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Tracing the Grammar of Old Norse Myth: Mapping Mythemes in English-Language Young Adult Literature from the Second Half of the Long Nineteenth Century

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How were ancient Norse myths to be told to a general, cultivated reader in the second half of the long nineteenth century? How did writers adapt them to interact with their audience's horizon of expectations? In other words: what was their narrative grammar? I will explore these questions in the following pages, in the hope that they may also be of interest to the celebrant of this Festschrift, Stefanie Gropper. The corpus of the work consists of several books published in English for children and young adults between 1857 and 1920 in both the United States and Great Britain; these texts, now easily accessible in online archives such as *Archive.org* and *Gutenberg.org*, are telling witnesses to the social knowledge about Old Norse myth of a cultivated English-language reader in this time period.

As I know of Professor Gropper's interest in new theoretical approaches, I want to propose here an unorthodox approach that adapts structuralist theories, such as Claude Lévi-Strauss's reflections on myths, to produce something that could be described as a theory of mythemes of social knowledge in cultural circulation. This theoretical approach is still in development; initial results were presented in a recent article (see Mohnike 2020) and in a webinar series, which can be consulted via a podcast channel hosted at the University of Strasbourg (see *Mytheme of the North* 2020–). The approach is itself the basis for computational methods developed by Ludovic Strappazon, a data engineer based at the University of Strasbourg, and myself, which semi-automatically trace, model, and visualise the grammar of narrative knowledge in a text or in a groups of texts. This process would be classified by Franco Moretti (2013) as a form of *distant reading*, but these methods may nonetheless open up new perspectives even for well-studied texts as regards close readings.

The dataset is derived from the following eight books on Old Norse myth: Annie and Eliza Keary's (1857) *The Heroes of Asgard and the Giants of Jötunheim*; Hamilton Wright Mabie's (1882) *Norse Stories*; Mara Pratt-Chadwick's (1894) *Legends of Norseland*; Mary Foster and Mabel Cummings' (1901) *Asgard Stories*; Abbie Farwell Brown's (1902) *In the Days of Giants*; Mary Wilmot-Buxton's (1908) *Told by the Northmen*; Emilie Kip Baker's (1914) *Stories from Northern Myths*; and Padraic Colum's (1920) *The Children of Odin*. To my

knowledge, none of the books studied here was written by a scholar of Nordic studies; rather, they were composed by authors, mostly unknown today, with interests in writing entertaining didactical prose for the younger generation. Besides Norse myths, these authors published variously on classical mythology, Christian ideas, colonial experiences, and much more. Some would qualify as writers who wrote for a living; others seem primarily to have written in their leisure time. Yet all the books analysed here had an influence on popular knowledge of the gods of the North, and some were richly illustrated and reprinted several times. As the publication dates indicate, they represent several generations' worth of appropriation of Old Norse mythology, but at the same time are all part of the heyday of nationalistic optimism, when British and American citizens were interested in creating a heroic past for their ancestors, imagining them as Anglo-Saxons, sometimes as Vikings, and as brothers of the Teutons. These texts are as homogeneous as a group of books with similar target groups and stories can be, and are thus ideal objects of comparison.

In fact, the stories told in the different volumes are quite similarly structured. All depict the plots known from Snorri's Edda and other medieval sources, but rewritten in an accessible manner. All but Colum begin with the creation of the world; all but Farwell Brown end with Ragnarök, with Farwell Brown only alluding to the impending end of the world after the depiction of Loki's punishment. The texts all tell the adventures of Thor, the misadventures of Loki, the binding of Fenrir, and other stories mostly known from Snorri's Gylfagynning. Yet there are some differences: Annie and Eliza Keary's rendering of Old Norse myth in their first edition uses a frame narrative of uncles and aunts telling the myths to a group of children in a family get-together the week before Christmas, but this framing is removed in later editions (on the work of the Keary sisters, see Wawn 2002: 197–201). The three latest books, from 1908, 1914, and 1920, add stories about Sigurd and the Völsungs; Wilmot-Buxton even includes the tale of Frithjof and Ingeborg, best known to audiences at the time from Esaias Tegnér's epic poem (on this topic, see Wawn 1994). It seems that by this time, the definition of what counts as Norse myth had changed - perhaps under the influence of Richard Wagner's Ring of the Nibelung, which made the stories of the Völsungs and the similar tales in the *Nibelungenlied* a primary point of reference in cultivated popular culture. As we will see, these changes are even to be seen in the quantitative data.

