

**Digital Literary Mapping II:
Towards an Integrated Visual-Verbal Method for the Humanities**

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ABSTRACT

This is the second of two linked papers that aim to present new ways of mapping literature by means of digital tools for the Twenty-First Century. The paper preceding this one (“Digital Literary Mapping I”) articulated the need to move beyond the mapping of literary texts onto geographic sites in the world and into the mapping of space relationally in non-referential ways by means of literary topology. This second paper seeks to make a larger case for new ways of working in the Digital Humanities that are of the Humanities and suggests that new methods of analysis and new tools are needed. It therefore articulates an integrated visual-verbal method of interpretation that combines the close reading of spatial meanings and structures within a text with analysis of the map series generated out of that same text in an iterative structure. The paper also argues for the value of layers of mapping and of comparative mapping of the same place both referentially and non-referentially. The two literary texts chosen to exemplify the method are Mary Shelley’s *Frankenstein* and Lewis Carroll’s *Through The Looking-Glass and What Alice Found There*. These allow us to explore the validity of the claims made.

KEYWORDS: Literary map; topology; relative mapping; place; space

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It plays a double game. It does the opposite of what it says. (De Certeau 1984, 129)

As the title makes clear, this is the second of two linked papers that aim to present new ways of mapping literature for the twenty-first century.¹ Our first paper set out to show the potential of using graph topologies to map literature, as opposed to metrics-driven mapping to real-world geography using GIS tools, and began to outline the value of visualising and spatialising texts in relation to core topological forms using the schema and method of the AHRC funded *Chronotopic Cartographies* project.² This second paper takes such ideas forward to articulate a method of analysis for Literary Studies (with wider application to the Humanities) that demonstrates the effectiveness of mapping and reading as an integrated process in which each act further illuminates the other. The first part considers what a full interpretative model for literary topology might involve – exploring the potential for analysis in terms of multiplicity; map layers; part/whole relations and nested maps. The second part of the paper directly applies the proposed approaches to two nineteenth-century texts used here as case studies: Mary Shelley's *Frankenstein* and Lewis Carroll's *Through the Looking-Glass and What Alice Found There*.

Tools and Methods in Digital Humanities

For any DH project there is a necessary balance between making best use of the new approaches offered by digital tools and the more traditional needs and methods of an academic discipline. In the normative relationship, computer scientists create automated tools to generate quantifiable data from across a large textual corpus then hand it over to be interpreted qualitatively by the Humanists. This is not problematic in and of itself. However, in a subject such as Literary Studies where the core object of study (the literary text) holds highly complex, non-factual, and multiple levels of meaning, automated tools rapidly hit the limits of what they can provide that is of use to those working in the core discipline. The result is to turn DH itself into a distinct form of activity that is counter to the dominant mode of activity of the mainstream subject. If, however, DH research is to bear directly upon the home discipline and function in a more integrated way (as we seek to achieve) then

alternative methods, and a redetermining of the underlying interdisciplinary relationship, need to be put in place.

We are aware that our entire rationale may seem counter-intuitive, even reactionary, to those working within Digital Humanities (DH). An argument in favour of manual, subjective mark-up and one that celebrates multiple outcomes, goes against a dominant DH desire to automatise reading processes in the Humanities (using tools such as NER, NLP and so on). And of course, there *are* good practical reasons for wanting to do this. It is important to “think with the medium” (Ryan 2005, 515) in the kinds of ways advocated by Marie-Laure Ryan and at first sight the medium lends itself most easily to large-scale quantitative analysis. The problem with such methods, however, is that, whilst they do create a new way of analysing literature by scanning and selecting across a large corpus in a form of “literary history” (Moretti 2013, 48), they do not meet the needs of the home discipline – which (ironically) then limits their effectiveness and influence *on* the Humanities. We respect the need for a spectrum of activities ranging from the highly quantitative to the highly qualitative, but we argue that the interdisciplinary relationship needs to work in *both* directions: with digital knowledge bearing upon the Humanities but also with expertise from the Humanities bearing upon how we work with and present digital research.

A relevant, focussed example may help to clarify the point we are making. In our first paper, “Digital Literary Mapping I,” we looked closely at DH projects that used social networks in relation to literary characters. Here the most convincing attempt to articulate a method relevant to the discipline was that made by Elson, Dames and McKeown. Initially, they positioned themselves in the standard interdisciplinary way, adopting:

a systematic and wide look at a large corpus of texts, an approach which complements the narrower and deeper analysis performed by literary scholars and can provide evidence for or against some of their claims (Elson and others 2010, 146)

But they also generated a hypothesis out of positions articulated by literary and cultural critics, to determine whether:

Novels set in urban environments depict a complex but loose social network, in which numerous characters share little conversational interaction. . . while novel set in rural environments inhabit more tightly bound social networks with fewer characters sharing much more conversational interaction. . . (Elson and others 2010, 141)

This is still a fairly crude and generalist hypothesis in literary-critical terms but it *does* show some awareness of the interests of the discipline and it also means that the tools and methods created by the project are directed towards a result that may be of literary-critical

significance. Still inherent in this approach, however, is the belief that a large-scale quantitative “reading” can “prove” something for the Humanities that a qualitative reading cannot achieve on its own, as the authors apologetically suggest:

These theories, however, have used only a select few representative novels as proof. By using statistical methods of analysis, it is possible to move beyond this small corpus of proof texts. We believe these methods are essential to testing the validity of some core theories about social interaction and their representation in literary genres like the novel. (Elson and others 2010, 139)

What if we were to push things a little further? What if we were willing to acknowledge, and even celebrate, subjectivity or multiplicity in the *process of data generation* itself; to create tools that can be used directly by Humanities scholars and that allow for different results in relation to the same object of study, so that the digital medium can become capable of exploration by the Humanities in a way that is actually true of how such researchers work and think – rather than Humanities scholars having to adapt to tools that do not fit their needs?

Our position here is partly anticipated by Johanna Drucker, an American academic working out of the field of art and design, who makes a strong case for the need to reclaim visualisation tools for the Humanities:

The majority of information graphics, for instance, are shaped by the disciplines from which they have sprung: statistic, empirical sciences, and business. Can these graphic languages serve humanistic fields where interpretation, ambiguity, inference, and qualitative judgment take priority over quantitative statements and presentations of ‘facts’? (Drucker 2014, 5)

Focussed on the way information is presented, she sets out to: “consider how to serve a humanistic agenda by thinking about ways to visualize interpretation” (Drucker 2014, vii). As she makes explicit, a truly humanistic approach should be of a radically different order:

Humanistic methods are counter to the idea of reliably repeated experiments or standard metrics . . . By definition, a humanistic approach is centered in the experiential, subjective conditions of interpretation. (Drucker 2014, 130)

This kind of thinking is fundamentally at odds with current ways of working in DH generally, and more specifically in the field of Digital Literary Mapping (where Franco Moretti’s drive towards quantitative methods and a morphology for literature always encouraged such approaches).³

Still, even though we align ourselves with Drucker’s larger position – agreeing that: “the shift away from standard metrics to metrics that express interpretation is an essential move”

(Drucker 2014, 130) – this remains primarily theoretical. What is needed is a fully articulated method of visual-verbal interpretation along with an accessible interface that can deliver the kinds of approach she points towards to Humanities scholars. When we return to our topological mapping model then, we have to consider: what does such a method need to be able to *do*? It needs to be concerned with core aspects of digitally generated topological graphs that are in turn able to meet the needs of literary mapping and illuminate understanding of the text or texts being mapped.

The Potential of Topology

In our first paper we drew upon Rob Shields' account of the potential usefulness of topology in his book *Spatial Questions*. Here Shields addresses topology both in terms of “the history of topology as a field and as a method” while also noting its “often incorrect and metaphoric appropriation for cultural studies” (Shields 2013, 101). Shields draws out the advantages of topology for Cultural Studies in ways that we can apply to and adapt for Literary Studies. He notes the value of moving away from geometric to non-Euclidean spaces as well as the emphasis on “lines of causality; the interaction of grouping, categories and other figures of recognition, status and power” (Shields 2013, 101). While his primary focus remains on the potential of topology to diagrammatically represent spatial power structures in new ways, we can easily see how the spatial elements he draws attention to could also apply to literary texts. In relation to the larger issue of how DH functions in relation to the Humanities, Shields also draws out the potential of topological models to work in new ways: “Topology allows us to work with multi-dimensional mathematical spaces . . . that can contain an infinite number of incongruent, even contradictory propositions” (Shields 2013, 106). Again this helps us to see the significant potential a topological model offers by allowing for multiple readings of the same space or dynamic readings of changing relations across a text.

Taking our cue from Shields we suggest that, in terms of spatialising literature, a topology can incorporate *at one level* the literally and symbolically spatial as depicted within the narrative (as the *Chronotopic Cartographies* project does) allowing for movement between places, reference to place-names, spatio-temporal zones etc. At another level, however, the same base topological construct (nodes; edges; nature of connection) might be used to map objects, agency, events and consequences in a wide range of ways as appropriate for the spatial nature of the literary work concerned. So, for example, in a work such as *Treasure Island*, the entity with the greatest motivational agency for the entire work is not a living

being, but the treasure map itself. In this example, one could map the map – the powerful object that is constantly motivating movement around it through the desire to possess it.

Equally, one might have a range of topological models generated from the *same* text to cover different thematic, philosophical or ontological elements. Shields denotes the possibilities for a “typology of experience” that could be:

strategically sketched as a diagram of what happened or what happens, but the contingencies of the embodied flow of experience, and its knotting of the past as ‘experiences’ and the present as ‘experiencing’, suggest more multidimensional models of happening than a two-dimensional diagram would conveniently capture. (Shields 2013, 50)

As Shields makes clear, topology offers a different way of thinking about meaning, and one that is open to temporal change and dynamic movement within a totality, gesturing towards a 3D digital model. Again we can see the potential here when applied to changing movements or dynamics between characters and other elements of a text.

Also in “Digital Literary Mapping I”, we drew on a core definition of topology as fundamentally concerned with continuity, connectedness and compactness or “connectivity; relationality and dimensionality” (Shields 2012, 48). These three core elements of the form can be seen to correspond to key aspects of spatial meaning for literature in terms of: unity, or the relationship between part and whole; relative and dynamic meaning across and within a text; issues of scaling up or down and of mapping at different levels of intensity depending on the significance of a key passage of text. We therefore argue that any interpretative method needs to generate multiple maps that can be read comparatively and in terms of layers if required, and that there is a need for sub-mapping or nested maps that address different aspects of spatial meaning to meet the needs of a particular text. Where the topological form for the whole text presents the complex totality at a small scale that limits it accordingly, by mapping *parts* of that whole separately, larger-scale embedded maps are generated that tell us a lot more about a particular section of the text, a key chapter, a section of the narrative told by a particular narrator, and so on. This allows for the much tighter and more focussed forms of analysis in relation to the visual that literary texts require (see below). Therefore our model is not just about final maps, nor is it about presenting maps as if there were only one of them and it were authoritative. It is about presenting multiple maps for multiple elements within a text and being explicit about the subjectivity that is inherent in the map-making and reading process. (For chronotopic mark-up to be effective, as we rapidly realised, the act of

“marking-up” becomes part of the reading and interpretative process and at the very least must be acknowledged as subjective for any map generated).⁴ So it is about permitting subjectivity and multiplicity, celebrating it even, within the digital domain.

