Narrating the North

Towards a Theory of Mythemes of Social Knowledge in Cultural Circulation

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> "Narratives exist, just like life"
> *Le récit est là, comme la vie.*[1]

S ince the end of the 19th century, numerous studies have been conducted to analyze different representations of the North and Northerness and the use of such representations in cultural history.[2] In these studies, scholars are often intrigued by the observation

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1 Roland Barthes, "Introduction à l'analyse structurale des récits," *Communications* 8, no. 1 (1966): 1.

2 Most of the older studies are about the reception of one national literature by another or older literature in new literature; however, the interest is clearly informed by the idea that literature is the mirror of culture and deals with representations of one culture in another. See for example Richard Batka, "Altnordische Stoffe und Studien in Deutschland. Part 1, 'Von Gottfried Schütze bis Klopstock,'" *Euphorion* 2 (1896): 1–70; Richard Batka, "Altnordische Stoffe und Studien in Deutschland. Part 2, 'Klopstock und die Barden,'" *Euphorion* 6 (1899): 67–83; Frank Edgar Farley, *Scandinavian influences in the English romantic movement*, Studies and notes in philology and literature (Boston: Ginn, 1903); Gunnar Castrén, *Norden i den franska litteraturen* (Helsingfors, 1910); Anton Blanck,

that in spite of the wealth of cultural, artistic and societal contexts that are analyzed, the same sets of (sometimes contradictory) elements from various categories of knowledge representing the North can be found in constantly evolving combinations: mist, coldness (natural and social), snow, night, Vikings, Teutons, heroes, juvenile culture, counter-antiquity, the maritime culture, suicide, egalitarianism, ideal society, natural, high technology, secular, protestant, design, democracy, childhood, positive pedagogy, masculinity, feminism, etc. It seems that social knowledge of the North, that is the shared comprehension of a certain socio-historical community of what is the North, has been of an astonishing stability from Herodotus to the present day, with its motivations oscillating between a desire for exoticism and a longing for Nordic origins.[3] Consequently, the social representation of the North

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Den nordiska renässansen i sjuttonhundratalets litteratur : En undersökning av den "götiska" poesiens almänna och inhemska förutsättningar (Stockholm, 1911); Ida Falbe-Hansen, *Øhlenschlægers Nordiske Digtning*, H. Aschehoug (København, 1921); Hélène Stadler, "Paul-Henri Mallet: 1730-1807" (Thèse de doctorat, Lausanne, 1924); Thor J Beck, *Northern Antiquities in French Learning and Literature (1755-1855). A study in Preromantic ideas.*, 2 vols., Publications of the Institute of French studies (New York: Columbia University, 1934).

[3] It seems that the research field has had two important periods, with a first, smaller peak from the end of the 1960s throughout 1970s, perhaps as a reaction to the (mis)use of social constructions of the North by the Nazi and other right wing European groups, a second flow of studies since the middle of 1990s, responding to the restructuring of the political and cultural geographies after the cold war and the beginning of the digital media revolution that is still underway. Some recent studies include Joost van Baak, "'Northern Cultures'. What Could This Mean? About the North as a Cultural Concept," *TijdSchrift Voor Skandinavistiek* 16 (1995); Øystein Sørensen and Bo Stråth, eds., *The Cultural Construction of Norden* (Oslo: Scandinavian University Press, 1997); Annelore Engel-Braunschmidt *et al.*, eds., *Ultima Thule : Bilder des Nordens von der Antike bis zur Gegenwart*, Imaginatio Borealis 1 (Frankfurt am Main: P. Lang, 2001); Astrid Arndt *et al.*, eds., *Imagologie des Nordens: Kulturelle Konstruktionen von Nördlichkeit in interdisziplinärer Perspektive*, 1 vols., Imaginatio Borealis 7 (Frankfurt am Main: P. Lang, 2004); Peter Davidson, *The Idea of North* (London: Reaktion, 2005); Karen Klitgaard Povlsen, ed., *Northbound: Travel, Encounters and Constructions 1700-1830* (Aarhus: Aarhus University Press, 2007); Klaus Böldl, *Der Mythos der Edda : nordische Mythologie zwischen europäischer Aufklärung und nationaler Romantik* (Tübingen: Francke, 2000); Sverrir Jakobsson, ed., *Images of the North: histories, identities, ideas* (Amsterdam, 2009); Kristinn Schram, "Borealism: Folkloristic Perspectives on Transnational Performances and the Exoticism of the North" (The University of Edinburgh, 2011), <http://hdl.handle.net/1842/5976>; Sylvain Briens, "Boréalisme. Le Nord comme espace discursif," *Études Germaniques* 2 (2016): 179–88; Peter Fjågesund, *The Dream of the North: A Cultural History to 1920* (Amsterdam, 2014); Thomas

(in Europe, Canada, Russia or the world) is today most often viewed by scholars, as we can conclude quoting Daniel Chartier, as "a plural and shifting sign system, which functions in a variable manner according to the contexts of enunciation and reception."[4] According to Chartier and others, the repertoire of representations of the North and Northerness are at the same time fascinatingly stable and fluid, apparently always the same under a surface of seeming heterogeneity of use in specific cultural products. Similar ideas can be found concerning research into the social constructions of other realms of the world, we just have to refer to the field of research on Orientalism, Africanism, and all the other "isms" that can be connected to geographical imaginations.

In what follows, I want to take up Daniel Chartier's above-quoted definition of the North and argue, 1) that, in order to understand the sign system that is the North in social knowledge, i.e. shared knowledge that is frequently transmitted through different media (letters, books, movies, computer games…), we should change perspective and start by observing the smallest parts of the system, describing their nature and their ability to connect with other units of discourse. I propose to call these smallest units of discourse 'mythemes of social knowledge', and the laws that determine the possibilities to combine mythemes at a certain moment in time their 'discursive grammar'. 2) I will show that this model allows us to understand that the perceived stability is not a historical fact *per se*, but an effect of family resemblance[5] between mythemes changing through use and cultural circulation, and that we can trace the history and geography of these transformations by

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Mohnike and Thomas Beaufils, eds., *Qu'est-ce que l'Europe du Nord?*, *Deshima* 10 (Presses universitaires de Strasbourg, 2016); Joachim Grage and Thomas Mohnike, eds., *Geographies of Knowledge and Imagination in 19th Century Philological Research on Northern Europe*, (Newcastle upon Tyne: Cambridge Scholars Publishing, 2017); Marja Jalava and Bo Stråth, "Scandinavia/ Norden," in *European Regions and Boundaries: A Conceptual History*, ed. Diana Mishkova and Balázs Trencsényi (New York, NY: Berghahn Books, 2017), 36–56.

[4] Daniel Chartier, *Qu'est-ce que l'imaginaire du Nord? Principes éthiques*, Isberg (Harstad, Montréal: Artic Arts Summit, 2018), 120. French version: "Il s'agit d'un système des signes pluriel et mouvant, qui fonctionne de manière variable selon les contextes d'énonciation et de réception". Daniel Chartier, "Qu'est-ce que l'imaginaire du Nord?," *Études Germaniques* 71/2 (2016): 191.

