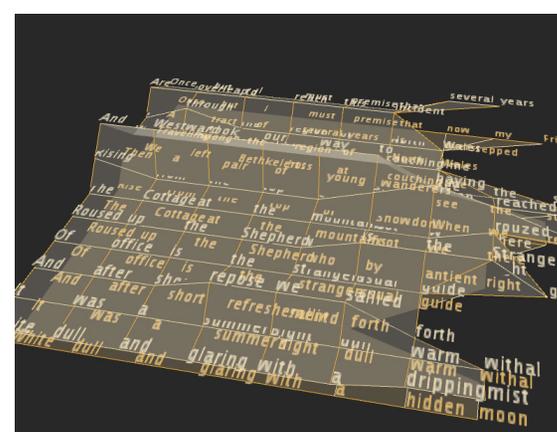


Are overlaid reach this incident several years  
 Once but must premise that now my friend  
 And Westwardk our way to North Wales having reached  
 Travelling the region of Snowdon when we  
 Risen left pathless way to see the  
 And Westwardk our way to Snowdon by there  
 Rise from the top of mountain right  
 The Cottage at the Shepherd by antient  
 Roused up the Shepherds called guide  
 Of office is the stranger usual guide  
 And after short refreshment forth  
 It was a summer night dull warm  
 White dull and glaring with a hidden moon

## Text as Terrain

Subsequent experiments explored ways of visualising compositional changes made to the poem during the writing process. A sample page of *The Prelude* detailing Wordsworth's account of the ascent of Snowdon was taken from the original notebooks, and transcribed into an XML structure. Places where the poet had made a change, i.e. added or removed text, were transcribed with a XML 'branch' tag. Each one of these changes was visualised in 3D space as a 'peak' in the text. Changes to the manuscript therefore generated a kind of 'terrain' from the text, in which height values show areas within the poem which have been re-worked the most. Although not taken further at this stage, the idea of generating a base or 'ground' from within the text itself is an important concept which is still being explored.

Above and Below: Experimentations visualising manuscript text as a type of 'terrain'. Changes and alterations in the original document are indicated by added elevation, creating textual 'peaks'.

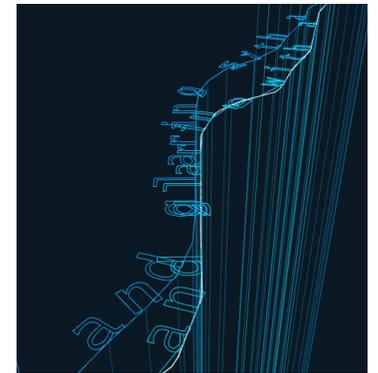
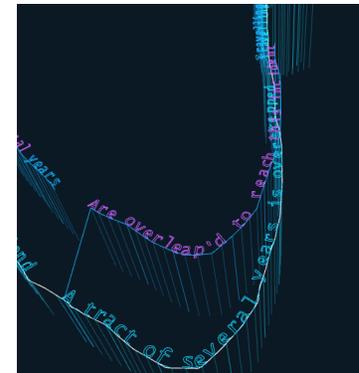
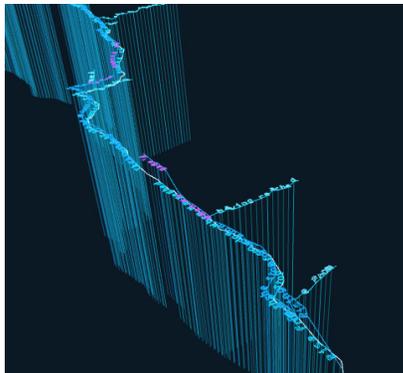
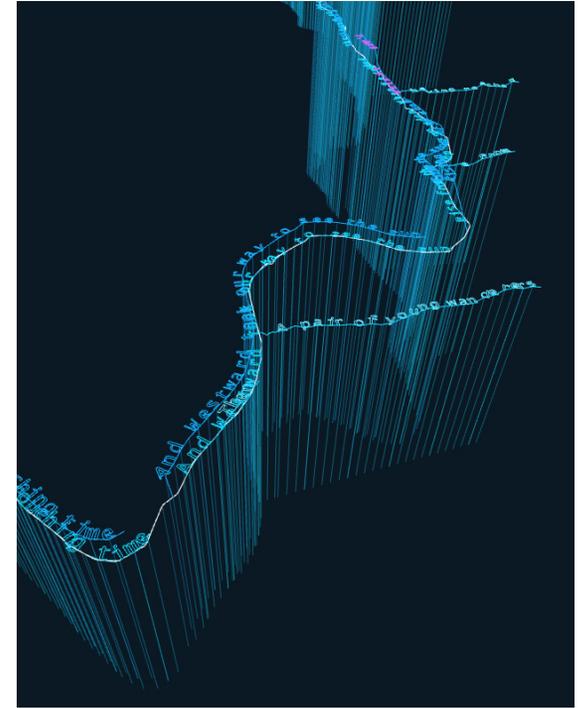
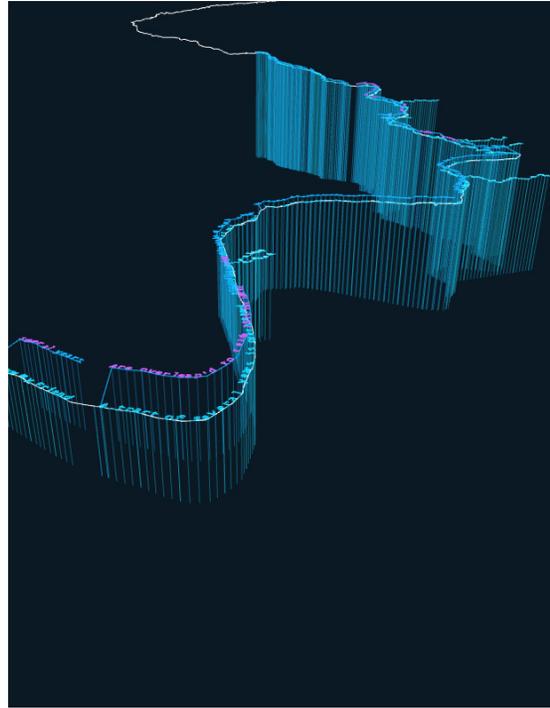