The creation of a symbiotic model of analysis by reading across and between map and text proves extremely powerful in ways that narratologist Marie-Laure Ryan explains:

When narrative uses the dual modalities of language and maps, each of these modalities expresses what the other cannot do by itself . . . Maps . . . are not well suited to express a subject’s lived experience in an environment, while language-based narrative . . . is not well suited to convey . . . a network of relations between objects.

(Ryan and others 2016, 45)

It is the bringing *together* of visual and verbal modes of spatial representation – for the *same* literary place and space – that lies at the heart of our method. This must necessarily be iterative – moving repeatedly between textual interpretation, map generation and interpretation of the resulting visualisation. As Ryan goes on: “when language and map complement each other, space can be represented in both its emotional / phenomenological and strategic dimensions” (Ryan and others, 45).

Case Study 1: Mapping Frankenstein

It is time to turn from theory to practice and the example of *Frankenstein*. Any search for “mapping *Frankenstein*” on the internet will immediately throw up a range of digital projects that map the realist settings of the novel onto real-world maps of European geography. Such projects generally use a “Google maps” approach of placing a pin in the landscape and linking information to key points; or employ Story Maps to provide a contextual frame across different key settings for the text. A pleasing example, using the ArcGis Story Map tool is that of Caitlin Burke and Patricia Herron at the University of Maryland (see *Figure 1*).⁵ Here the creators draw upon various resources from the library’s collections to combine multimedia images (first edition cover; maps of the period) with aesthetic images of different locations and corresponding maps; such as those for St Petersburg. A second example is that of graduate student Giorgina Samira Paiella, whose *Digital Frankenstein* project – while still mapping onto real-world locations – distinguishes between the three narrative voices of the text (as we do below) providing a circular set of nested map visualisations for Walton – Frankenstein – Creature (see *Figure 2*).⁶

A more scholarly version of such a project can be found at *The Frankenstein Atlas*, a web resource created by historian Jason M. Kelly at Indiana University. To some extent, this project presents many parallels to our own – but with its anchors in the real – and thus provides a good ground for us to articulate the distinctiveness of mapping relatively using topological forms, rather than a geographic base map. “Inspired by research and theoretical approaches in literary mapping and historical geography” the *Atlas* aims to “provide scholars and students with a platform to study and experiment with Shelley’s text”.⁷ Essentially pedagogic, and created in conjunction with graduate students, it uses schema and gazetteers to explore spatial representations in the text in relation to real-world geographies. The gazetteer uses standard elements of real-world mapping (longitude; latitude; place-names) but does also enlarge on these in ways that are relevant for literature (drawing upon Piatti and others) with a series of spatial forms (point in space; zone of action; projected place; paths; imaginary spaces; extratextual locations) as well as actions, emotional states and types of nature. Thus it begins to gesture beyond the mapping of a text to geographic co-ordinates and into more abstract elements relevant to literary place and space. Much could be done with this, so that the interactive map displayed on the site via Google maps (see *Figure 3*) is disappointingly limited and simplistic and does not reflect the richness of the underlying code stored on Github. Despite its potential ability to engage with key aspects of literary space, then, the site tends to remain focussed on historical and geographical context. For example, it provides a map that suggests what the extent of the frozen ice cap might have been in 1819 and speculates about Walton’s exact location (*Figure 4*). Fascinating as this is, it remains highly problematic in relation to literary mapping because of the way it elides the nature of the object of study (the literary work) as a form of representation. In fact, the site immediately hits the most common problem of attempting to map literary place and space onto the real, noting that: “there are relatively few geographical specifics noted in the text. Even when Shelley mentions a specific location, its position in space might still be relatively general”. Thus, in relation to Victor and Clerval’s visit to Edinburgh, the map-makers are forced to speculate and generate a map that infers which real-world spaces are implicit in the text (see *Figure 5*).

FIGURES 1, 2, 3, 4 and 5 here

Figure 1: University of Maryland Frankenstein map
<https://lib.guides.umd.edu/frankenstein>

Figure 2: Digital Frankenstein

<https://thecorpuselectric.wordpress.com/2017/05/27/digital-frankenstein-dh-mapping-of-mary-shelleys-frankenstein/>

Figure 3: *A Frankenstein Atlas*
<https://jasonmkelly.com/frankensteinatlas>

Figure 4: *Mapping Edinburgh in A Frankenstein Atlas*

Figure 5: *Estimating Walton's Route in A Frankenstein Atlas*

A common fallacy emerges across all of these projects in relation to the nature of spatial representation in literature: the assumption that if a fictional text uses real-world names then the fictional representation of place corresponds directly to the real-world place and can be mapped onto it. The issue of direct correspondence to the world is more obviously in play for a realist text (which *Frankenstein* essentially purports to be) as it is not for other genres (the same problem is not present for, say, travel writing). Here, the space and place of the literary text suffers from the same popular assumptions that apply to real-world maps: because the represented object appears to be “natural” (in Peircean terms “iconic” – resembling the thing it represents). It is assumed to be “true” and read as directly equivalent to what it represents when this is, of course, not the case. Pam Morris reminds us:

There is a popular and somewhat paradoxical assumption that realist fiction is to be judged according to how faithfully it corresponds to things and events in the real-world. The more exact the correspondence, the more a one-to-one concordance can be recognised between words and world, the more the realist writer is to be praised for having achieved his or her aim. (Morris 2003, 5)

However, as critic and theorist J. Hillis Miller makes clear, since literary realism occurs only in and through the medium of language it can never mirror the world directly: “No language is purely mimetic or referential, not even the most utilitarian speech” (Hillis Miller 1971, 287). Instead the apparent transparency of the text merely acts to encourage this illusion:

The specifically literary form of language . . . may be defined as a structure of words which in one way or another calls attention to this fact, while at the same time allowing for its own inevitable misreading as a “mirroring of reality”. (Hillis Miller 1971, 286)

The key issue here in terms of digital literary mapping is the question of what is achieved by mapping fictional places onto real-world geography at any level beyond that of a literary tourist (seeking to vicariously experience the world of the text by visiting real-world

locations assumed to lie behind or beneath it). In terms of understanding literary spatiality, such acts of mapping are in many ways actively unhelpful and misleading.

The Digital Mapping of Frankenstein using Graph Topologies

These examples of mapping to real-world geographies for *Frankenstein* serve to provide a useful counter-model to our own topological model. We wish to emphasise that it is not our intention to dismiss absolute mapping to real-world places altogether, but to suggest that, for works of literary fiction, multiple map layers or comparative visualisations of absolute and relative mapping may be the best way forward.⁸ For the purposes of this paper then, we use the example of mapping *Frankenstein* topologically, by means of a map series generated from the marked-up text, to present the strengths and limits of our digital mapping method when compared to a metrics-driven GIS model. Equally, by creating a *series* of maps generated from a single text (not a single authoritative image) those map visualisations are more likely to be read (in Drucker's terms) not as "representations of information already known" but as "knowledge generators capable of creating new information through their use" (Drucker 2014, 65) which is how they function in our symbiotic model of interpretation.

In his essay on "*Frankenstein* and Ecocriticism" Timothy Morton notes: "you would have thought . . . that there would be hundreds of studies specifically devoted to ecological readings of Mary Shelley's novel. Yet this is not the case" (Morton 2016, 143). Focussing directly on the reasons for this omission leads Morton to describe *Frankenstein* as:

A novel whose ecological resonance is so obvious that ironically hardly anyone tackles it directly; and a novel . . . whose ecological resonance is so uncanny in relation to standard beliefs about Nature that hardly anyone tackles it directly. (Morton 2016, 143)

What is true of ecocriticism is also true of space, place and spatiality in the novel; in general, despite the fact that the novel is so strongly spatial it is rarely read in this way. Again, the emphasis on reading the text *onto* the real undermines other metaphorical/ symbolic / psychological spatial values. However, digital literary mapping helps to open the text up to such an approach.

It is natural to begin by looking at the totalising map of our chronotopic series that presents the most information: the *complete* map.⁹ However, for a work like *Frankenstein* this is frankly problematic (*Figure 6*). In many ways it is a "bad" map because there is not enough selection of information for it to be effective in relation to interpretation of the corresponding text out of which it has been generated. (In fact this is frequently the case with

our mapping model for a three volume nineteenth-century realist novel because of its spatio-temporal richness and density.) However, for our project this is not a major problem because the code generates a map *series*, not a single map, and other maps in that series are far more selective in what they present (using the same coded information from the manual mark-up to display different aspects of spatial meaning). Against the *complete* map for *Frankenstein* then, we can set the simplest map in the series, the *deep chronotope* map, that shows what spatio-temporal forms are in play for the text and proportionately how significant they are (see *Figure 7*).

FIGURES 6, 7 and 8 HERE

Figure 6: Frankenstein First Map Series: Complete Map

<https://www.lancaster.ac.uk/chronotopic-cartographies/visualisations/frankenstein/complete-map-creature-tale/>

Figure 7. Frankenstein First Map Series: Deep Chronotope Map

<https://www.lancaster.ac.uk/chronotopic-cartographies/visualisations/frankenstein/deep-chronotopes/>

Figure 8. Frankenstein First Map Series: Topoi Map

<https://www.lancaster.ac.uk/chronotopic-cartographies/visualisations/frankenstein/topoi/>

Colour maps further draw attention to the relationship between direct and indirect physical negotiation of space in physical movement between represented realist locations (purple) as opposed to jumps/projections and more internalised spaces (orange). When we interpret this visual information we find that eleven of the twelve core chronotopic forms are found within *Frankenstein* on the *deep chronotope* map. (The table of core chronotopic types is given in “Digital Literary Mapping I”). The two most dominant are those of encounter and the road, with the latter being directly connected to all others at the centre. These two chronotopes often occur together in literary texts as one might expect (whilst journeying one meets people).¹⁰ *Frankenstein* actually presents a dark version of these, since for the most part movement is compelled rather than freely chosen and encounters are commonly violent and disturbing. The only chronotope missing is that of threshold which is perhaps surprising. In part this points to the subjectivity inherent in the coding (the creature’s existence in the hovel *could* have been defined in such terms, as could the moment he reveals himself to the blind old man who lives there, but instead these have been coded as encounter). However, it is also

quite telling in relation to the presentation of character within the book and especially that of Victor Frankenstein as a self-involved narrator. Individuals are rarely given the chance, or allowed to show a level of self-awareness that would enable them to change in ways that a threshold state suggests.

The map in the first series that often proves most useful in relation to spatial analysis of the text is the *topoi* map that privileges the presentation of key places visited within the fictional world. This also means that it is frequently the map chosen to be layered onto a referential real-world layer (as our model allows). When we generate this map for *Frankenstein* (Figure 8) it shows distinctive movements for Walton (top left) and the Creature (bottom right) but the most dominant feature is a distinctive Big Wheel form, or ring topology, that corresponds to Victor's own spatiality as he undertakes a Grand Tour of Europe with his friend Clerval (as well as other shorter tours). The visualisation of the text emphasises the touristic nature of Victor's movement. For us, this immediately led us back intertextually to a secondary touristic text lying beneath *Frankenstein*: Mary and Percy Shelleys' *History of a Six Weeks' Tour* published in 1816.¹¹

An absence of spatial readings for *Frankenstein*, noted above, is matched by an absence of intertextual references to *History*, which is clearly a major source text for the descriptions of Victor's tourism.¹² Indeed, one remarkable fact about the real-world *Frankenstein* mapping projects considered above is that none of them draws on this work – which as a piece of direct travel writing can be mapped far less problematically onto real world places than the fictional text.