David Clark (2007: 138-139) describes this type of book very aptly as being

very much in line with nineteenth- and early twentieth-century approaches to mythology for children – to tell bowdlerized versions of stories in a simple and elegant style, to interleave the texts with beautiful plates in brown or grey tone, and to make the books to all intents and purposes homogeneous with retellings of any other set of myths, whether Roman, Greek, Celtic, or Babylonian. [...] One finds a concerted effort to tone down or absorb anything alien or potentially upsetting in the original, presumably reflecting a desire to educate but not to disturb children. Some of them are nevertheless beautiful in both style and visual appearance, and can still have a huge imaginative impact on children.

As Clark rightly remarks, these texts are witnesses to a general interest in myth, and they are representative of wider trends in how they were adapted to the needs of the audience. To formulate this idea rather more radically: more general ideas of what is myth, understood at the time as an early expression of the nature of peoples, nations, and/or races, have pre-

structured the reception of Old Norse myths and the ways in which they are told in the books. The texts are rendered in a way to make a comparison between different mythologies possible. Most often, classical, Greek, and Roman mythologies provide the central reference point, with these myths often being described as something originally alien to the English, but which now form part of their culture. Another important frame of reference, both explicit and implicit, is the Christian religion, which Clark does not mention. A Christian education on the part of the children in the audience was taken for granted; the reading of other myths should not disturb it. This is not only apparent from the texts themselves, but also in the fact that many of the authors wrote explicitly Christian texts elsewhere (see, for example, Brown 1900 and 1910; Wilmot-Buxton 1911 and 1920).

The books rarely give clear indications of their sources. Some mention the Eddas, and later the *Nibelungenlied*, but it is very likely that that no author had access to the originals. Of course, the authors of later books in the corpus would have used earlier editions themselves as sources. A central source for at least the first books in the group would certainly have been one of the many editions of Thomas Percy's translation and commentary of Paul-Henri Mallet's Monuments de la Mythologie et de la Poésie des Celtes, et particulièrement des Anciens Scandinaves (1756), first published in English in 1770 under the title Northern Antiquities. New editions of the text, adapted, refurnished, and newly illustrated, were published regularly throughout the long nineteenth century. For example, the 1847 edition of Northern Antiquities, edited by I. A. Blackwell, was supplemented by texts on the discovery of Greenland and America and on Icelandic laws, institutions and literature, especially Snorri's Edda, as well as an extract of Walter Scott's translation of Eyrbyggja saga, whilst omitting other texts found in Percy's own edition (see Mallet 1847; on some aspects of the editions, see Wawn 2002: 183-195; Spray 2019: 54-79). In 1842, George Webb Dasent published his translation of Snorri's Edda, with Rasmus B. Anderson's own following in 1880 (see Snorri Sturluson 1842 and 1880). The Poetic Edda was accessible mainly through three translations by Benjamin Thorpe (1866), Guðbrandur Vigfússon and F. York Powell (1883), and Olive Bray (1908); some authors may even have read translations in German and French. Additionally, Benjamin Thorpe's comprehensive scholarly work Northern Mythology (1851–1852) served as a basis for at least the Keary sisters' work.

Against the background of the existing translations of the sources, it becomes clear that the reason for the existence of the texts analysed here was that they cast the medieval narratives into new forms in order to adapt them to their readers' horizon of expectations. These books represent what could be described as a normative version of Old Norse myth in the second half of the long nineteenth century, in that they narrate the myths to their implied readers as seemed logical or natural to them. They thus represent what can be termed the social knowledge of Old Norse myth, meaning the shared (or expected to be shared) comprehension of a certain socio-historical community – here, the cultivated English language reader.

But how can we analyse this social knowledge more precisely? When using the concept of social knowledge outlined above, I am as a scholar of literature most interested in a

¹ The term 'long nineteenth century' is generally used to refer roughly to the period from 1780 to 1920, which encompasses the decades immediately preceding and following the nineteenth century as strictly defined.