[5] Family resemblance is a concept that had been developed by Ludwig Wittgenstein in his *Philosophische Untersuchungen* and has become an important concept in genre studies and cognitive science.

elaborating the methodical approach inherent to the theoretical model. 3) In spite of the apparent simplicity of the approach, it proves to be quite complex as soon as we want to describe the changing repertoire of mythemes of the North in cultural circulation because of the number of sources and mythemes that should be considered. It calls for data management that very soon goes beyond traditional pen-and-paper analysis. It demands the use of relational databases, best informed by digital text retrieval with tools still to be developed. The last part of the present article investigates the challenges and possible solutions for the sketched problem and presents first experimental results. It also shows that digital analysis not only allows us to handle the apparent complexity, but also helps to avoid to some part arbitrariness of definitions of individual mythemes for which similar approaches have garnered criticism, as we will see below. In fact, computational based methods can help to model what we want to observe because it forces us to work in a sometimes counterintuitive fashion, by objectivizing intuitive knowledge.

From Imaginative Geographies to Narrative Knowledge—some Reflection on the State of the Art

Up to now, studies on representations of the North often belong to, or are inspired by, ideological critical discourse analysis, imagology and stereotype studies or, like much of my own research, placed in the postcolonial aftermath of Edward Saïd's epoch-making study *Orientalism* (1978). These studies refer, implicitly or explicitly, to Saïd's notion of "imaginative geographies" and the interconnected quest for the Foucauldian grammar of discourse; Kristinn Schram's *borealism* and Sylvain Briens' *boréalisme* being two more elaborate versions of this approach.[6] All these qualitative methods and theoretical approaches

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[6] See for example for the notion of borealism Kristinn Schram, "Borealism"; Briens, "Boréalisme. Le Nord comme espace discursif"; Sylvain Briens, "Boréalisme. Pour un atlas sensible du Nord," *Études Germaniques* n° 290, no. 2 (2018): 151–76. For my use of imaginative geographies, cf. for example Thomas Mohnike, *Imaginierte Geographien: der schwedische Reisebericht der 1980er und 1990er Jahre und das Ende des Kalten Krieges*, Identitäten und Alteritäten 24 (Würzburg: Ergon Verlag, 2007); Thomas Mohnike, "Géographies du savoir historique : Paul-Henri Mallet entre rêves gothiques, germaniques et celtiques," in *Figures du Nord. Scandinavie, Groenland et*

have their advantages and shortcomings. For example, it seems to me that the notion of "discursive grammar" is often limited to a metaphorical level or used in a far too simplistic way, as for example in the case of Saïd, in supposing a set of dichotomies that structure the discourse. Even if dichotomies might be a feature of discursive grammar, it seems to me to be far more complex. We should consequently look for new ways to define what we mean and may detect as the grammar of discourse.

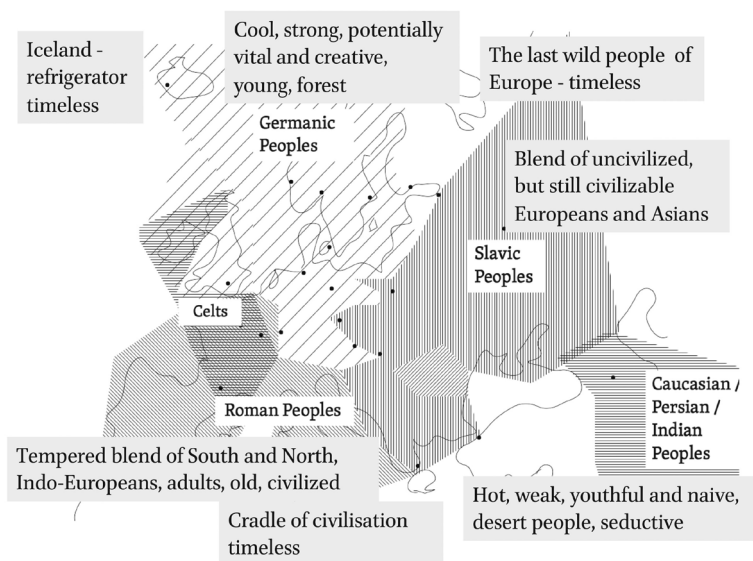*Figure 1: Narrative Geography of 19th Century Comparative Philologists, map by author.*

Secondly, there is a tendency in research to reconstruct a certain unity of discourse and ideology, as my reconstructions of the geographies of comparative philology demonstrate, suggesting both professional and amateur comparative philologists of the 19th and 20th century shared a certain idea of cultural geography (fig. 1).[7] The map

suggests a unity in ideology and vision, while, empirically, the findings are far more ambivalent. We may easily find examples of discursive practices that use the same discursive elements but with different ideological intentions. To cite an example, in Strasbourg in 1873, the German philologist Wilhelm Scherer used the myth of the wild hunt, headed by the god Odin/Wotan as proof of the juvenile civilizing force of the Germanic people; the French *académicien* Maurice Barrès used the same myth to show the destructive, barbarous nature of the same people at the same place 48 years later.[8] The Norwegian painter Peter Nicolai Arbo painted the myth, only with Thor at the head of the hunt,[9] in 1872 in his Paris atelier as an allegory of nature, based on a poem by the Norwegian poet Johan Sebastian Welhaven (1844). The cited works share many elements to evoke Northerness, combining them in a similar way, including references to a sublime, wild natural setting with rocks and forests that seem to come from the same repertory of social knowledge of the North. Nevertheless, the embedded ideologies clearly differ. However, narration and ideology are not as linked as it may seem; narrative coherence primes often ideology, as we will repeatedly see in the following: The Viking metal band Bathory, for example, used the painting by Arbo as a cover illustration in order to transmit still other ideologies.

Thirdly, there is a tendency to understand these geographical imaginations by employing the notion of "image". This is evidently most dominantly the case for the field of imagology,[10] but even implicitly in

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Königshausen & Neumann, 2013), 277–97; Thomas Mohnike, "'Le Dieu Thor la plus barbare d'entre les barbares divinités de la Vieille Germanie.' Quelques observations pour une théorie des formes narratives du savoir social en circulation culturelle.," *Revue de littérature comparée*, 2015, 151–64; Thomas Mohnike, *Géographies du Germain. Les études nordiques à Strasbourg (1840-1945)*, Presses universitaires de Strasbourg (Strasbourg, forthcoming).

[8] For a discussion of Scherer's and Barrès' use, see Mohnike, "Le Dieu Thor."