FIGURES 9 and 10 HERE

Figure 9. Topoi Map for History of a Six Weeks' Tour (not on Chronotopic Cartographies website)

Figure 10. Second Series Map for Frankenstein: Victor's Narrative (not on Chronotopic Cartographies website)

What is the reason for this omission? Perhaps it is the very closeness of the real-world touristic accounts to Victor's movements in the fictional text – a concern that the fictional representation is too pragmatic in drawing upon Mary's limited travel experience so directly. Certainly it is the case that when we mark-up and generate a topology for *this* text

and compare it to Victor's in the *topoi* map as well as the second series map for just his section of the narrative (see *Figures 8-10*), we can see how closely his movements mirror it. Both maps have Geneva as a central hub site for a major tour of Europe and also present other minor tours starting from that city – including those to Mont Blanc and Montanvert in both cases.

One exception to the overlooking of *History* in relation to *Frankenstein* is George C. Dekker's book on *The Fictions of Romantic Tourism* which brings together the touristic and the fictional to claim that:

but for the stimulating and shaping power of this discourse (tourism) . . . the novels for which these authors are best known could not have been what they are and probably would have been unimaginable (Dekker 2004, 2).

Dekker reminds us that Europe had been entirely closed off for fifteen years and that travelling over to it for the younger generation brought an “exhilarating sense of release” (Dekker 2004, 200). However, the Shelleys' first tour of Europe in 1814 is by no means characteristic of the leisured and moneyed classes. Their tour is both journey and flight – an escape into adulthood – and partly as a consequence of this it is constrained by financial limitations and the unwelcome realities of travel. From the start Mary tells us “I am not a good traveller” (Mary and Percy Shelley 1816, 1-2). She is “dreadfully seasick” (Mary and Percy Shelley 1816, 3) on the voyage to France where “travelling produced a very bad effect upon my health” (Mary and Percy Shelley 1816, 10). Travelling through post-Napoleonic France, Mary is disgusted by how “squalid with dirt” (Mary and Percy Shelley 1816, 23) and “disgusting and brutal” (Mary and Percy Shelley 1816, 24) places are. Switzerland is praised in comparison but their stay is cut short because “the £28. which we possessed was all the money that we could count upon . . . we should soon be reduced to absolute want” (Mary and Percy Shelley 1816, 53). As a result they return by boat down the Rhine because “water conveyances are always the cheapest” (Mary and Percy Shelley 1816, 54). In many ways, then, the first journey is more *anti*-tour than tour.

The second (1816) tour of Geneva and Mont Blanc, as reported through the form of the letter, resembles far more strongly the characteristic Romantic search for the sublime that is then so powerfully embodied in Shelley's famous poem of that name at the end of the book. Here, only the first letter is by Mary, and the detailed accounts of Chamonix and its environs are all by Percy Shelley. Still, this section bears directly upon the account of Victor's visit to the Montanvert glacier in *Frankenstein*. In fact, when we read this in the light of *History* we can see that Mary Shelley herself layers Victor's experience in a way that perhaps allows her

to revisit *Percy's* Letter in her fictional description of the *same* scene now experienced by her character: "I remembered the effect that the view of the tremendous and ever-moving glacier had produced upon my mind when I first saw it. It had then filled me with a sublime ecstasy . . ." (Shelley (1818) ed. Hunter 1996, 66). This also draws attention to the extent to which subjective experience bears upon the spatial. Victor's account of the ascent to the Mer de Glace adopts the register of the tour in his use of the second-person: "The ascent is precipitous, but the path is cut into continual and short windings, which enable you to surmount the perpendicularity of the mountain" (Shelley (1818) ed. Hunter 1996, 66). His description draws directly upon that of *History* as we can see by placing the texts side by side:

We passed over a hollow covered with snow, down which vast stones are accustomed to roll. One had fallen the preceding day, a little time after we had returned: our guides desired us to pass quickly, for it is said that sometimes the least sound will accelerate their descent. (Mary and Percy Shelley 1816, 164-66)

The path, as you ascend higher, is intersected by ravines of snow, down which stones continually roll from above; one of them is particularly dangerous, as the slightest sound, such as even speaking in a loud voice, produces a concussion of air sufficient to draw destruction upon the head of the speaker. (Shelley (1818) ed. Hunter 1996, 66)

Such sections of text would further reward "micro-mapping" and visualisation to compare touristic and fictional descriptions of the same location further.¹³ Still, what the parallel maps and tours (of real and fictional geographies) here draw out is both a conscious layering of representations in relation to the touristic within the text and an emphasis on inherent subjectivity (authorial and character-based) that immediately problematises the form of travel undertaken.

At the same time the *unconventional* nature of the real-world travel writing as experienced in *History* also helps us to realise how odd it is that Victor's dominant mode of movement should be that of the tour. The ring topology makes us aware of a dramatic juxtaposition between what appears to be happening spatially (and to some extent in the experience that the innocent Clerval is having) and Victor's underlying motivation for travel. Postponing marriage with Elizabeth (ostensibly because he knows he must make the creature a mate) Victor also deliberately misleads his father: "I expressed a wish to visit England; but, concealing the true reasons of this request I clothed my desires under the guise of wishing to travel and see the world" (Shelley (1818) ed. Hunter 1996, 109). The given reason (to

himself) for Victor's overtly elaborate movement is to hide his true motivation from his family. But the true reason is to delay the inevitable. Thus, although the spatial dominates *visually*, the underlying motivation is *temporal*. His own dark motives and inner state in relation to the Creature generate a massive spatial structure of denial in which the choice of travel and remote destination are designed to distract him from the true goal as well as from his own past and future actions. Movements that appear to be for pleasure and thus aimless, are actually deeply goal-directed (but against the wishes of the traveller himself). Thus a highly paradoxical spatial condition adheres – which Victor constantly registers temporally: “If this journey had taken place during my days of study and happiness, it would have afforded me inexpressible pleasure. But a blight had come over my existence” (Shelley (1818) ed. Hunter 1996, 113) – and by comparison with his friend “in Clerval I saw the image of my former self” (Shelley (1818) ed. Hunter 1996, 113). A series of stops at popular tourist destinations on that ring (“Oxford”; “Matlock”; “Cumberland and Westmorland”) is also a driven trajectory that ultimately goes round on itself and leads nowhere. In the end, the entire structure functions as a kind of tragic parody of the purpose of undertaking the Grand Tour that should refine the gentleman and turn the boy into a man. By the end of the tour, Clerval is dead, Victor has wilfully failed his progeny and nothing has been gained or learned from the experience, as he returns hopelessly home.

Victor's personal spatiality (the form of a ring topology) dominated the *topoi* map but also suggested the need for a *second* series of sub-maps for each narrative voice since that map of the whole text made us aware of the distinctive spatialities of Walton, Victor and the Creature held within it. To generate a *second* map series therefore, the text was divided into three discrete sections corresponding to each narrator/ character. When the three sub-maps are compared (the *complete* map in each case) they prove highly distinctive and help to reveal the extent to which character and identity are strongly spatially determined. Victor's narrative has been discussed above (although the separate map for his sections of the narrative make it even clearer how much Geneva functions as an anchor for his many tours). His spatiality also bears upon that of the Creature and it does so in two ways: directly (at a level of represented place and movement) and narratologically, as our maps make clear. Since the only account we have is the Creature's own narrative – relating to his early abandoned experiences – his spatiality emerges as extremely distinctive (see *Figure 11*). Here the visualisation resembles a fiery sun with satellite stars and fireballs shooting off from it.

FIGURES 11 and 12 HERE

Figure 11. Second Series Map for Frankenstein: Creature's Narrative

<https://www.lancaster.ac.uk/chronotopic-cartographies/visualisations/frankenstein/complete-map-creature-tale/>

Figure 12. Second Series Map for Frankenstein: Walton's Narrative (not on Chronotopic Cartographies website)

The star topology reflects the ways in which the Creature's spatiality is largely static and unseen. Just as there is a deep disharmony between Victor's inner state and his outer movement so there is a discrepancy between the movements that the Creature must be making and what is able to be visualised. Of course, this in itself is a direct consequence of his outcast situation – he must keep hidden and remote to survive, as the toporefs emphasise – “from my hiding place”; “a more secure hiding place” – but again it shows how by visualising the narrative a distinct spatial identity emerges for the character. In the case of the Creature we can never get at this directly and this map – derived from his first person (but twice retold) narrative – is the closest we can come. For much of the text the effect of long disappearances and sudden re-appearance at a key site enhances his otherworldly spatial sense that Victor seeks to convey as he is repeatedly revealed (by lightning; the moon) in different locations as if he is the “daemon” he is accused of being:

I darted towards the spot from which the sound proceeded, but the devil eluded my grasp. Suddenly the broad disk of the moon arose and shone full upon his ghastly and distorted shape as he fled with more than mortal speed. (Shelley (1818) ed. Hunter 1996, 146)

Thus, at a spatial and narratological level the Creature is othered and dehumanised by the narrator's account.

In contrast to Victor's endless circling away from himself, or the Creature's doubly imposed self-containment, the visualisation of Walton's narrative is teleological and quest-like, heading out into the unknown from the base of St Petersburg (*Figure 12*). The form is bold and risky, without the repeated looping back to home that we see in Victor's map. (Indeed, reading across all three maps, only Victor's has the luxury of the powerful affective anchor of home.) The topoi reinforce the extreme nature of the environment as

place-names fall away and we are left only with “Northern Ice” or “Mountains of Ice” whilst interiors shrink to “the cabin” or “the deck” of the ship (a fact that also presumably reflects the lack of any underlying real-world experience for the author). Walton is willing to give up everything, to cut all ties, as Victor is not and this is reflected at a level of form in his use of the letter that may or may not make it back to the recipient, as well as visually in the topology. Although we know from the last of these that he is to return, unsuccessful – in part as a consequence of what he has learnt from the nested narrative – he doesn’t actually do so within the text itself.

Where GIS mapping for literature can only really show physical movement by the characters and the visiting of named places – conceptually problematic for literature in any case – relative mapping can allow the spatial identity of the represented beings to emerge more fully. Reading *Frankenstein* topologically alongside, or even against, the absolute mapping of realist sites to geo-referenced locations on the globe proves richly rewarding. The mapping of individual narrative voices draws our attention to elements of spatiality that are not simply those of setting but derive from the phenomenological nature of human existence in which the individual is dynamically part of the world around him or her. French phenomenologist Maurice Merleau-Ponty describes the condition of spatiality as “the establishment of the subject in a setting, and finally his inherence in a world” (Merleau-Ponty (1945) 2002, 327). Topological maps represent movement across the novel but also draw out the inherent spatiality of the character in an entirely unique way as well as raising questions of motivation and agency.