specific form of knowledge: narrative knowledge. Narrative knowledge appears to be a central form of knowledge transmission; in fact, most of the knowledge processed by and circulated between human beings takes the form of narrative. The prominent position of narration in human thought has led many scholars to define the human being as homo narrans, a storytelling animal (see Fisher 1987; Niles 1999; Boyer 2001; Boyd 2009; Gottschall 2013). In contrast to some other approaches to the study of narration, I want to focus on the smallest units of narration and the tendencies that they have to be used together. Inspired by Claude Lévi-Strauss's structuralist theories, I call these smallest narrative units 'mythemes'. Lévi-Strauss (1955: 431) describes mythemes as "gross constituent units" of stories, characterised as being "bundles of [...] relations" - "and it is only as bundles that these relations can be put to use and combined so as to produce a meaning". In other words, a mytheme as a narrative unit must always be seen in the context of other narrative units. Yet not all mythemes are as likely to be used in the same context: whilst the god Thor often meets with giants, Odin rarely meets with the Pink Panther. In this sense, I have proposed elsewhere that "the grammar of discourse could be defined as the (most probable) possibility of connecting sets of mythemes at a given moment in time and space" (Mohnike 2020: 28).

In order to avoid some of the potential pitfalls highlighted in responses to Lévi-Strauss, particularly the danger of arbitrariness (see Mohnike 2020: 16–17), I propose to distinguish here between four different types of mythemes:

- 1) 'Actor mythemes': narrative units that can cause action (e.g. a god, a stone).
- 2) 'Chronotope mythemes': narrative units that situate a narrative in time and space (e. g. a castle, a sunset).
- 3) 'Action mythemes': narrative units that define the narrative relationship between actor mythemes (e. g. a battle, a voyage).
- 4) 'Concept mythemes' (e.g. love, hatred).

Of course, the borders between different types of mythemes are not always clear-cut; a stone can be in one context be understood as part of a chronotope, indicating where the action takes place, and in another as an actor, as for example when it is used to hit another actor. Yet the proposed distinction has proven to be helpful for this research, as demonstrated below.

As indicated above, the analysis in this article uses a quantitative computational approach; specifically, it assesses the results obtained by the *Mytheme Laboratory*, a software kit that Ludovic Strappazon and I have been developing since 2019 (see *ML*). Its interface and database structure is based on Wikimedia software; the statistical data is produced by a small program coded in Python, using Natural Language Processing tools, such as spacy (see Ines Montani et al. 2021), to conduct several statistical operations on the texts. These operations will be described in detail in a forthcoming publication. To summarise here, the basic postulates of the approach are as follows:

1) There are signifiers in the text that induce a high probability of the use of a mytheme at a certain passage of a text (e.g. the name 'Thor' refers to the mytheme 'Thor', the word 'forest' to the mytheme 'Forest').

- 2) The text that surrounds a mytheme contains traces of the attributes (i. e. relations) of a mytheme in the form of words and word-groups.
- 3) Words used more often in the portion of the text analysed than more generally in the same text are more significant for the mytheme in question.

The software thus takes a text uploaded to the system and lemmatises it, meaning it transforms all grammatical variations of a word to its basic form, as well as determining the part of speech (e.g. noun, verb, proper noun) of each word. It then looks for all occurrences of a signifier or groups of signifiers; for example, the god Thor can be figured as 'Thor', 'god of Thunder', 'Thunderer', sometimes all in the same text. The software then collects all the words surrounding a given signifier in a predefined window, most often 120 words, and calculates the coefficient of over-representation for each word, which can be roughly defined as the probability that a word will be used more often in the context of that signifier than in the rest of the text. To give an example from our corpus: Odin's horse Sleipnir is strongly connected to Odin's son Hermod in the works of 1884, 1908, and 1920, as well as to the goddess Hel, as Hermod rides Sleipnir to Hel after Baldr is killed. In fact, Hermod is mentioned in these works almost exclusively in this context. In Colum's The Children of Odin (1920), nine of the twelve occurrences of the name 'Hermod' take place in Sleipnir's narrative environment. Whilst we may initially be surprised that the name 'Odin', by contrast, is not a significant trace for the name 'Sleipnir', we should keep in mind that Odin is often referred to in the text outside any connection to his horse. On the other hand, in the statistics concerning the name 'Odin', Sleipnir is seen to be strongly connected to Odin, as nine of the twelve occurrences of the name 'Sleipnir' take place in Odin's narrative neighbourhood.

This observation brings us to the question of how to define the probability of cooccurrence of two mythemes in a given narrative context, i. e. the discursive closeness of mythemes. Here, we propose a further set of postulates:

- 1) The grammar of knowledge is defined by the probability of one mytheme to link to another through shared connected points ('relations').
- 2) We can thus define mythemes as 'nodes' in networks of possible relations.
- 3) Possible relations can be defined as 'edges'.
- 4) The grammar of knowledge can be visualised and interpreted by using methods from network theory.