[9] Interestingly enough, Arbo is highlighting another warrior by means of light in the foreground of the picture, wearing a winged helmet, a warrior that could be read as Odin by contemporaries. However, the warrior does not have a lance, nor an eight-legged horse, neither is he one-sided blind. It seems that Arbo follows the Wellhaven's poem in citing Thor as the leader of the hunt, but putting a figure in the foreground that permits an identification with the mytheme of Odin for a public that is more familiar with the Odin as the leader of the wild hunt. Thanks to Pierre-Brice Stahl for turning my attention to this interesting ambiguity.

[10] See, for example, Arndt *et al.*, eds., *Imagologie des Nordens*; Manfred Beller and Joep Leerssen, eds., *Imagology: The Cultural Construction and Literary Representation of National Characters* (Amsterdam: Rodopi, 2007).

many other approaches—as in "imaginative geographies", "imaginaire" etc. However, historically, images are rather new as a predominant way of representing the world. It was only over the course of the 19th century that reproduction of images became less expensive, and the omnipresence of the image, and increasingly the moving image, is a product of the 20th century. It does not seem to be by chance that even the metaphorical use of the notion as mental representations in theory is influenced by the 20th century rapidly increasing use of still and moving images.[11] Before, the main (but of course not the only) mode of transmission of knowledge was narration, as has been highlighted by information scientists, evolutionary literary and cognitive studies,[12] to the point that we should refer to our species as *homo narrans*, the storytelling animal:

> storytelling is an ability that defines the human species as such […] Through storytelling, an otherwise unexceptional biological species has become a much more interesting thing, Homo narrans […]. It is through such symbolic mental activities that people have gained the

[11] See for example the classical definition by Mitchel: "Consciousness itself is understood as an activity of pictorial production, reproduction, and representation governed by mechanisms such as lenses, receptive surfaces, and agencies for printing, impressing, or leaving traces on these surfaces." W.J.T. Mitchell, *Iconology: Image, Text, Ideology* (Chicago: University of Chicago Press, 2013), 16. Thanks to Claire McKeown for the reference.

[12] See for example Roger Schank and Robert Abelson, *Scripts, Plans, Goals and Understanding: An Inquiry into Human Knowledge Structures* (Hillsdale, New Jersey: Lawrence Erlbaum Associates, 1977); Walter R. Fisher, *Human communication as narration: toward a philosophy of reason, value, and action* (Columbia, S.C.: University of South Carolina Press, 1987); John D. Niles, *Homo Narrans: the poetics and anthropology of oral literature* (Philadelphia: University of Pennsylvania Press, 1999); Jean-Marie Schaeffer, *Pourquoi la fiction?* (Paris: Seuil, 1999); Joseph Carroll, *Literary Darwinism: Evolution, Human Nature, and Literature* (New York: Routledge, 2004); Pascal Boyer, *Religion Explained: The Evolutionary Origins of Religious Thought* (Basic Books, 2007); Albrecht Lehmann, "Homo Narrans. Individuelle und kollektive Dimensionen des Erzählens," in *Erzählkultur: Beiträge zur kulturwissenschaftlichen Erzählforschung*, ed. Rolf Wilhelm Brednich (Berlin, 2009), 59–70; Brian Boyd, *On the origin of stories: evolution, cognition, and fiction* (Cambridge Ms, London, The Belknap Press of Harvard University Press, 2009); Alain Rabatel, *Homo narrans: pour une analyse énonciative et interactionnelle du récit*, 2 vols. (Limoges: Lambert-Lucas, 2009); Arthur W. Franke, *Letting Stories Breathe* (Chicago: University Of Chicago Press, 2010); Jonathan Gottschall, *The storytelling animal: how stories make us human* (Boston: Mariner Books, 2013).

ability to create themselves as human beings and thereby transform the world of nature into shapes not known before.[13]

As Brian Boyd has argued, from an evolutionary perspective, storytelling is an adaptation of the human species: "far from being ornaments, [art and storytelling] often became a pivot of human lives"[14], and it seems to be central to much of human activity: even pictorial representations are most often structured in a way that triggers narration, as could be exemplified by the illustrations reproduced in the present article. The narrative construction of possible worlds seems to be the human way to prepare for possible futures, and our all human interest for stories appears to be related to it.

To understand the social knowledge of the North from the perspective of the narrative paradigm seems particularly helpful. When people evoke the North or other geographical realms, it is most often as a setting in narratives—of tourism, identity narratives, nation branding, detective stories or the like. In that sense, it would be justified to call imaginative geographies rather 'narrative geographies' that use shared knowledge of the North. I propose to understand these narrative geographies as repertories of mythemes of social knowledge that are available to describe the world at a given time and place, and that are used to produce sense within the narrative in question. In using the notion of mytheme, I suggest that a productive misunderstanding of Claude Lévi-Strauss's structuralist approach to myths could be beneficial. However, as Lévi-Strauss's approach has justly been criticized since he proposed it in the 1950s, we have to closer examine its implications and possibilities for elaboration. We will see that mythemes are not as stable as Claude Lévi-Strauss suggested, but redefined by use, and that these elements can connect to each other according to a discursive grammar that changes over time and that can be investigated.

What Is a Mytheme?

The notion of mytheme is borrowed from the work of the structural anthropologist Claude Lévi-Strauss. When comparing myths from different regions in Latin-America, Lévi-Strauss noted that many

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[13] Niles, *Homo Narrans*, 3.
[14] Boyd, *On the origin of stories*, 35.

myths share narrative elements, but that the ways in which they are recombined are constantly renewed. Inspired by linguistic concepts like phoneme, morpheme etc., describing the smallest units of language, he called these small narrative units *mythemes*. Later, he transferred the concept to Greek mythology, and Gilbert Durand proposed to systemize the use of the notion of mythemes to analyze cultural narrations in general[15]. Lévi-Strauss's approach became known, but only seldom used, and more often severely criticized. Edmund Leach remarked, for example, that the notion of mytheme in Lévi-Strauss's work all too often turned into an ill-defined verbal formula,[16] and Robert Weimann added, that Lévi-Strauss's division of texts into units was at times based on undefined criteria and was thus totally arbitrary[17]. I would add that Lévi-Strauss's understanding of mythemes was often marked by the hope of finding 'deep structures' such as 'the cooked vs the raw'[18] that would prove a profound stability of myth; however, this idea seems to be disputed by many historical observations—historically speaking, only change is stable. Consequently, as experts of Lévi-Strass will notice, I do not intend to follow him *à la lettre*, but rather engage in a dialogue of productive misunderstanding, using him as a source of inspiration, but not of ultimate authority, whatever that might be.

In his seminal article on "The Structural Study of Myth", Lévi-Strauss defines mythemes as "gross constituent units" of (mythological) stories, characterized as "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"[19]. It is important to underline that mythemes are situated at the story level of the narrated, not at the level of narration, or following

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[15] Gilbert Durand, *Les Structures Anthropologiques de l'imaginaire: Introduction à l'archétypologie générale* (Paris: Dunod, 1992); Gilbert Durand, *The Anthropological Structures of the Imaginary* (Brisbane: Boombana, 1999); Gilbert Durand, *Figures mythiques et visages de l'œuvre : de la mythocritique à la mythanalyse* (Paris: Dunod, 1992); Frédéric Monneyron, "Gilbert Durand et l'étude des mythes," *Sociétés*, no. 123 (June 17, 2014): 41–49.