## Snowdon Route

Wordsworth's account of his route to the summit of Snowdon, as outlined in one episode of *The Prelude*, was used to explore a specific journey in more depth; this pathway was used as a way to visualise the literal journey which inspired the poetic account and also the creative compositional 'journey' of the poet during the writing process.

Re-tracing the path of Wordsworth's ascent of Snowdon provided the source data for visualising the poet's literal and creative journey as it is written and re-written across several of his notebooks.

Right and Below: Examples of the text from the manuscript rendered onto the path to the summit of Snowdon. The text is Wordsworth's own account of the climb, annotations and changes are marked as side paths. Colour denotes annotation and revision.

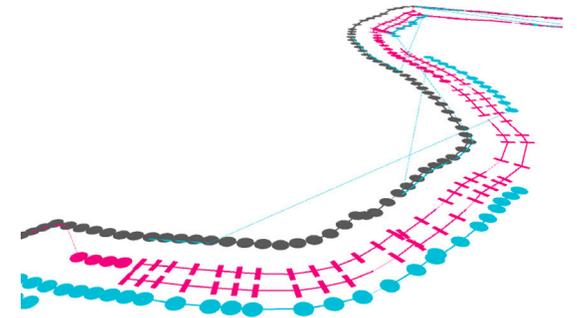
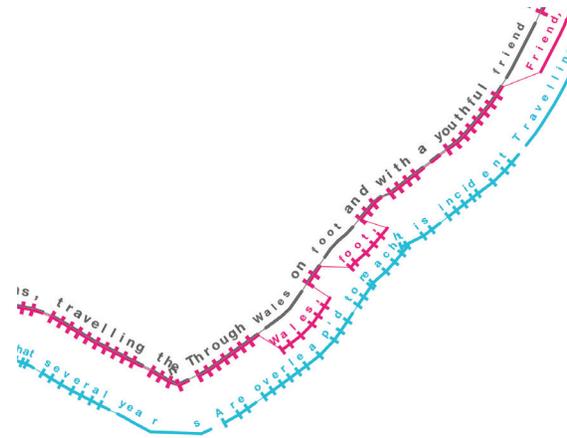
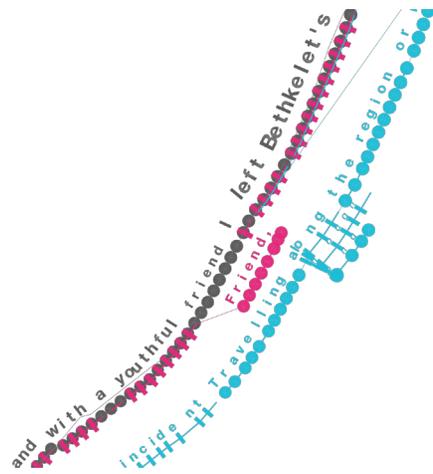


Right and Below: Further renderings of the text from the ascent of Snowdon. Colour and symbol are used to show different versions of the passage and indicate words which have been edited, or crossed out in the original manuscript.



GPX data tracing the journey of the re-creation of the ascent was used as the base 'spine' onto which the core text was mapped. Deconstructed letters as single points were generatively re-mapped onto the terrain according to the latitude, longitude and elevation data elements from the walk. This main spine visualises the final, published version of Wordsworth's poetic account of the climb. Additional creative pathways, changes and alterations, made during the 'creative ascent' of the poet's writing process were extracted from the source XML as 'branches' and visualised as alternative pathways branching off the main route.