Case Study II: Through the Looking-Glass and What Alice Found There

The second case study presented here is for a literary text that is self-consciously removed from reality and takes place in a world where the ordinary laws of time and space are inverted or made meaningless: Lewis Carroll’s *Through the Looking-Glass*. Where the example of *Frankenstein* enabled us to explore the value of the iterative visual-verbal model through the generation of a first and second map-series for distinct narrative voices, this text allows us to examine the value of bringing together different ways of mapping and moving through fictional place and space. We map *Through the Looking-Glass* first in terms of referential mapping to the plan view of the chess game given as a visualisation at the front of the first edition; then through analysis of the first topological map series generated out of the text; and finally in a second sub-nested series that maps Alice’s progress across each individual square

rather than the whole chess board. Reading and mapping *Through the Looking Glass* allows us to draw out the ways in which a text sets up a juxtaposition or tension between different kinds of spatial practice for a single individual – in this case that of map vs tour. The two *Alice* books constitute a canonical text for Literary Studies, attracting commentary from theorists (Deleuze (1969) 1990; and Cixous, 1982), as well as Martin Gardner’s remarkable *Annotated Alice* (Gardner, 2015) that all explore the intertextual complexity of these works. Still, the primary focus of analysis tends to be linguistic or philosophical rather than spatial (due to the complexity of Carroll’s logic and word play) and as far as we are aware no-one has read the text through the map/tour structure as we do here.¹⁴

In his well-known essay on “Heterotopias” the mirror space is the first example to which Michel Foucault turns. In fact, he defines the mirror as a “mixed, joint experience” (partaking of both utopia and heterotopia) because it is located and unlocated: “a placeless place” (Foucault 1984, 4). He states that, “I see myself there where I am not, in an unreal, virtual space that opens up behind the surface”. At the same time this place is also heterotopic, the object itself physically located in the world but reflecting back on it and capable of acting upon it: “the mirror does exist in reality where it exerts a sort of counter-action on the position that I occupy” (Foucault 1984, 4). For Foucault, the effect of being in that “unreal space” bears upon the experience of the real, but literature can take this idea much further – in ways that *Through the Looking Glass* immediately does.¹⁵ As Alice explains to the kitten before entering, the dominant spatial mode is one in which “things go the other way” (Carroll (1866) 2012, 119).¹⁶ The *Looking-Glass* world expands beyond the framed visual limits of the mirror but (crucially) retains a sense of looking into it *from the real* and thus of Alice journeying increasingly “backward” into the reflection as she goes forward through the new space – indeed “the physical curiosities of *Looking Glass* Land are the direct result of Alice’s entering a world of mirror images with her perspective unaltered” (Reichertz 1992, 24).¹⁷ The concept of inversion is then expanded from the merely visual through different forms of spatio-temporal inversion experienced by both Alice and the chess pieces (that also inhabit both worlds). As Martin Gardner notes, “Inversion themes occur of course, throughout Carroll’s nonsense writing” (Gardner 2015, 168) and here he further extends this concept – that applies to how characters move or exist – to time and states of being.¹⁸ This has a physiological, and even ontological, effect as the White Queen points out: “That’s the effect of living backwards . . . it always makes one a little giddy at first” (Carroll (1886) 2012, 163).

Lewis Carroll himself provided the visualisation of the board and the game play at the start of the book (see *Figure 13*) which partly paves the way for the kind of visual / verbal reading we offer here. As others have explored in detail, the game of chess being played in the book is decidedly non-normative, but Alice's own moves do follow the rules.¹⁹ When we compare Carroll's illustration with our referential map layer (using the *topoi* map from the first series) two important facts about the space of the text are immediately made clear (see *Figure 14*). First, that the spatial totality is not encompassed by the chess board and thus that there are two layers of spatial meaning in play that are not quite identical (although easily conflated): a base layer of *Looking-Glass* world and the game being played upon it. Second, **FIGURES 13 and 14 HERE**

Figure 11. Second Series Map for Frankenstein: Creature's Narrative

<https://www.lancaster.ac.uk/chronotopic-cartographies/visualisations/frankenstein/complete-map-creature-tale/>

Figure 12. Second Series Map for Frankenstein: Walton's Narrative (not on Chronotopic Cartographies website)

that Alice's progress across the board as a pawn is extremely straightforward when visualised, yet is not experienced as such in reading the text. These issues led us to explore the spatial discrepancy they point towards – between two simultaneous yet contradictory ways of negotiating space in terms of “map vs. tour” that bear upon both Alice's experiences and those of the reader.

There are a number of different theoretical accounts of the distinction between map and tour, but the one we draw upon here is that made by Michel de Certeau.²⁰ De Certeau distinguishes between descriptions of place in terms of the map as “a plane projection totalizing observations” (De Certeau 1984, 119) and the tour as “a discursive series of operations” (119).²¹ Where the map is concerned with “seeing” and with a static geometric representation of space as viewed from above, the tour or itinerary is concerned with “going”; with enabling the individual to negotiate space and with the spatial practices that emerge from this. De Certeau defines these as “two symbolic and anthropological languages of space. Two poles of experience” (De Certeau 1984, 119). Nevertheless, each means of conceptualizing space is still bound up with the other. The tour contains within it a strong awareness of the map: “The chain of spatializing operations seems to be marked by references to what it produces (a representation of places) or to what it implies (a local

order)” (De Certeau 1984, 120). Equally, the map is strongly bound up with the itinerary out of which it originally emerged: “The drawing articulates spatializing practices” (De Certeau 1984, 120). De Certeau’s map / tour distinction itself maps onto his larger spatial distinction between “strategies” – larger sets of imposed rules, structures and systems – and the “tactics” of the individual user moving within these. His focus is always on the latter and on the ways in which “ways of operating” resist or reform the larger model from within. Spatial trajectories make place meaningful and these spatial practices are not only actual but also metaphorical and narratological.

When we take this model and apply it to *Through the Looking Glass* it is immediately obvious that the distinction is fully in play in relation to the spatiality of this work. The “map” view constitutes the view of chessboard from outside/ above as if playing across the board. The “tour” consists of the chessboard experienced from within each individual square and the relationship between the individual’s (confused, and ultimately circular) immersed traversal of the imaginary landscape.²² The *syuzhet* map (mapping the order of events as told) from the first map series makes this explicit through its form as a ring topology (*Figure 15*). Beginning at the “drawing-room” on the right middle of the circle, Alice’s movement can be traced through the main loop of spaces – from square to square – moving anti-clockwise and **FIGURES 15 and 16 HERE**

Figure 15. The Syuzhet Map for Through the Looking-Glass(First Series)

<https://www.lancaster.ac.uk/chronotopic-cartographies/visualisations/through-looking-glass/syuzhet/>

Figure 16. John Tenniel’s illustration of the landscape from the top of the hill (Chapter 2)

around the micro settings contained within them (“shop”, “river”, “wood of no name”) then back to the “drawing-room”. Smaller loops (triangles off the main circle) demonstrate the narrative structure, in which Alice’s progress is repeatedly interrupted by spatio-temporal digressions that divert her path through *Looking-Glass* world. (These were also visible on the referential map layer where they were placed marginally to left and right outside the edges of the board). Overall, the ring topology registers the circularity of the narrative beneath the apparent linearity of Alice’s movements – ending where it began and not really going anywhere.

It is the fact that the world extends *beyond* the chess board that allows for the aerial perspective of the map – or plan view – to be brought into play in relation to it as illustrated by John Tenniel (*Figure 16*). We see this when Alice self-consciously “makes a grand survey of the country she was going to travel through” (Carroll (1866) 2012, 138) from the hill top above the gridded space:

For some minutes Alice stood without speaking, looking out in all directions over the country, and a most curious country it was. There were a number of tiny little brooks running straight across it from side to side, and the ground between was divided up into squares by a number of little green hedges, that reached from brook to brook. “I declare it’s marked out just like a large chessboard!” Alice said at last. “It’s a great huge game of chess that’s being played – all over the world – if this *is* the world at all, you know.” (Carroll (1866) 2012, 134)

Here, Alice is in a dominant position of visual oversight and control which contrasts sharply with her actual experience on the ground once she becomes part of the game. In fact, her description implicitly registers the simultaneous layered nature of the two spatialities with the game being played “all *over* the world” (i.e. the board is like a map laid down on top of the landscape).²³

A Pawn in the Game

So Alice maintains a doubled identity. She is both a girl travelling through a weird landscape *and* a pawn in the game. This also means that two forms of spatial agency are in play. Once entered, the chess game strongly imposes itself upon Alice’s movement. As a pawn, she can only go forwards, not backwards, one square at a time, and as a pawn seeking to become a Queen her movement is externally driven and determined by rules and movements beyond her purview. She has no choice about where to go (although luckily this aligns with her own wishes): “I want to become a Queen” (Carroll (1866) 2012, 196); “If only I could get to the Eighth Square before dark” (Carroll (1866) 2012, 147). However, at the same time, as a traveller across and within *each square* of that world (in a form of movement that we might term “Alice’s journey”) she must make her own way and does *have* choices, even if these are repeatedly confounded. These two forms of spatial agency deepen the tension between “map” and “tour” and correspond directly to the model suggested by De Certeau – of a larger controlling strategy or field of operations within which resistant tactics emerge.

A lack of individual spatial control is felt most strongly at the interface between these two spatialities as Alice draws near to a boundary at the edge of one square and prepares to move into the next. Apart from her first entry onto the board and arrival on the final Eighth Square (where she moves forward voluntarily and eagerly) all other movements occur by compulsion (driven by the train; escaping from the noise of the drums) or through her actions in chasing objects that cross the threshold (the shawl; the egg) and draw her across with them. The rules of the game act strongly upon her as she “jumps” (is jumped) into each new square which then resets around her. Once *within* a square, however, she appears free to interact with those on either side of her and the space itself seems to morph and extend laterally. The boundaries that run *horizontally* across the board (materially signalled by asterisks on the page and not corresponding to chapter breaks) are thus much firmer than those that run vertically. This reminds us that at the same time that Alice moves, the other players are also moving around her – a fact that the reader is largely blind to. We have visualised this in *Figure 17*, which shows not only Alice’s moves (as on the referential map layer) but also those of the *other* pieces in sequence.²⁴ So, for example, when on her journey she observes the Red King sleeping in the Fourth Square, he is actually located on the square to her right at the near centre of the board.²⁵ In the same way, the White Queen is moving in parallel to Alice on her left, which is why Alice is able to assist her. When we visualise *all* the moves (as Carroll does not) we see that the movement of pieces around her seem to occur to ensure Alice’s safe progress rather than to win the game.²⁶ The White Queen acts as a kind of protector (Alice is standing in for her child after all). The Red Queen only moves twice – to start Alice off and meet her at the end. The Red King must stay sleeping in order for the game to continue; the White Knight stops Alice being taken. In this sense, map and tour are bound together since the success of Alice’s journey (tour) seems to generate the pattern of movement for all the characters on the gridded space seen from above (map).

FIGURES 17, 18 and 19 HERE

Figure 17. Movements of all the characters mapped onto Carroll’s game plan

Figure 18: Second series of sub-maps for each individual square in Through the Looking-Glass (not on Chronotopic Cartographies website)

Figure 19: The Deep Chronotope Map (First Series) for Through the Looking Glass
<https://www.lancaster.ac.uk/chronotopic-cartographies/visualisations/through-looking-glass/deep-chronotopes/>

At the same time, however, Alice's *personal* experience is not one of clear and ordered progress because her larger forward movement is offset by her experience on the ground. Movement *within* an individual square simply does not exist on a chess-board since a piece is entirely static, waiting to be played. In *Through the Looking Glass* this zone thus seems to function in an anti-propulsive way. On the one hand, we might say that the "tour" space of movement is rendered static precisely by virtue of not existing on a chessboard (perhaps intentionally by Carroll, taking this into account). However, for Alice herself, there *is* still a need to travel across this space (backwards, moving away from the face of the glass) and so her spatial experience is rendered contradictory. As De Certeau might put it, the narrative "plays a double game; it does the opposite of what it says" (De Certeau 1984, 129). The (relative) order and clarity of what is happening in the game in terms of patterns of movement at one level, is interrupted by confusion and muddle at a level of immersion within each square as the two ways of negotiating space are brought into conflict. Indeed it is worth noting that the action of most of the squares is centrally concerned *with* conflict (Tweedledum and Tweedledees' battle; the Lion and the Unicorn; the two Knights).