[16] Edmund Ronald Leach, *Claude Lévi-Strauss*, dtv, 747: Moderne Theoretiker (München: Deutscher Taschenbuch-Verl, 1971), 90.

[17] Robert Weimann, *Literaturgeschichte und Mythologie*, (Frankfurt am Main: Suhrkamp, 1977), 352.

[18] Claude Lévi-Strauss, *Le cru et le cuit*, Mythologiques (Paris: Plon, 1964).

[19] Claude Lévi-Strauss, "The Structural Study of Myth," *The Journal of American Folklore* 68, no. 270 (1955): 428–44.

Saussure they are part of the signified, not the signifier. That means that we can describe mythemes only indirectly by analyzing the traces that a mytheme leaves in a text, a picture, a movie, a game, or to put it the other way around: words, sounds and pictorial signs can be explored as mediatic traces, i.e. signifiers of mythemes. This will, of course, have methodological consequences—how can we relate what we can observe (i.e. words, lines of a drawing) to something that we only can presume (mythemes)? An unexpected help to solve some of these problems may come, as we will see, from statistical text analysis and network models.

Before we can confront these problems, however, we have to model further what we want to observe. In fact, when reflecting on the smallest constituent narrative unit of story, that is a mytheme, it seems to me that there is not only one kind of mytheme.[20] I propose that there are at least four types of mythemes: actor mythemes, action mythemes, chronotope mythemes and concept mythemes. Each mytheme is furthermore the carrier of attributes, respectively the node of relationships that can be defined as attributes, as shall be explained further on.

Actor mythemes are narrative entities that can function as the object or subject of action, as for example the god Thor, an apple, a sword, a sorcerer, that is entities that can eventually cause action. These actor mythemes can take the place of all actants as defined by Greimas.[21] Two subcategories of this class of mythemes are characters and objects or tools – every actor mytheme can become the subject or the object in a story, the narrator can activate or disactivate the attribute of 'living', that is the quality of being able to intentionally interact with other actor mythemes. A sword can, for example, be a tool or an active protagonist of a story with its own will and personality. An actor mytheme qualifies as a character when it shows, as Arthur W. Franke would say, "capacities for motive, […] so for non-humans to be characters, they must be anthropomorphized, like animals in folktales who often turn

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[20] The notion of mytheme is thus not restricted to myth in a narrow sense, but to all relevant to all narratives and thereby reconnect to its oldest known meaning: story. Cf. Bruce Lincoln, *Theorizing Myth: Narrative, Ideology, and Scholarship* (Chicago, Ill.: University of Chicago Press, 1999); Marcel Detienne, *L'invention de la mythologie*, (Paris: Gallimard, 1992).
[21] Algirdas Julien Greimas, *Sémantique structurale. Recherche de méthode*, (Paris, Larousse, 1966).

out to be humans under a spell".[22] In this sense, I propose to distinguish two different types of actor mythemes: character mythemes and tool mythemes.

Mythemes of action are narrative elements that define the narrative relationship between actor mythemes, as for example X fights Y with the help of Z. A looks for B with the help of C. They are hence responsible for the change of quality of relations of other types of mythemes in narrated time and space.

Chronotope mythemes define the place and time of an action, as defined by Bakhtin in his thoughts on chronotopes:[23] a forest, the sea, the middle ages, paradise, a crossroad. Of course, several mythemes of the same category can be used by a narration at the same time: a crossroads in a forest in the Middle Ages.

Unlike the other mythemes, *concept mythemes* are not located at the literal level of the story, but related to the moral, intentional level of a story: concepts such as liberty, democracy, eternal love, goodness etc., which in some narrations may dominate the plot structure as is often the case, and perhaps the most consequently, in allegories.

If we were to combine some of the mythemes quoted here, we could relate a narrative sequence of Thor (actor-character mytheme) fighting (mytheme of action) a sorcerer (actor-character mytheme) with the help of a sword (actor-tool mytheme) in a medieval forest (chronotope mytheme), or we could narrate the story of a sorcerer and Thor fighting conjointly an apple with the help of a sword in the sea, or of an apple fighting Thor with the help of a smartphone in paradise. Based on such combinations, a talented narrator will probably very soon be able to engage in storytelling. Concept mythemes can be experienced as difficult to integrate, but they seem to have an influence on the narrative structure of the story (as focalization, voice etc.). In the first example, the narration will be changed by the choice to depict Thor either as a fighter for liberty or, in other cases, as a remnant of an evil pagan past.

If this classification is correct, the similarities and dissimilarities with linguistic models are obvious. We could compare actor mythemes with nouns and mythemes of action with verbs, and often we will use

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[22] Franke, *Letting Stories Breathe*, 31.
[23] Michail M. Bakhtin, *The Dialogic Imagination: Four Essays* (Austin: University of Texas Press, 2000), 84–85.

nouns to name actor mythemes and verbs to describe mythemes of action. However, to use linguistic categories as metaphors for narrative phenomena might be rather misleading when we try to describe the narrative logic of texts, suggesting a natural link that might not be as direct as the metaphor would suggest. Furthermore, as linguistic traces in texts, nouns can describe action (travel, battle) and verbs can be used to evoke attributes of an actor mytheme ("raising a hammer", for example, seems to be a description of an action that evokes the mytheme of Thor). Attempts to underline a similarity between the linguistic and narrative models of phenomena of human communication, as had been done by many structuralists—Claude Lévi-Strauss or Roland Barthes are but two examples—should therefore be avoided. Linguistic models and narrative models must be used to describe two distinct phenomena.

As Lévi-Strauss proposed in the quotation above, a mytheme can be defined as a 'bundle of relationships', or, as I would prefer to define: as a node of attributes that make up a mytheme and its relationship to other mythemes, or to reformulate in terms of network theory: a hyperedge that constitutes a path across multiple networks. These attributes can be activated by a given narration or not, depending on the needs of the story. For example, we could loosely describe the mytheme of a Viking in contemporary popular culture as defined by attributes as follows, grouping the set of latent attributes in square brackets: [masculine being, human being, horned helmet, hypermasculinity, wilderness, vitality, weapon, Viking ships, animality, barbarous, sublime, snow, Valhalla, battle, defiance of death, liberty seeking…].

When we use the mytheme of a Viking for a narration, we do not need to render all of these attributes explicitly, simply mentioning a few of them is enough to evoke the presence of a mytheme. We might even replace some attributes without any problem: the [horned helmet] is a strong signifier for a Viking, but can be easily be replaced by a (historically correct) helmet without horns. However, when the attribute of a non-horned helmet is used, it seems that the narrative presence of other attributes has to be stronger in order to refer clearly to the mytheme.