In the above example of Odin and Sleipnir in Colum's text, the mythemes are linked through multiple traces. Most significant is the use of the signifier 'Sleipnir' together with Odin, but the mythemes also share a tendency to be connected to the term 'dead', expressed through high coefficients of overrepresentation. There are several ways to analyse the statistical data from the laboratory as networks of mytheme use. In the following, I will focus on an algorithm implemented in our software using the Python package NetworkX to create networks of mytheme uses. The algorithm connects two mythemes as nodes when they share traces. Traces are interpreted as witnesses of edges between two mythemes; these edges are weighted according to the coefficient of representation (CR). If two mythemes share many traces, the respective CRs are added together, thus resulting in highly weighted relations. Finally, the algorithm calculates the 'betweenness centrality' of

the mythemes, meaning that it tries to define which mythemes take central places in the narrative grammar by looking for how often a given mytheme is used to link any mytheme with any other. In other words, whilst some mythemes are used only rarely in a text and occupy a peripheral position, others are of central importance in linking the mythemes of the narrative universe.

I have attempted to identify through the statistical data and my knowledge of the texts the most frequent mythemes in each text; these were then searched for in all studied works. Depending on the length and complexity of the text, the software identified between 112 and 165 mythemes. All the data can be consulted at the *Mytheme Laboratory*'s website.

Any attentive reader of renderings of Old Norse mythology knows that the narrative importance of certain mythemes changes according to time and space, in that they depend on the historical needs of the group of storytellers and their publics. As we know, the question of whether Thor or Odin should be understood as the central god in the pantheon is debated, and it is often suggested that Thor takes the lead in the nineteenth century before the advent of Richard Wagner's operas. Fig. 11, which depicts the betweenness centrality of highly frequent mythemes in the studied books, confirms quantitatively this hypothesis about Thor and Odin:

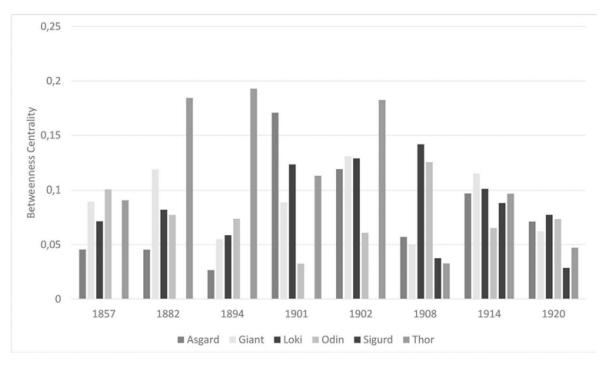


Fig. 11: Betweenness centrality of frequent mythemes in retellings of Old Norse mythology.

The results presented in Fig. 11 also indicate the absence of Sigurd in the five earlier works; as mentioned above, the stories on the Völsungs are only introduced to the corpus in 1908. Second, and more importantly, whilst the mytheme of Thor has a comparatively high betweenness centrality in all works, this aspect is significantly higher in the works of 1884, 1894 and 1902 than the betweenness centralities of the other mythemes. Additionally, the Thor mytheme has a comparatively low centrality after 1908. Interestingly, Odin is not a dominating figure in any work, but in the texts after 1908 he is roughly as central as the other mythemes analysed here. An interesting exception is Wilmot-Buxton's *Told by the*

Northmen (1908), in which both Odin and Loki take central positions. Loki plays an important part in all the texts, but is seldom as dominating as he is in Wilmot-Buxton's work or, alongside Thor, in Mary H. Foster's *Asgard Stories* (1901). In the latter, perhaps not by chance given the name of the book, the chronotope of Asgard seems to play a more significant structuring role than elsewhere.

On these grounds, we can thus discern two major groups among the texts: the works between 1882 and 1902, which give a relatively central role to Thor and less to Odin, and those from 1908 on, in which Odin surpasses Thor in betweenness centrality. The Keary sisters' 1857 work, however, is an exception in its resemblance to the later works. Incidentally, other gods and heroes are not of similar importance to those mythemes analysed here in any of the works, with the exception of Baldr to a certain degree.