Alice's personal spatial identity reflects this doubleness. In relation to the chess board layer this consists of her hesitating or expressing reservations about forward movement but then giving in anyway. Again, this is most visible at the point of "jumping" into a new square:

Alice felt a little nervous at the idea of trains jumping at all. "However, it'll take us into the Fourth Square, that's some comfort!" she said to herself. (Carroll (1866) 2012, 141)

She very soon came to an open field, with a wood on the other side of it: it looked much darker than the last wood, and Alice felt a little timid about going into it.

However, on second thoughts, she made up her mind to go on: 'for I certainly won't go back,' she thought to herself, and this was the only way to the Eighth Square.

(Carroll (1866) 2012, 145)

Dialogue further functions to displace forward momentum and the nursery rhyme meta-texts pull against the drive of the narrative and Alice-as-pawn's own goal-directed desires (as seen in our referential map layer where they are arranged to left and right of the board).

A second series of nested maps for sections of the text corresponding to single squares can deepen understanding (see *Figure 18*). When we generate these we find that across almost all of the sub-maps the form of the star topology dominates.²⁷ In a star topology, a central

“hub” provides the sole link to other points in the network. This kind of structure has been commented upon by other researchers in relation to digital character networks where it signifies a strong focus on a central character. In our maps – centred on spatio-temporal meanings rather than character relations – it shows the centrality of a particular chronotopic form within each square. In fact what the sub-maps reveal is a tension between encounter and a second chronotope – the road for the fourth and fifth squares; the market-place in the sixth square. The seventh square is the most distinctive, containing two encounters, one of which strongly dominates. In contrast, for the eighth square the star form is retained, but encounter is now replaced by threshold as Alice prepares to exit the world.

In terms of Alice’s movement within and across a single square, then, this is often checked or constrained as she follows signs that all lead to the same place (Fourth Square) goes round in circles (Square Five) or is rendered static (Sixth Square). The sub-maps confirm the way in which each individual square pulls *against* Alice’s larger movement across the board (as in the wood of no names where she first loses all sense of self and then, having recovered, is confronted with signposts that spatially confound her). By the final square – when Alice is about to take the Red Queen and so put the Red King in check and end the game – the chess move is not even experienced *as* direct movement but as an anticipatory change of state: “‘Take care of yourself!’ screamed the White Queen, seizing Alice’s hair with both her hands. ‘Something’s going to happen!’” (Carroll (1866) 2012, 220). What, then, is the dominant spatio-temporal identity of the text as a whole? If we turn back to the *deep chronotope* map from the first series this strongly confirms the findings of the sub-maps for each square. This map has a highly distinctive fan shape (see *Figure 19*) because all nodes (topoi) are connected to that of encounter, which is also by far the largest and most dominant chronotope for the whole text.

By its nature the heterotopic space of the mirror leads to an expectation that the Alice who returns from the far side will be able to see herself differently as a result of “What She Found There”. So what ultimately do we make of this pull (between the spatial stasis of the encounter experienced repeatedly throughout Alice’s journey as opposed to the goal-driven trajectory of the piece across the board) in which it is encounter that triumphs? We could perhaps argue that encounters are spatially static, but experientially rich. Helen Cixous offers a Lacanian reading which promises to confirm such a reading – “the title . . . would point towards the discovery of herself through *intersubjectivity*” (Cixous 1982, 238) – but does so only to deny it. (She concludes that: “If Alice had believed that she had found something, one would expect that when she left the House of Mirror she would be marked by the experience”

(Cixous 1982, 238)).²⁸ In his account of how everyday stories work spatially, De Certeau argues that: “Within the structured space of the text they thus produce anti-texts, effects of dissimulation and escape, possibilities of moving into other landscapes”(De Certeau 1984, 107). Alice’s progress both makes and unmakes itself at the same time. Where the chess board offers clear action and progress towards a goal, the individual square presents narration in a way that confronts that way of being and brings it to a halt: “Something in narration escapes the order of what it is sufficient or necessary to know . . . It does not have its own discourse. It does not say itself. It is the practice of nowhere” (De Certeau 1984, 80). One kind of spatial form (narrative? utterance? Literature?) resists another (patterned; playing a game). Gillian Beer, in *Alice in Space* structures her own critical readings of the two Alice books in a way that loosely corresponds to what we have discussed here; “to reveal particular patterns rather than to proceed irreversibly from stage to stage” (Beer 2016, 25). This approach allows her to “respect the picaresque nature of Alice’s travels and resist seeking a moral progress or an apotheosis that would falsify Lewis Carroll’s achievement” (Beer 2016, 25). Perhaps, reading spatially, all one can conclude is that at least she does make it safely both across (the board) and back (through the mirror); that she gets herself out.²⁹

Conclusions

In this paper we have argued for and sought to put into practice a new form of interpretation for the Digital and Spatial Humanities that combines the reading of the text with that of the visualisations generated out of it. Both case studies show that the power of the topological mapping method is comparative and lies in reading across different maps within a series, or for the same literary form, or in comparing one map form with other spatial representations of the text. At the same time, when we do this the act of comparison often highlights tension or dissonance between one kind of spatial experience and another; between inner and outer experiences or a distinction between a larger imposed spatiality and the movements of individuals within that. Literature problematises and complicates the spatial experience. Ultimately, the map visualisations bring to light spatial meaning within a work that extends far beyond mere setting or background and points towards the importance of spatial agency, motivation and identity as core features of literary mapping.

We wish to end with a comment by Merleau-Ponty that seems to draw attention to the possibilities of such a method:

Space is not the setting . . . in which things are arranged, but the means whereby the position of things becomes possible. . . . instead of imagining it as a sort of ether in which all things float, or conceiving it abstractly as a characteristic that they have in common, we must think of it as the universal power enabling them to be connected.

(Merleau-Ponty (1945) 2002, 284)

A topological approach has the potential to allow for the full nature of spatiality that literature represents.

DRAFT

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Stanzel, Franz K. 1979. *A Theory of Narrative*. Trans. Charlotte Goedsche. Cambridge: Cambridge University, Press, 1984.

¹ The first paper, also published in *Cartographica*, is called “Digital Literary Mapping I: Visualising and Reading Graph Topologies as Maps for Literature”. We recommend reading this first for a full understanding of the map generation method.

² <https://www.lancaster.ac.uk/chronotopic-cartographics/>

³ In *Atlas*, Moretti asked “What can quantitative methods *add* to the study of literature?” (Moretti 1997, 149) but by *Distant Reading* he uses the term “literary history” (Moretti 2013, 48) and “quantitative formalism” (Moretti 2013, 180) to define his method. The debate around the benefits of “distant” vs. “close reading” also finds its origins here.

⁴ There has not been space here to discuss subjectivity fully, but our project does map the same text using different editions and coders as well as different versions of the same text to explore such issues.

⁵ <https://uofmd.maps.arcgis.com/apps/MapJournal/index.html?appid=85b227b2ce964cb9b6279ed0dc3411ac> Accessed Tuesday 27th April 2021.

⁶ <https://thecorpuselectric.wordpress.com/2017/05/27/digital-frankenstein-dh-mapping-of-mary-shelleys-frankenstein/> Accessed Tuesday 27th April, 2021.

⁷ <https://jasonmkelly.com/frankensteinatlas#aboutfrankensteinatlas> Accessed Tuesday 27th April 2021.

⁸ We also note an alternative model for the future of DH in the concept of “deep mapping” which allows for a range of forms of representation to co-exist in relation to a given place. See Trevor M. Harris, John Corrigan, and David J. Bodenhamer, eds. 2015. *Deep Maps and Spatial Narratives* (Bloomington & Indianapolis: Indiana University Press). Our model differs fundamentally from Deep Mapping in that map forms are generated directly out of the text and those layers represent simultaneous spatial meanings within a single text (not the layering of multiple texts over time). We also focus strongly on interpretation of text and of imaginary spaces rather than on geographic sites in the world (as Deep Mapping tends to do).

⁹ A full account of the different maps in the series is given in our first paper, “Digital Literary Mapping I”. These are: the complete map; topoi map; syuzhet map (with fabula derived from syuzhet); topoi and chronotopic archetypes map; deep chronotope map.

¹⁰ The chronotope of “meeting” is a key one for Bakhtin (whose account of the chronotope underpins our model). He states: “The inseparable unity of time and space markers gives to the chronotope of meeting an elementary, clear, formal, almost mathematical character” (Bakhtin 1981, 97).

¹¹ This composite text contains: a first tour of France, Switzerland, Germany and Holland in 1814 (MS); a second tour of Geneva and the Alps in 1816 in Letter form (MS and PS); and Percy Shelley’s poem, “Mont Blanc”.

¹² The Broadview edition of *Frankenstein* acknowledges the difficulty: “An edition like this one, which tries to give a sense of the whole intertextual network within which Mary Shelley’s novel was written and received, must be rigorously selective” (Macdonald and Scherf 2012, 9) yet its intertextual focus is primarily on the reading undertaken by characters within the text or in relation to Mary Shelley herself, the influence of her parents (Godwin and Wollstonecraft) with no mention of *A History*.

¹³ Although we have started to work on a micro-mapping method for the largest scale analysis this has not yet been fully developed.

¹⁴ As its title suggests, Gillian Beer’s *Alice in Space: the Sideways Victorian World of Lewis Carroll* (London: University of Chicago Press, 2016) draws closest. This book contextualises Carroll in terms of nineteenth-century debates around space and time.

¹⁵ Gillian Beer notes that: “Professionally, Dodgson held to the authority of Euclid; as Lewis Carroll he explored in fantasy alternative spaces for thinking” (25).

¹⁶ See Gardner for a comprehensive list of left-right reversals in the narrative (166-167).

¹⁷ As Martin Gardner also makes clear, Alice crucially retains her sense of being the right way round as Tenniel’s illustration shows: “Alice is not reversed on the other side of the glass. She continues to raise her right arm and to kneel on her right leg” (Gardner 2015, 173).

¹⁸ See Gardner 2015, 155-57.

¹⁹ Carroll himself drew attention to this in a note added as a “Preface” to the 1897 edition. See Gardner 2015, 154-57. By far the most thorough and comprehensive account of the moves in the game is that by Glen Robert Downey in his PhD Thesis: “The Truth About Pawn Promotion: The Development of the Chess Motif in Victorian Fiction” (University of Victoria, 1998). Downey summarises early efforts to understand the chess problem before concluding that: “Carroll’s game both elicits and subverts critical attempts to subject it to a rigorous scheme” (Downey 1998, 136).

²⁰ In *Narrating Space/ Spatialising Narrative: Where Narrative Theory and Geography Meet* (Columbus: Ohio State University Press, 2016) Marie-Laure Ryan, Kenneth Foote and Maoz Azaryahu make the same distinction although they draw upon two different underlying narrative models (the second of which is also De Certeau's source): Franz K. Stanzel *A Theory of Narrative* (1979), trans. Charlotte Goedsche (Cambridge: Cambridge University Press, 1984); Charlotte Linde and William Labov, "Spatial Networks as a Site for the Study of Language and Thought" *Language* 51 (1975): 924-39.

²¹ De Certeau makes clear the nature of the two types: "The first is of the type: 'The girls' room is next to the kitchen.' The second: 'You turn right and come into the living room.'" (De Certeau 1984, 119).

²² Although he doesn't make the map/tour distinction Downey's reading of the moves of other pieces in the game implicitly draws on the limited perspective of the tour because of their immersion: "characters move the way they do because they lack an understanding of the position of other pieces" (Downey 1998, 155).

²³ Cf. Carroll's account of the 1:1 map in *Sylvia and Bruno* (*The Complete Illustrated Works of Lewis Carroll* (London: Chancellor Press, 1982)); 523-4. Counter to our reading here, Gilles Deleuze reads the text in terms of one surface sequentially replacing another "Alice herself enters the game: she belongs to the surface of the chessboard, which has replaced the mirror" (Deleuze 1990, 247).