This becomes clear when we want to combine two mythemes, for example the Viking mytheme with the mytheme of Disney's Scrooge McDuck. The latter could be tentatively defined by the attributes [duck,

rich, money, adventures, stinginess, uncle, asexual, Duckburg, small round glasses…]. When combining the two for a cover, Disney artists created a fusion that activated a choice of attributes, that is [masculine being, horned helmet, vitality, weapon, Viking ship, sublime, battle, duck, rich, money, adventures, Duckburg, small round glasses] . Some of the attributes of the Viking mytheme are disactivated without doing harm, that is they can be reused in another story, and the same is true for the mytheme of Scrooge McDuck. Some attributes stay latent, that is, they can be used later on in the story (like [stinginess]); others might not be used as easily (like [human being] for the protagonist).

Observing this, we can already grasp one of the ways mythemes change: latent attributes can be activated or not and, furthermore, new attributes can be added by use in the context of other mythemes. Each mytheme has an influence on the story, but connecting them has an influence on each single mytheme as in the case of the Viking McDuck— they can change through narrative use. Mythemes are structuring and structured by mythemes. If a new combination of attributes of a mytheme is very successful in cultural media at a given time in a given social-cultural space, previously significant attributes can be lost in oblivion and others added through continued use. Of course this change takes time and never affects all attributes of a mytheme at a time. Combining mythemes can even create new mythemes: if we used Viking Scrooge McDuck for many stories with a lot of success, this character could free itself from its predecessors, as was more or less the case of Paperinik, the superhero-variant of Disney's Donald Duck.

When describing a mytheme as a node of latent attributes that can be activated in narration through the structuring force of other present mythemes, we understand why Lévi-Strauss preferred the word "relationship" to "attribute": some of the attributes demand or trigger the use of other mythemes. The attribute of a Viking longship, for example, is a mytheme in its own right. Its presence in a story, however, indicates the eventual presence of Vikings, and the presence of Vikings indicates the potential presence of longships.

At a given time and space—and often even in a *longue durée*—, some combinations of mythemes are linked together in a rather stable manner. I would propose to call such combinations *mytheme complexes*. For example, Thor fighting the Midgard serpent is a combination of mythemes of quite a stable and productive history, we can find uses

from the early Middle Ages until today. Other mytheme complexes can be less stable and only figure in certain series of narratives in a very specific historically and geographically defined place.

Experts of Lévi-Strauss will notice that he often used the notion of mytheme for both mythemes and mytheme complexes, but to distinguish the two levels seems rather appropriate: If we understand mytheme complexes as units of linked mythemes, we can easily understand the history of profound change of the actor mythemes of Thor or the Midgard serpent and the rather stable history of their combination. The Thor of early Marvel comics and the Thor of the 10th century Gosforth cross and their fight with the enemy, the serpent, have little in common, but the combination of the three elements (Thor, battle, serpent/dragon) is rather stable. A history of the transformation of the battle between Thor and the serpent could thus be described as the history of transformation of its parts rather than of the mytheme complex itself.

On the other hand, different mytheme complexes can, if they contain similar mythemes, suggest narrative proximities—that can be historically justified or not, but productive in narrative use. The fight between Thor and the serpent is, as a mytheme complex, at some level very similar to the fight between Saint George and the dragon. To study the relationship of such structurally similar mytheme complexes could be an interesting field of research—and has indeed already attracted attention in comparative philology since the beginning of the 19th century.

Additionally, mytheme complexes can be chained to each other in a canonized manner, a phenomenon that I would propose to call *fixed mytheme complex chains*. The story of Thor fighting the Midgard serpent was, in the Scandinavian Middle Ages and afterwards, very often narrated in combination with other mytheme complexes, building a story that can be part of a larger story as a combination of several mytheme complexes. Thor is often visiting a giant (mytheme complex 1), testing his force against the giant by getting the bigger bait (mytheme complex 2), rowing further out to sea or trying to fish bigger animals (the giant fishes whales, but Thor the serpent) (mytheme complex 3), and ending with Thor fighting the serpent in a specific manner (mytheme complex 4, often intimately linked to mytheme complex 3). This chain

of mytheme complexes is rather stable at one point in the reception history of the myth, that is in the Middle Ages, but the elements are not linked so firmly that a they cannot be unlinked: for example, we have medieval descriptions of Thor fighting the serpent without the presence of the giant, as for example in the case of the Altuna rune stone (U 1161).

Mythemes in Cultural Circulation—the Example of Thor

After describing some principles of change and stability of mythemes, I would like to exemplify the model of mytheme change that underpins my ideas here with a very short history of the actor mytheme of Thor in cultural circulation, centered on some pictorial representations at significant historical and spatial nodes.[24] I focus on pictorial representations for didactical reasons as they are often more centered around one narrative moment and can therefore be interpreted more swiftly. This history can of course only be loosely sketched here for two reasons: firstly, it is my intention here just to show some guiding principles; secondly, a thorough study would demand a more thorough empirical investigation, using digital (text or pictorial) retrieval systems, as I will demonstrate in the next chapter.

Two of the earliest known representations of the mytheme complex of Thor fighting the Midgard serpent are to be found at the Gosforth cross from the 10th century, found in Northern England, and the Altuna rune stone (U 1161) from roughly the same period, located in Swedish Uppland. Neither resembles Marvel's Thor, and it would indeed be difficult to see the link between the two versions of the mytheme. If we try to identify the attributes that characterize Thor here, we could define them as follows: [human being, hammer, fishing, animal in sea, boat, two men, foot outside boat,…] whereas of the last two attributes, only one is activated in either representation: the Altuna rune stone has only one person, but a foot outside the boat, whereas the Gosforth cross has two men, but no foot. One might add that the two pictures stem from a religious context (both of them have the Christian Cross in media proximity) which might be an attribute as well. We can thus

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[24] For the concept of nodes, see Hutcheon and Valdés thoughts on the structure of literary history, see Linda Hutcheon and Mario J. Valdés, *Rethinking Literary History: A Dialogue on Theory* (New York: Oxford University Press, 2002).

read them as two different cultural expressions of one mytheme, as they share many attributes. Additionally, the two uses of the actor mytheme of Thor resemble the use of the mytheme of Thor in the 13th century Icelandic Prose-Edda, the Poetic Edda and, to a lesser extent, in Saxo Grammaticus' *Gesta danorum* from the beginning of the 13th century, suggesting a certain unity.[25]