The suggested groupings – which I would suggest represent a change in the narrative grammar of retellings of Old Norse myth – are reinforced by analysis of further details. For example, if we assess the mytheme of battle as represented by the signifiers 'battle' and 'fight', both in their verbal and nominal forms, we see that the use of the mytheme and its betweenness centrality increase after 1908. In fact, before this period, the mytheme has in all works a betweenness centrality of zero; however, in the works of 1908, 1914, and 1920, it has a stronger structural importance, with a betweenness centrality of approximately 0.015 in each work. Whilst such a centrality is not as important as those of the mythemes studied above in Fig. 11, the change between texts is itself significant. An analysis of the neighbouring nodes indicates that this development is mostly induced by the introduction of the legends of the Völsungs.

In the following, I will focus on two case studies, which are particularly significant representatives of the groupings established above: Hamilton Wright Mabie's *Norse Stories* (1882) and Ethel Mary Wilmot-Buxton's *Told by the Northmen* (1908). In order to map the narrative grammar of these texts, I imported a network-file (graphml) that our software generated into the network visualisation and exploration software Gephi (Bastian/Gephi Consortium 2017).² Gephi was developed primarily for social network analyses, but is now used in all fields of sciences with an interest in complex networks of all kinds. Gephi proposes several algorithms to sort, analyse, and visualise a network graph. Fig. 12 shows a map of 114 frequent mythemes in Marbie's work and their relations, composed of 383 edges; as mentioned above, the edges are weighted according to the CR. Fig. 13 shows a similar map of Wilmot-Buxton's book with 150 frequent mythemes and 727 edges.

To create the graph, I used the MultiGravity ForceAtlas 2 algorithm that organises the nodes according to their proximity or distance. That means that nodes with no directly connecting edges are situated far away from each other, whilst nodes with many and/or highly weighted edges are depicted close together. Mythemes with high betweenness centrality have labels in larger letters and bigger circles; the width of the connectors represents the weight of the relationship. In addition, I used the label-adjust algorithm so that the labels overlap as little as possible. The different colors represent so-called communities, calculated by Gephi's modularity algorithm. As mentioned, Gephi was developed for social network analysis, and in this context it is interesting to identify

The graphml files for the mytheme networks relating to each of the eight texts studied here are available as a dataset via *NAKALA*; see Mohnike (2022).

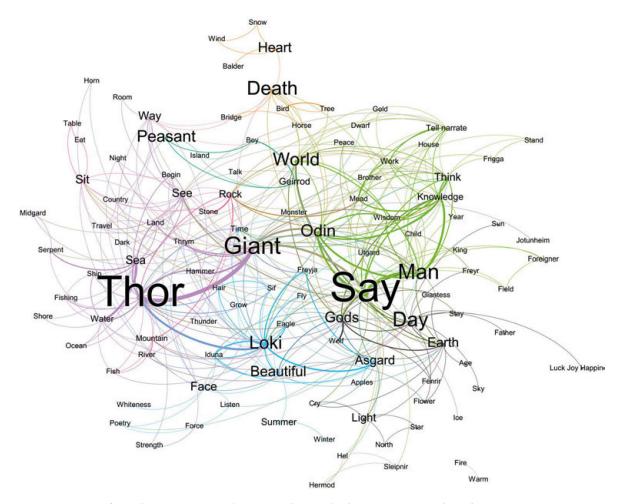


Fig. 12: Map of mythemes in Hamilton Wright Marbie's Norse Stories (1882).

nodes that form communities, as these indicate complexes of mythemes with close relationships which are often used together.

The comparison of the two graphs shows that the work of Wilmot-Buxton is incomparably more complex, since it involves not only the myths of the gods, but also the heroic stories of the Völsung cycle, as well as parts of *Friðþjófs saga*. As noted in Fig. 11, Thor and the giants are more central in Mabie's *Norse Stories* (1882), whilst Odin and Loki, as well as Asgard, play a more central role in *Told by the Northmen* (1908).

As we can see in both maps, the algorithm has identified mytheme complexes of revealing character. Any student of Old Norse mythology may identify some stories simply by following the edges between the mythemes. For example, Thor is in both maps strongly connected to the giants, sometimes by the intermediary mytheme of his hammer; this is especially clear in Fig. 12, but is also apparent in Fig. 13. In both cases, Thor is connected to the world of peasants, and in Fig. 12 he is closely associated with water, fishing, the ocean, and particularly the Midgard serpent, as well as with travel. This last mytheme takes him to a place where he can sit at a table, eat, and drink from a horn. These two mytheme complexes correspond closely to Thor's attempts to fish the Midgard serpent and his encounter with Utgarda-Loki. A similar picture can be found in Fig. 13, although it is not as clearly demarcated because of Thor's diminished significance.