²⁴ Although the map as given here is our own, and spatialises all moves at once, it draws upon Glen Robert Downey's detailed move-by-move analysis of the game.

²⁵ In heterotopic terms the Red King is doubly removed from reality: a dreamer, asleep in the world through the mirror (a place that is no-place). Alice is already "nowhere" and "not real" at one level by virtue of having passed through into Looking Glass world. The suggestion that she is also "dreamt" within that world again reflects the doubleness of the space she moves through.

²⁶ As Downey points out, the Red King could have been placed in check by both the White Queen and Alice herself early on, if the purpose of the game were to win it (Downey 1998, 178). See also Gardner 2015, 155-6.

²⁷ This is less true for the third and the fifth squares – but in these Alice is carried along by rail and river.

²⁸ Cixous describes "The nongratifying relationship which this book establishes with the reader: no day will be the day of meaning . . . meaning both promised and inaccessible" (Cixous 1982, 237).

²⁹ Notably Alice releases herself in a final move that is brought about when she allows her feelings full rein because she "can't stand this any longer" and is "too much excited to be surprised at anything" (Carroll (1886) 2012, 222). So perhaps what she has learnt is the power of self-release. However, this is contradictory at best: "Alice is able to win because she finally quits trying to play the hopelessly muddled and stacked game" (Kathleen Blake, *Play, Games and Sport: The Literary World of Lewis Carroll* (Ithaca and London: Cornell University Press, 1974) 147).

FIGURES for DIGITAL LITERARY MAPPING II

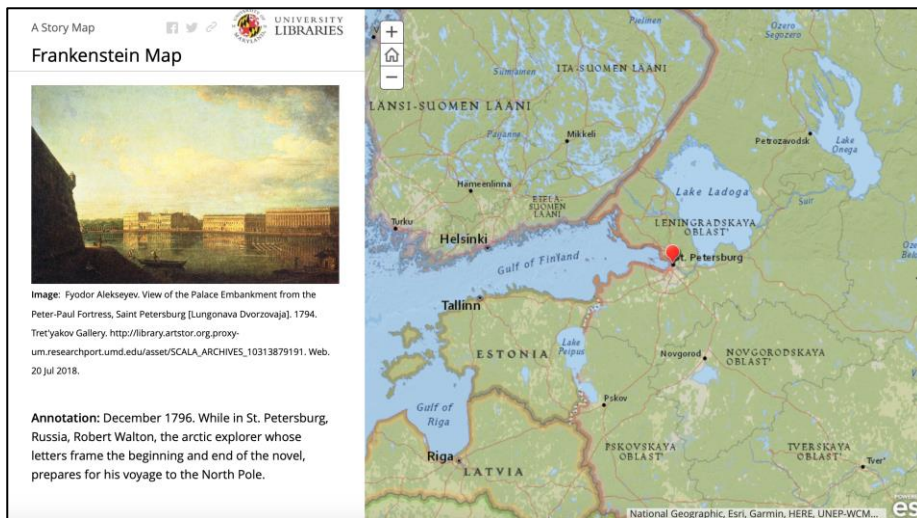


Figure 1: University of Maryland Frankenstein map
<https://lib.guides.umd.edu/frankenstein>

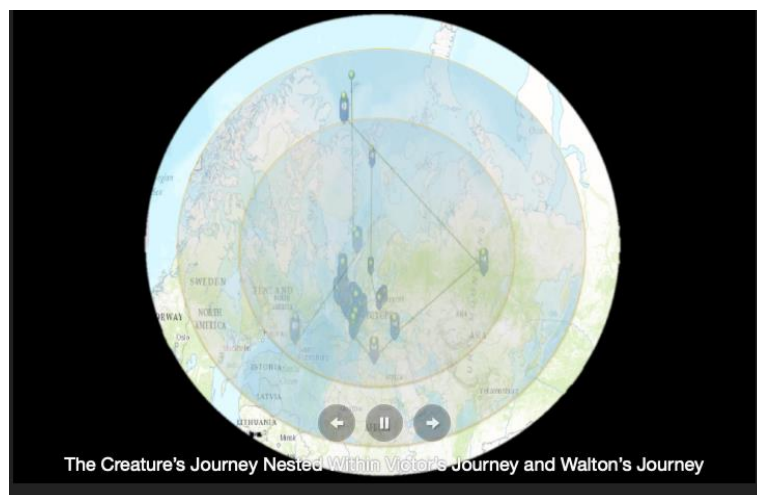


Figure 2: Digital Frankenstein
<https://thecorpuselectric.wordpress.com/2017/05/27/digital-frankenstein-dh-mapping-of-mary-shelleys-frankenstein/>