Already in the medieval Christian sources, the pagan deities are discussed in the context of supposed trinity structures,[26] but it seems that they are connected firmly in trinity configurations from the humanist period on. In Olaus Magnus' *Historia de gentibus septentrionalibus* (printed in Rome in 1555, reprinted several times, and recopied for example in Olof Rudbeck's Atlantica, published in Uppsala (1679) we can find Thor in the center between Frigg and Odin. The trinity structure would find a distant echo in Bengt Fogelberg's sculpture group *The Asa Gods: Balder, Odin, Thor*, (ca. 1850),[27] but would then go on to lose importance as an attribute. When looking at the mytheme of Thor in Olaus Magnus work (figure 2), it becomes evident that the attributes permitting to identify him have changed—or rather, new attributes have been added, and others are not mentioned (latent, not activated attributes are stroked out): [man with hammer, ~~fishing~~, ~~animal in sea~~, ~~boat~~, metaphysics/mythology, ~~religious~~, ~~two men~~, ~~foot outside boat~~, trinity, king, tunic, antic body, scepter, trinity, Odin, Frigg,…]. Adding attributes derived from mythemes connected to Classical Antiquity seems to be related to the humanistic endeavor to create a Counter Antiquity for the kingdoms North of the Alps which could not easily construct a line of heritage to the Roman empire. Instead, they invented Antiquities that could be compared with Roman culture, taking the

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[25] Of course, the mytheme of Thor is much more complex in the Prose-Edda as it is used in quite a long text, and evidently, we are able to identify Thor in the two pictorial representations because of our knowledge of the Prose-Edda, hence the unity of the mytheme is disputable; however, for our present argument, these complications are less important. For some discussion of the use of Thor in the Middle Ages, see Martin Arnold, *Thor: myth to marvel* (London: Continuum, 2011), 1–30, esp. 24 *sq.*

[26] Adam of Bremen tells, for example, that in the Uppsala temple, three gods were exposed (Thor, Odinn and Freyr), and the prose Edda, attributed to Snorri Sturluson, has in the part called "Gylfa gynning" (the tricking of Gylfi) a trinity of gods as the representative of the gods.

[27] Knut Ljøgodt, "'Northern Gods in Marble': The Romantic Rediscovery of Norse Mythology," *Romantik: Journal for the Study of Romanticisms* 1, no. 1 (2012): 149–50.

form of Gothicism, Germanicism, Batavism and many more. Mythemes of the Roman gods served as models for the gods of the North, and the explicit reference to that pantheon inscribed into the mytheme elevated its cultural status. These references stayed rather firmly attached to the mytheme of Thor until today. Incidentally, we can note that intertextual or intermedial references seem to be part of the attributes defining a mytheme, an observation that will be discussed below.

Figure 2: Frigg, Thor and Odin in Olaus Magnus' Historia de gentibus septentrionalibus, Rome 1555.

The next group of attributes is added to the mytheme of Thor in the 18th century when the North as a setting becomes associated with the experience of the sublime. The best known expressions of this include the rediscovery of Homer, the creation of the Ossian-universe and the restructuring of the imaginative geographies of Europe and the world with Montesquieu's *De l'esprit des loix* (1748), and when it comes to Norse Mythology in Paul-Henri Mallet's highly influential works *Monuments de la Mythologie et de la Poésie des Celtes, et particulièrement des anciens Scandinaves* (1756) and his *Introduction à l'histoire de Dannemarc* (1755).[28] A wonderful example for this restructuring of the mytheme of Thor is Johann Heinrich Füssli's *Thor Battering the Midgard Serpent* (1788) where the attributes of the sublime landscapes become part of the mytheme of Thor without effacing the pre-existing

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[28] Lars Lönnroth, "Mallet och det nordiska sublima," in *Sagnaþing Helgað Jónasi Kristjánssyni Sjötugum, 10. Apríl 1994*, ed. Gísli Sigurðsson, Guðrún Kvaran, and Steingrímsson Sigurgeir (Reykjavík: Hið íslenska bókmenntafélag, 1994), 527–37; Mohnike, "Géographies du savoir historique: Paul-Henri Mallet entre rêves gothiques, germaniques et celtiques."

attributes: [man with hammer, fishing, animal in sea, boat, metaphysics, mythology, ~~religious~~, two men, ~~foot outside boat~~, ~~trinity~~, ~~king~~, ~~tunic~~, ~~Antic body~~, ~~scepter~~, ~~trinity~~, ~~Odin~~, ~~Frigg~~, wilderness, sublime, north, Counter-Antiquity, ~~forest~~, sea, contrast of darkness and light…]. Quite a similar composition can be found in Mårten Eskil Winge, *Thor's Fight with the Giants* (1872), Stockholm, replacing the serpent with giants and the boat with a chariot, drawn by two goats, and the above-mentioned *Wild hunt* by Arbo is another example. However, the sublime as an attribute of Thor (and not just the Northern landscape) at first appears mostly a local phenomenon restricted to the British Isles, and less used in Scandinavia. C.W. Eckersberg's famous *Balders død* (1817), for example, certainly uses some attributes of the sublime North in the surrounding landscape, but this has no influence on the depiction of the gathered gods. History is thus not straightforward, but goes with, for example, geographical variation.

We could continue this short history of the Thor mytheme by describing the changes that can be detected through the work of Richard Wagner (and later in the Marvel comics, etc.) and it would indeed be interesting to write a history of the transformations and reconfigurations of the mytheme in a more precise manner. We have seen here how change of the mytheme in history can be traced as a change of attributes, and that the perceived stability of the mythemes of the North is but an illusion of "genetics", that is of family resemblance in the sense the philosopher Ludwig Wittgenstein has proposed, or to speak in the metaphor of genetics: a mytheme is a node of latent attributes that can be passed on from one narrative use to another. However, individual use can change the set of characteristics through contact with other mythemes, and former characteristics can be lost or gained. Each historical incident of use of a mytheme could in that perspective be compared to individual expressions of a historically and geographically changing species—with a high potential for cross species breeding, as has been exemplified above with Viking McDuck.

Tracing Mytheme Change

In order to prove the validity of this preliminary, sketched idea, it would be interesting to have more empirical data of the use of

one mytheme in time and space and of the distribution of mytheme complexes and other clusters of mythemes, because, as we have seen, our initial research has suggested that mytheme cooccurrences seem to change mythemes, and that successful cooccurrences can imply paradigmatic changes. However, as Lévi-Strauss already felt, these questions can easily become too complex to be treated on paper only.[29] We would need relational databases to register mytheme occurrences and attributes and, ideally a tool that would help us to automatically identify mythemes in big text corpora. However, in order to design such a tool, it is necessary to define the relationship between what we want to find (mythemes and its attributes) and what a machine can find (when it comes to texts, tokens, that is roughly normalized words in texts). A first step thus has to find a way to identify the linguistic traces that a mytheme can leave in a text.