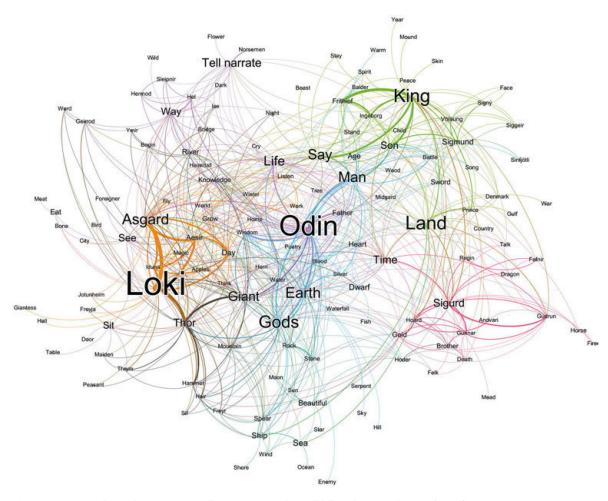


Fig. 13: Map of mythemes in Wilmot-Buxton's Told by the Northmen (1908).

In the same way, Odin is connected to the mythemes of knowledge and wisdom, mead, man, and other family relations. It is he that forms the connection to the world of living men – and not Thor, who travels the world of man in *Snorra Edda*. It may be that Odin took Thor's place through his function as the Allfather, an aspect of the mytheme linked to the Christian God; to some extent, Odin is the dominating father as God is in Christian belief. In Fig. 13, his quality as a father and his authority over life and earth are particularly clear, as is the important role he plays for the concept of kingship and the related narrative universes of Frithjof on the one side and Sigurd and the Völungs on the other. No other god – apart from Baldr, through his role as inhabitant of the temple in *Friðþjófs saga* – has any direct connection to the heroic myths.

As is to be expected from the above observations about Sleipnir, we see Hermod on his way to Hel in both maps – once in the upper area of the map, and again in the lower one. Interestingly, Baldr, the object of Hermod's ride to Hel, is only weakly connected to this mytheme, but this is not too surprising, as he is not an active agent in the story. This suggests that the approach detailed here directs our attention primarily to the narration itself as a process that takes place in time, as a temporal art that realises itself through the successive unfolding of its elements.

Perhaps surprising is the importance of the action mytheme 'say' in Mabie's *Norse Stories*. The *Mytheme Laboratory* permits us to look at the passages where and when a signifier associated with a specific mytheme is used in a given text. From the large number of occurrences of 'say' (129) in *Norse Stories*, it seems evident that the dialogue of the actors – here, of course, mainly Odin, Thor, and Loki – plays an important role in the narrative.³ The function of dialogue is similar in Wilmot-Buxton's *Told by the Northmen*, although it does not seem to be as central. When looking at the action mythemes used in both texts, however, it can be seen that both texts use the same action mythemes – only their weighting or centrality is changed.

As we have seen, Thor, Odin, and Loki are by far the most important actor mythemes in the corpus analysed here, but whereas Thor is a central actor between 1880 and 1902, Odin gains in importance after 1908, around the same time when the stories about the heroes of the Völsungs are introduced to these editions, and therefore become part of what such authors seem to consider as Norse myth. Odin is related to the world of the mortal, of kings and heroes, and connected to wisdom and knowledge, whilst Thor is linked to the giants, to the sea and the Midgard serpent, to the peasant world. It seems that the world of peasants is not intimately connected to the world of people in the social imagination of these retellings – perhaps because they are not necessarily part of the target audience of these books, who were presumably the relatively wealthier members of society.

It would be interesting to compare these findings with traditional close readings of the books analysed, and of course to deepen the quantitative analysis discussed here through further investigations, such as generating social networks of the actor mythemes of the books with the sketched computational approach in order to depict a myth's narrativisation of social tensions and hierarchies. Of similar interest would be an analysis of the chronotope mythemes at play, and of course a comparison with other witnesses to the reception of Old Norse myth, with *Snorra Edda* being a notable point of reference that could indicate changes in the narrative grammar of Old Norse myths since the Middle Ages.

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