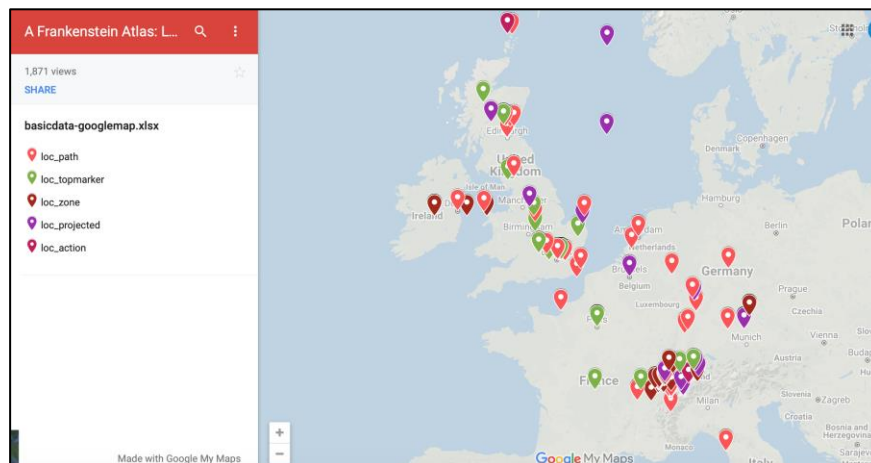


Figure 3: A Frankenstein Atlas
<https://jasonmkelly.com/frankensteinatlas>

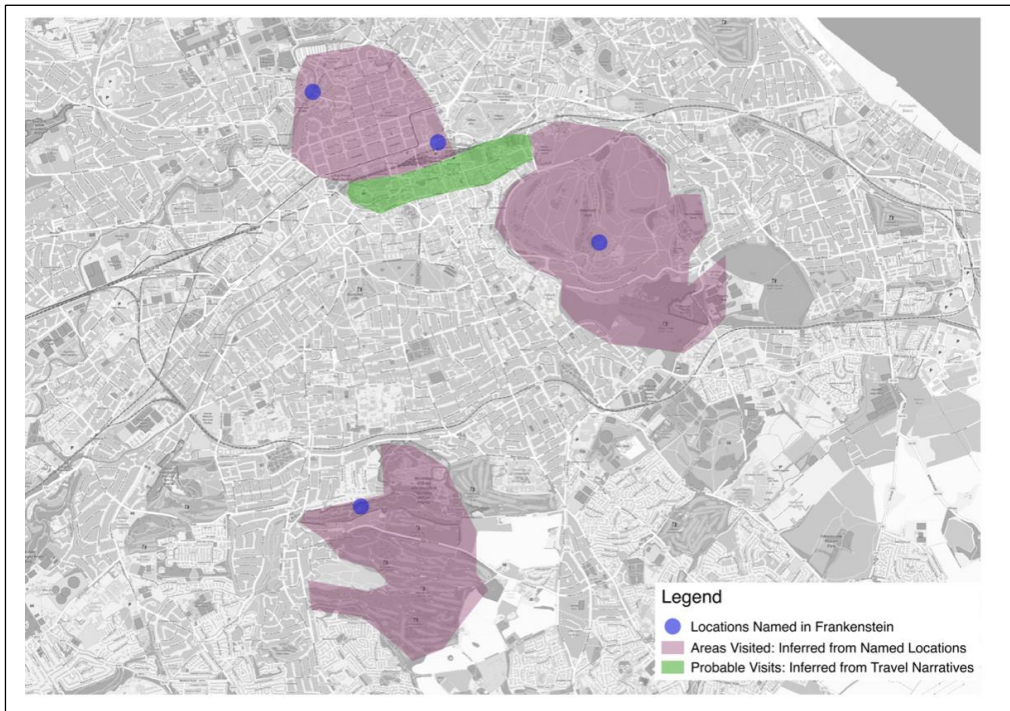


Figure 4: Mapping Edinburgh in A Frankenstein Atlas

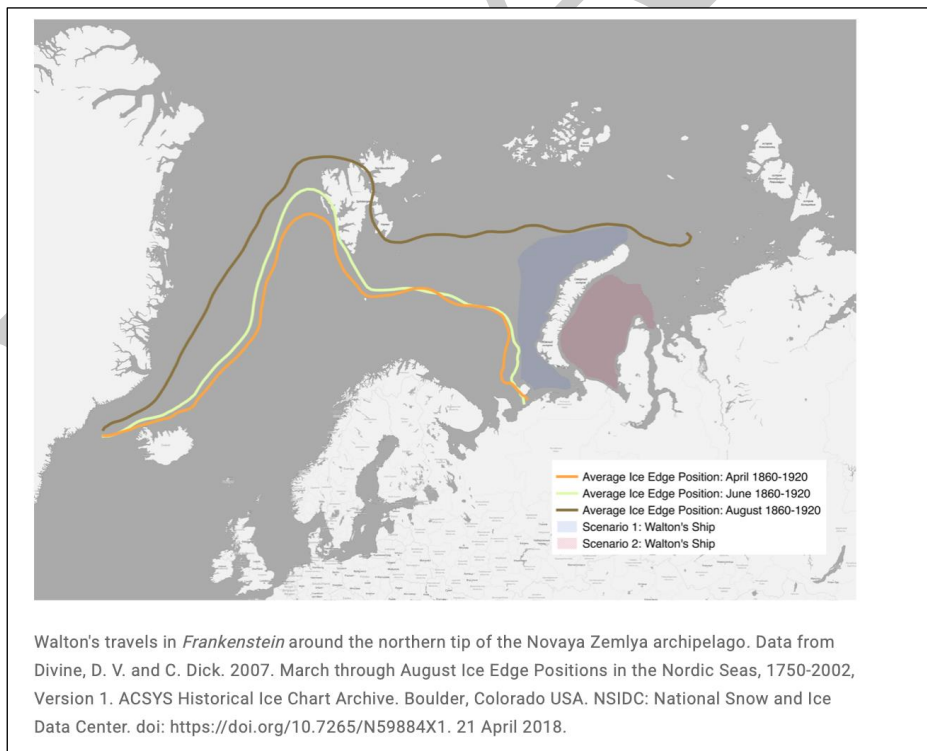


Figure 5: Estimating Walton's Route in A Frankenstein Atlas

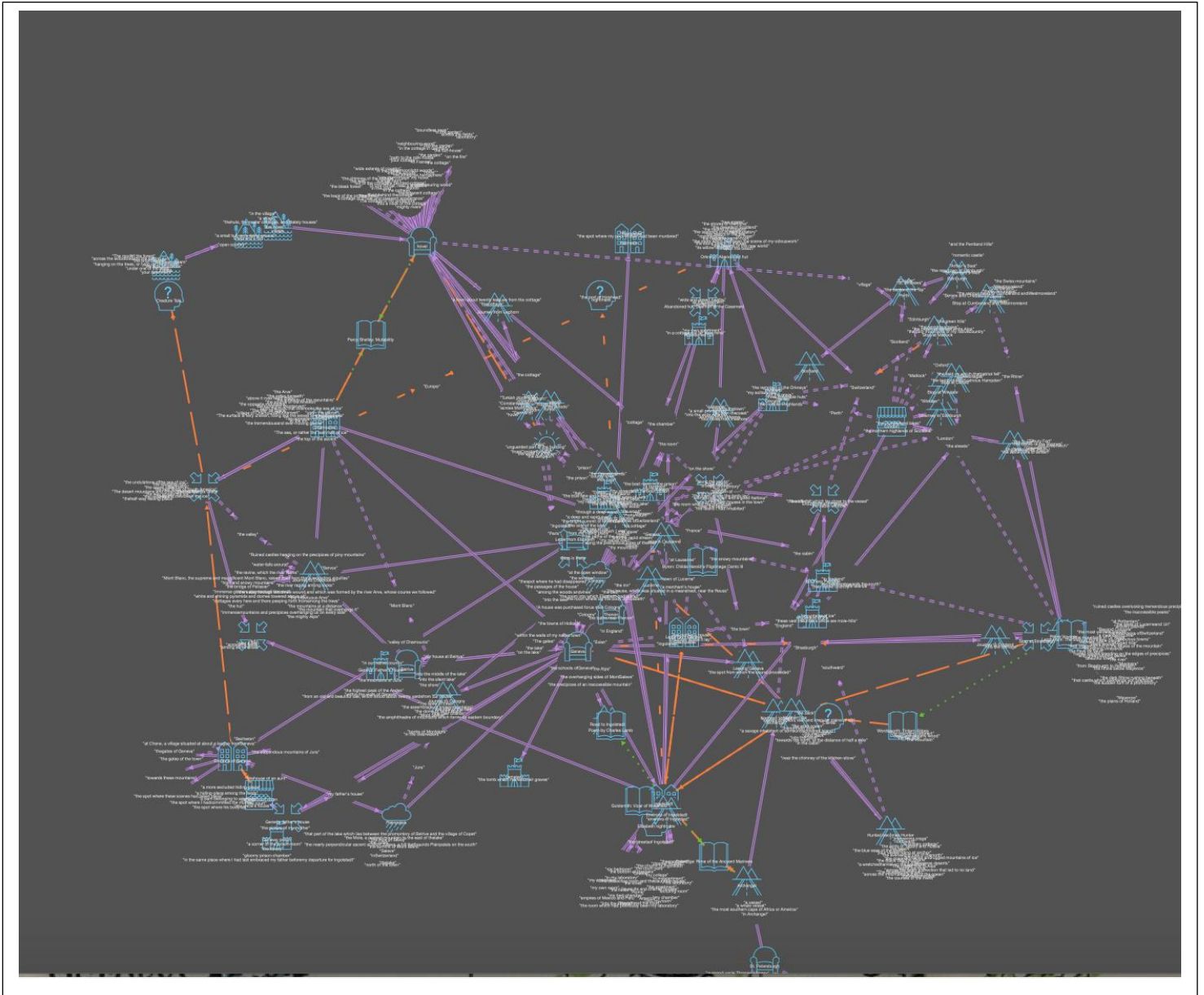


Figure 6: Frankenstein First Map Series: Complete Map

<https://www.lancaster.ac.uk/chronotopic-cartographies/visualisations/frankenstein/complete-map-creature-tale/>

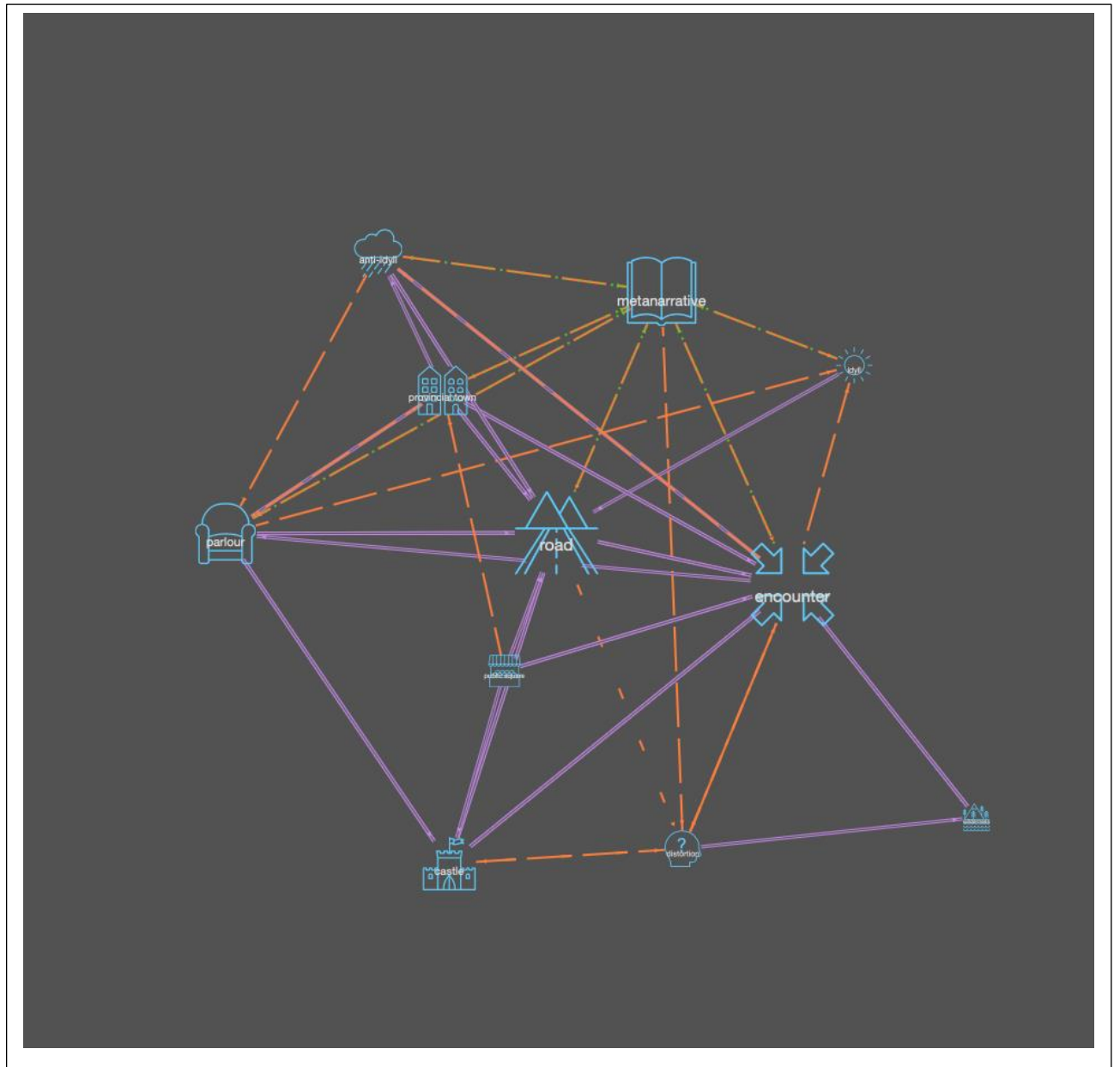


Figure 7. Frankenstein First Map Series: Deep Chronotope Map

<https://www.lancaster.ac.uk/chronotopic-cartographies/visualisations/frankenstein/deep-chronotopes/>

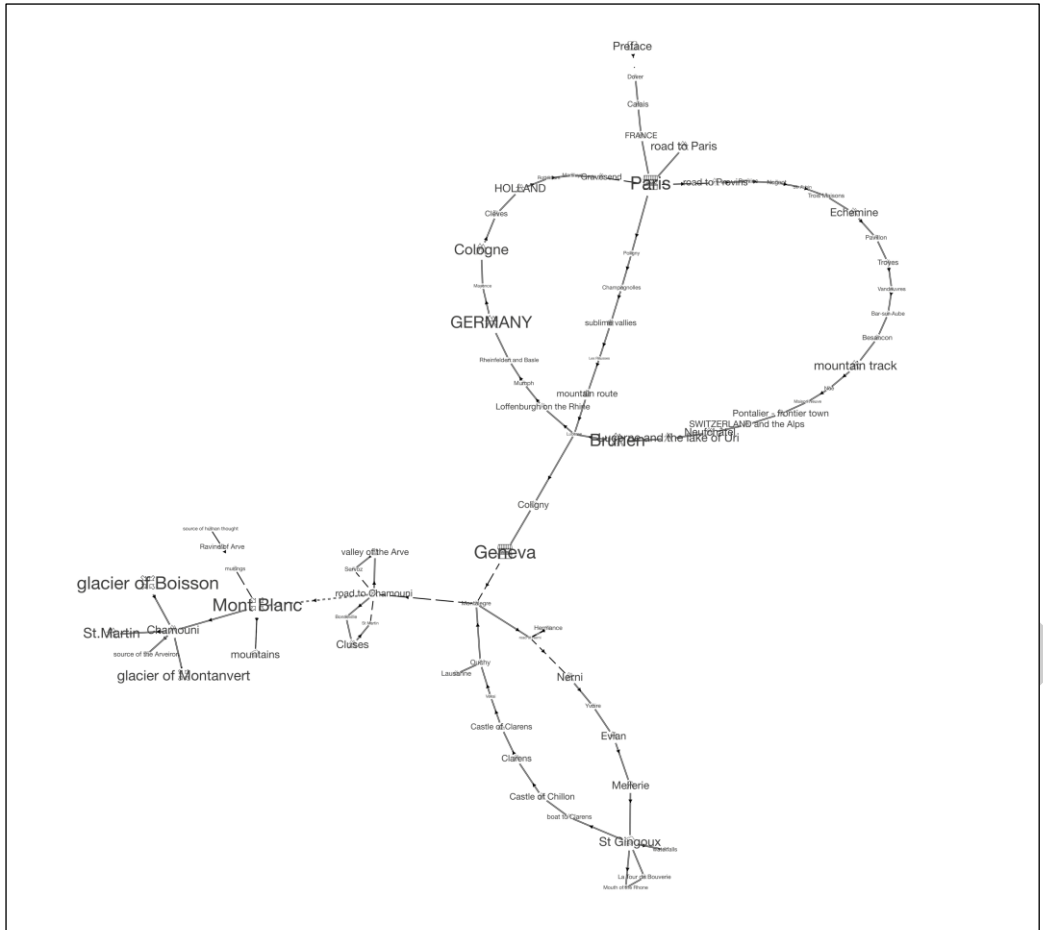


Figure 9. Topoi Map for History of a Six Weeks' Tour (not on Chronotopic Cartographies website)