An appropriate method could be to make statistics about what tokens can be found in the textual environment of a given mytheme. In order to do so, we designed a short program in Python, using the NLK (Natural Language Kit)[30] to establish statistics of cooccurring tokens around tokens that would qualify as a highly indicative of the presence of a mytheme, that is for example a name attributed to an actor mytheme.[31] We experimented with a handful of texts in English dealing with Norse Mythology from around 1900 and accessible from

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[29] In his article from 1955, he dreamt: "It should be emphasized that the task of analyzing mythological literature, which is extremely bulky, and of breaking it down into its constituent units, requires team work and secretarial help. A variant of average length needs several hundred cards to be properly analyzed. To discover a suitable pattern of rows and columns for those cards, special devices are needed, consisting of vertical boards about two meters long and one and one-half meters high, where cards can be pigeon-holed and moved at will; in order to build up three-dimensional models enabling one to compare the variants, several such boards are necessary, and this in turn requires a spacious workshop, a kind of commodity particularly unavailable in Western Europe nowadays. Furthermore, as soon as the frame of reference becomes multi-dimensional […] the board-system has to be replaced by perforated cards which in turn require I.B.M. equipment, etc." Luckily, most of us have computers at hands with even much higher capacities than 1955 IBM computers.

[30] Bird Steven, Edward Loper, and Ewan Klein, *NLTK. Natural Language Processing with Python*, version 3.4.2 (O'Reilly Media Inc., 2009), <http://www.nltk.org/>.

[31] This part of the present study has been partly conducted together with Gabrielle Gueguen in February and March 2018, at the time Master student of Linguistics and Informatics at the University of Strasbourg.

project gutenberg.org as txt-files. After cleaning the texts (removing information on digitization, copyright and other peritexts), we let the computer make statistics about cooccurrence of tokens with a name of an actor mytheme in the surrounding context of 60 tokens. As a result, we found in Padraic Colum's *The Children of Odin: The Book of Northern Myths* (1920) about 950 tokens cooccurring with the name "Odin" more than 4 times and 100 tokens being used more than 33 times, without considering stop words like 'and, the, a, are' etc. I propose to call these tokens in our context 'traces of mythemes' respectively 'traces of mytheme attributes' (cf. table 1).

When looking at these traces, it became manifest that they belong to different categories of mytheme attributes, and that some of the most significant mytheme attributes were other mythemes: High frequency words indicate that the mytheme of Odin was defined by close relationships to other actor mythemes (Loki was the third most frequently used token after Odin and different word forms of the verb "to say"), chronotope mythemes, mythemes of action, and tokens that define social relationships or personality, etc. As already Lévi-Strauss had suggested, the relationship to other mythemes seems thus to be of major importance for a definition of a mytheme: mythemes figure as attributes of other mythemes. Furthermore, this is confirmed by intuitive knowledge: If a storyteller wants to use one mytheme, he will often use other mythemes belonging to the same narrative universe; or to say it the other way around: a narrative universe is defined by the interaction between mythemes occurring as attributes of other mythemes.

While some mythemes are frequently interconnected, others are less compatible. Thor is often used together with Loki, but not as often with the Pink Panther. It seems to me that, if this is true, we touch on a phenomenon that could be described as part of the grammar of narrative discourse. In this sense, 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. Hence, when we want to describe the grammar of the narrative geography of the North at a given moment and place, we have to analyze the mythemes that are connected to the mytheme of setting that is the North or any part of what is narrated as North, and the nature of these connections. The social knowledge

of the North would be defined as the repertory of all mythemes that are connected by probability to the mytheme of the North. When introducing the notion of probability here, it is in accepting the fact that a gifted storyteller would be able to link basically all mythemes. However, it seems to me that a narration to be understood as authentic is a narration that uses mythemes with a high probability of connectivity.

odin*	769	name	100,00 %
say*	334	action	43,43 %
loki	243	Actor mytheme	31,60 %
come*	240	action	31,21 %
god*	215	class of being	27,96 %
asgard	211	setting	27,44 %
would	202	action	26,27 %
went	168	action	21,85 %
giant*	142	class of being	18,47 %
son*	137	social	17,82 %
thou	136		17,69 %
see*	135	action	17,56 %
one	133		17,30 %
men	122	class of being	15,86 %
upon	121	setting	15,73 %
give*	114	action	14,82 %
king*	114	class of being	14,82 %
go*	106	action	13,78 %
thor	106	Actor mytheme	13,78 %
know*	103	personality	13,39 %
well	100		13,00 %
look*	99	action	12,87 %
world*	98	setting	12,74 %
thy	97		12,61 %
made	89	action	11,57 %
frigga	88	Actor mytheme	11,44 %
hall*	88	setting	11,44 %
wisdom	87	personality	11,31 %
back	85		11,05 %
great	84	personality	10,92 %

Table 1: Thirty most frequent concurrent words with "Odin" in Colum's The Children of Odin (1920)

Based on these observations, I propose to further define actor mythemes as a node of attributes that can be classified with the following set of categories: 1 Self (Name); 2 actor mytheme (2a character (Loki, Thor, Odin); 2b class of being (god, man, aesir); 2c tools (Mjölnir, chariot)); 2d social relationships (father, friend etc); 3 action (travel,

journey, strike, battle, quest), 4 feature (personality, fierce, strength); 5 chronotope mytheme (Asgard, forest, North, time); 6 inter- and metatextual relations (Zeus, Edda, Bible, poetry); 7 concept mythemes; 8 other.

The first category—"self" refers to traces that can be classed as names or direct identifiers: for example, mytheme Thor might be referred to as [Thor, Donnar, God of Thunder, etc]. It could be discussed whether categories 2a-d should be fused, as objects and subjects are closely related at the level of the mytheme, as discussed above. However, I suggest distinguishing between the three categories: it is important for the definition of the mytheme of Thor, for example, whether the hammer Mjölnir figures as tool/object or as interacting protagonist in the story (i.e. as character mytheme). Category 8 gathers statistically relevant data that is difficult to classify.

In order to see if this approach may help to see variation and change of mythemes in time and space, I tested the same method of identifying mytheme traces on an English translation of Snorri's Edda. Snorri's Edda is, as mentioned above, our major medieval source for Norse Mythology. Using the English translation gave me the advantage of having material that could be directly analyzed by our program as, to my knowledge, there is no Old Norse database for the NLTK-kit. However, the English translation is not an accurate mirror of the original text. The following results thus have to be treated with caution (see table 2).