New lines and pathways were added for each re-writing of the poem across different manuscripts, showing each as individual 'journeys' of the text as the poet 'retreads' the pathways adding more changes. Adding each manuscript as a new line enabled direct comparisons to each version to be made.



In one of these excursions, travelling then Through Wales on foot and with a youthful friend I left Bethkelet's hut at couching-time And westward took my

Once but I must promise that several years Are overlaid'd to reach this incident Travelling along the region or N. Wales We

way to see the sun Rise from the top of Snowdon. Having reached The cottage at the mountain's foot, we there Rouzed up the shepherd who by ancient right

Of office is the stranger's usual guide, And after short refreshment sallied forth. It was a summer's night, a close warm night, Wan, dull and glaring.

with a dripping mist Low-hung and thick that cover'd all the sky. Half threatening storm and rain; but on we went Unchecked, being full of heart and havi

ng faith In our tried pilot. Little could we see Hemmed round on every side with fog and damp And, after ordinary travellers' chat With our conductor, si

Half threatening storm and rain; bu

Half-threatening storm and rain; b

at covered all the sky threat'

Multiple ways of rendering the lines and pathways were explored, both in printed and interactive screen-based versions. Colour and symbol were added to visualise the annotations from the manuscripts. The line was rendered with and without text, and was displayed both as a the walked pathway and as a single continuous line highlighting, more clearly, connections between the re-worked versions of the poem. Left and Above: Images showing the path of text rendered as a single straight line, showing more clearly annotations and revisions in the original.

## Summary

The work in the project represented an ongoing enquiry into the visualisation and relocation of literary texts, re-situating words within a broader spatial context. It consisted of a series of experiments which examined possible ways of visualising the relationship between the words of a literary text within its wider geospatial landscape. Wordsworth's epic poem 'The Prelude', a work closely connected to location and journeying provided an interesting and useful case study for this, enabling visual explorations to be made between the work and landscape of the poet; connecting the physical experiential pathways of the mountains with creative compositional journey of the writer.

Spanning across text and geospatial data sources, the project explored a number of methods and approaches to re-imagine the poem using spatial attributes from the landscape and creating interesting new encounters of both fictionalized literary maps

which offered new representations of each. Rather than 'hard' analytical visualisations, the outcomes are softer, 'poetic', visuals which express nuanced ideas and associations between the text and its environment in visually expressive and sympathetic ways. Experimentation with scale, format, text, image and data helped to develop new impressions and visual encounters with both text and landscape, inviting the reader to explore the words and make their own connections and interpretations. Each outcome is a new encounter with the text, and encourages a range of approaches toward reading and viewing the poem as individual viewers make their own journeys across the landscape of text.

The research is ongoing and future work will explore ways in which a 'terrain' of the text can be computationally generated from a range of fictionalised landscapes and spaces.

1. Collier, M. and Ling, M. (2014). Wordsworth & Basho-Walking Poets. Art Editions North.
2. Jänicke, S., Franzini, G., Cheema, M.F. and Scheuermann, G. (2015). On close and distant reading in digital humanities: A survey and future challenges. In Eurographics Conference on Visualization (EuroVis)-STARS. The Eurographics Association
3. Meneses L, Furuta R. (2015). Visualizing poetry: Tools for critical analysis. In *paj: The Journal of the Initiative for Digital Humanities, Media, and Culture*.
4. A Literary Atlas of Europe (2018) Available at: [www.literaturatlas.eu/en](http://www.literaturatlas.eu/en)
5. Cooper, D. and Gregory, I. N. (2011). Mapping the English Lake District: a literary GIS. *Transactions of the Institute of British Geographers*, pp.89-108
6. Text Visualisation Browse (2019). A Visual Survey of Text Visualization Available at: [Techniqueshttp://textvis.lnu.se/](http://Techniqueshttp://textvis.lnu.se/)
7. Malka, A. (2014). He Liked Thick Word Soup [online] Available at: <http://chronotext.com/WordSoup/> [Accessed: 21 June 2016]
8. Mueller, B. (2009). VisualPoetry-generative graphic design for poetry on the road. In *ACM SIGGRAPH 2009 Art Gallery* (p. 41). ACM.
9. Posavec, S. Writing Without Words. Available at: <http://www.stefanieposavec.com/writing-without-words>
10. Fry, B., Reas. C. (2018). Processing.org. [online] Available at: <https://processing.org/> [Accessed: 02 Sept 2018]
11. Marxer R. (2013). Geomerative. Available at: <http://www.ricardmarxer.com/geomerative/> [Accessed: 16 Aug 2015]

Left: Images showing the work exhibited at the Wordsworth Museum, Grasmere.