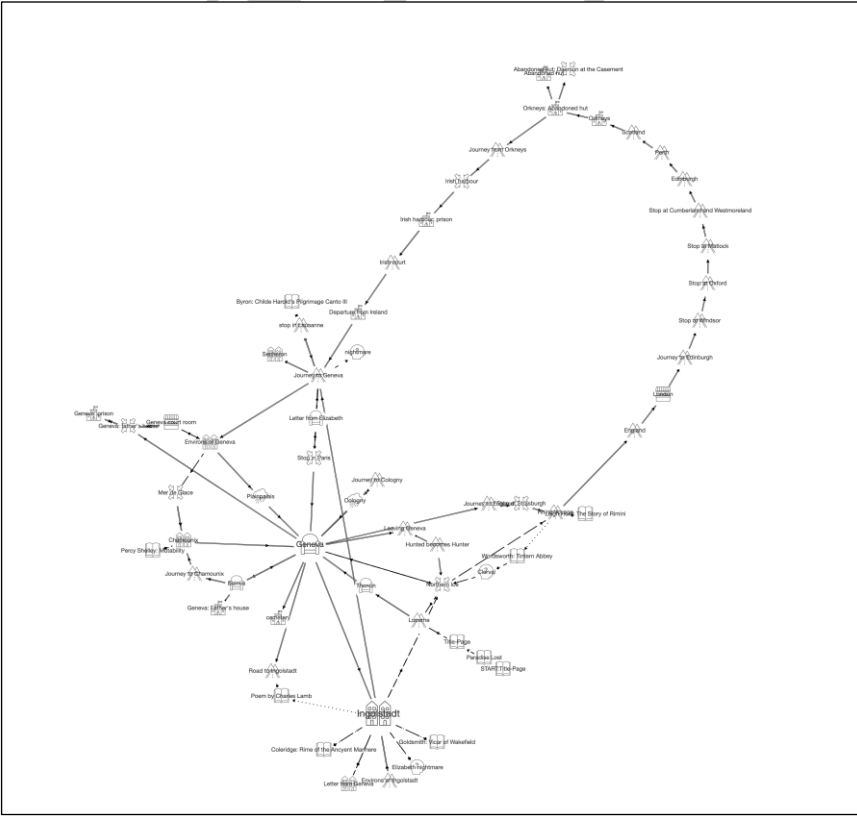


Figure 10. Second Series Map for Frankenstein: Victor's Narrative (not on Chronotopic Cartographies website)

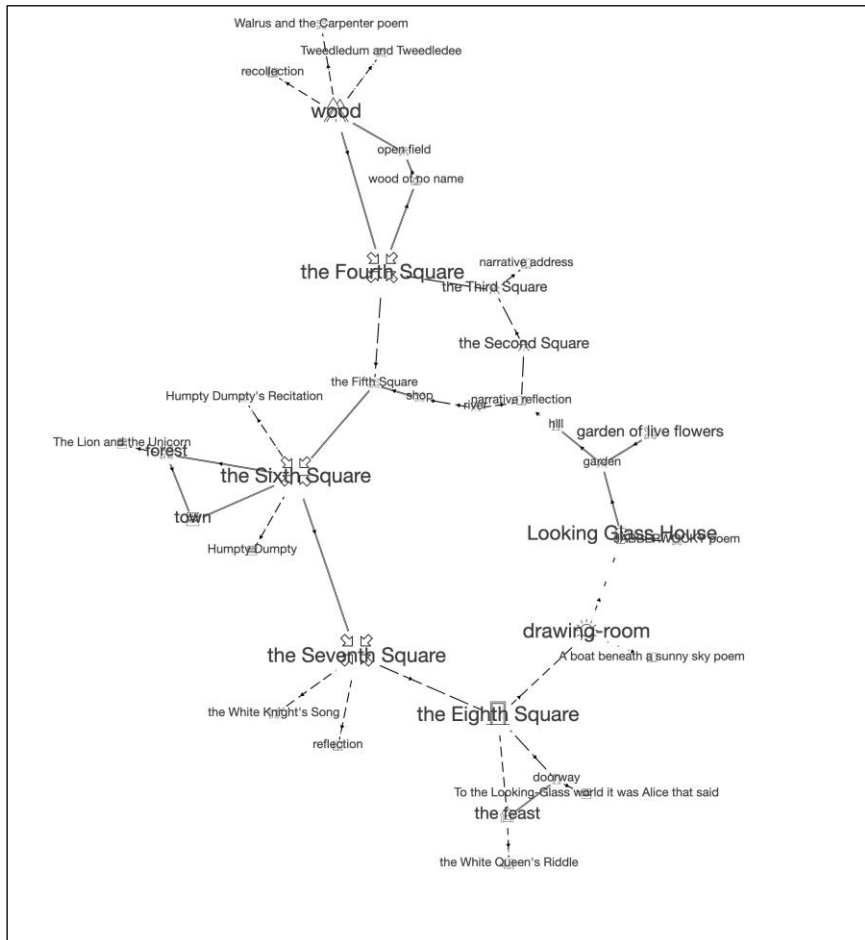


Figure 15. The Syuzhet Map for Through the Looking-Glass(First Series)

<https://www.lancaster.ac.uk/chronotopic-cartographies/visualisations/through-looking-glass/syuzhet/>

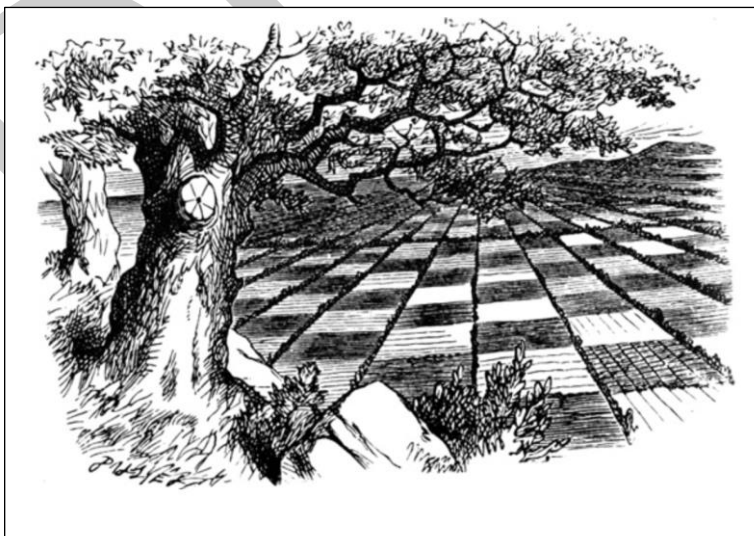


Figure 16. John Tenniel's illustration of the landscape from the top of the hill (Chapter 2)

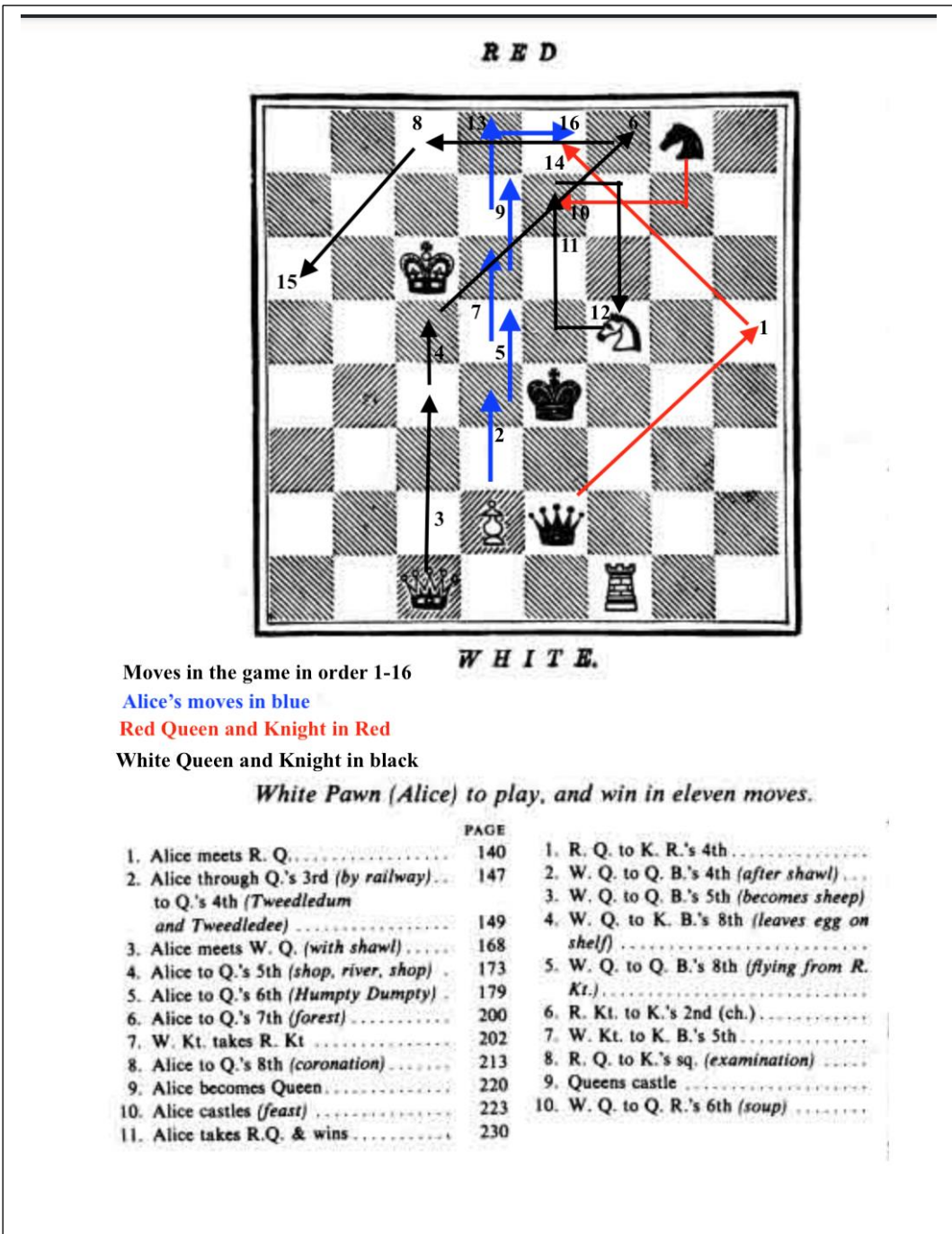


Figure 17. Movements of all the characters mapped onto Carroll's game plan

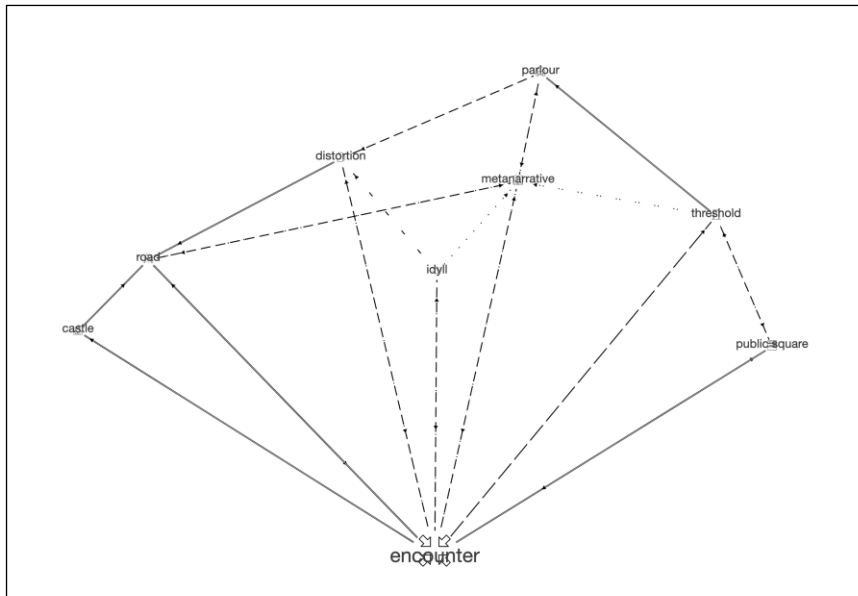


Figure 19: *The Deep Chronotope Map (First Series) for Through the Looking Glass*
<https://www.lancaster.ac.uk/chronotopic-cartographies/visualisations/through-looking-glass/deep-chronotopes/>

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