When comparing the two tables, it becomes apparent that Loki seems to be much less important to the mytheme of Odin in Snorri than in Colum, Thor more important than Loki, and Asgard of comparatively little importance. Taking a closer look at character-actor mythemes, the importance of Loki to the text of Colum is even more significant (figures 3 and 4). Loki is by far more significant to the mytheme of Odin in Colum than in Snorri. Furthermore, many of the other traces of character-actor mythemes, that were of the 10 most frequent in Snorri, do not even figure in the table of the 10 most important in Colum (æger, brage, suttung, hrungner, frey, hreidmar). The same is true for the category of tools where Odin's spear does not figure among the 10 most frequent traces in Snorri, but is one of the most important in Colum, whereas the mead and horses are much more important in Snorri. This seems to

suggest that the mytheme of Odin changed from being a noble poet in the Middle Ages into representing more of a warrior god around 1920.

odin	183	name	100,00%
call*	116	action	63,39%
son*	84	social	45,90%
asas	66	class of being	36,07%
name*	64	action	34,97%
said	63	action	34,43%
man*	60	class of being	32,79%
take*	44	action	24,04%
thor	42	character mytheme	22,95%
god*	41	class of being	22,40%
men	41	class of being	22,40%
loke	40	character mytheme	21,86%
go*	37	action	20,22%
came	34	action	18,58%
many	34	other	18,58%
one	33	other	18,03%
ride*	31	action	16,94%
would	31		16,94%
see*	29	action	15,85%
giant*	28	class of being	15,30%
hight	28	personality	15,30%
answer*	27	action	14,75%
father	27	social	14,75%
drink	26	action	14,21%
land*	26	chronotope	14,21%
come	25	action	13,66%
make*	25	action	13,66%
mead	25	belongings/object	13,66%
horse	24	belongings/object	13,11%
ask*	23	action	12,57%

Table 2: Thirty most frequent concurrent words with "Odin" in Snorri's Edda in Blackwell's English translation (1906)

Furthermore, it shows that Loki has risen in importance for the definition of Odin, and an accompanying close reading would show that this relation is one of antagonism in Colum, but not as pronounced in Snorri. This thesis seems to be confirmed when we look at the mytheme of Thor: Even here, Loki is by far the most frequent cooccurring character mytheme (43,56 %), second place being taken by Thrym and Hrymer with 10,53% each. In Snorri, the data is much more even, with Loki ranking third after Hrungner, Geirröd and before Udgardloke and

Hymer. Interestingly enough, when analyzing the mytheme of Loki, the difference in pattern between Snorri's and Colum's version is only one of degree. The changing role of the mytheme of Loki seems to be detectable mainly through its changed relationship to other mythemes.
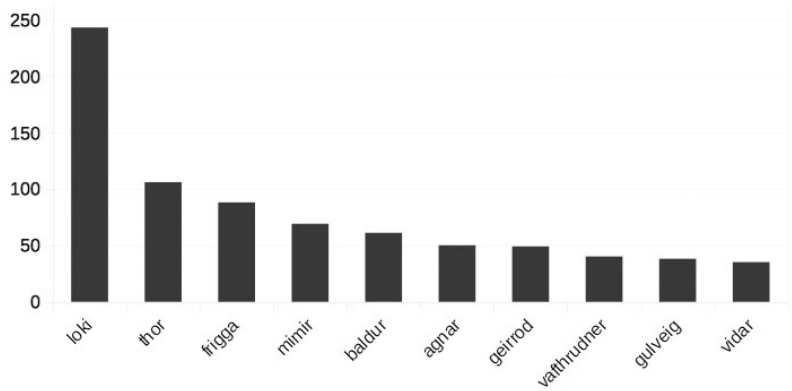

Figure 3: Traces of Charactor-Actor mythemes near Odin in Colum (1920)
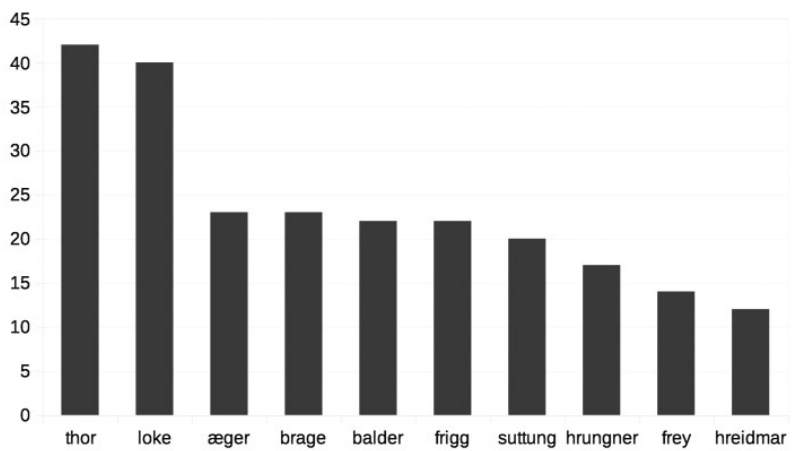

Figure 4: Traces of Character-Actor mythemes near 'Odin' in Beckham's Snorraedda.

Consequently, if we want to understand the underlying grammar, that is the affinity between mythemes in a given text and, by extension, in a repertoire of mythemes at a given moment, it would be important to analyze the relationship between the mythemes in use. One way to inquire is to relate the data of mytheme traces found for one mytheme to the data gathered for others. In order to do so, I have established data for the character mythemes of Thor, Odin, Loki and Baldr as well as

for the setting mythemes of Asgard, Jötunheim, Yggdrasil and forest. When it comes to the chronotope mythemes, I used the same set of attribute categories as for actor mythemes, as the traces suggested its equal relevance. It is probable, that the categories might be valuable even for action and concept mythemes.

The acquired data was put into a relational database with the different mythemes defined as nodes and the cooccurrence as edges, that is relationships. The importance of the edges was weighted by the percentage of cooccurrence with the mytheme identifier (self). For example, when the program identified 245 occurrences of the token "loki" and 53 cooccurrences of the token "thor", the relationship was weighted 21,63 % or, put on the scale of 1, 0,2163. The data was imported to the software Gephi that visualizes relations between elements[32]. To ensure its readability, the data was reduced to the traces of attributes concerning character mythemes (2a), class of being (2b), tool mythemes (2c) and chronotope mytheme (6). The algorithm "forceatlas 2" approached nodes (that is traces of mythemes or mytheme attributes) with high weighted relations and vice versa. The different categories were assigned specific colors: character mythemes in pink, setting mythemes in green, class of being in blue and tools in orange. Central nodes were indicated by bigger lettering.

Figure 5 and 6 show the results. It becomes obvious that grammar of mytheme relations has changed profoundly. Setting is much more important to the text by Colum (1920) than to the Snorraedda, whereas the latter is rather structured by characters. The central setting in Snorri is Asgard, Jötunheim is less important and the Yggdrasil and forest mythemes are of no importance to the general pattern, whereas all the setting mythemes dominate the map of relations in Colum. Yggdrasil seems to be of central importance to the mythological imagination in 1920, and so was the forest. The forest mytheme in Colum, however, is almost exclusively connected to the group of stories around Sigurdr and the Volsung and less to myths related to the other myths. In both cases, Thor and Loki are rather close to each other; Odin, however, is rather independent in Snorri, but close to Thor and Loki in Colum. The narrative importance of space seems to correlate to the observation

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[32] Mathieu Bastian and Gephi Consortium, *Gephi*, version 0.9.2, 2017, <https://gephi.org/>.

that nature and myth were connected in the 19th century's discursive grammar of the North, and that myth became representative of people connected to geographical space as depicted in fig 1 and analyzed, for example in the volume on *Geographies of Knowledge and Imagination in 19th Century Philological Research on Northern Europe*, edited by Joachim Grage and me.[33]

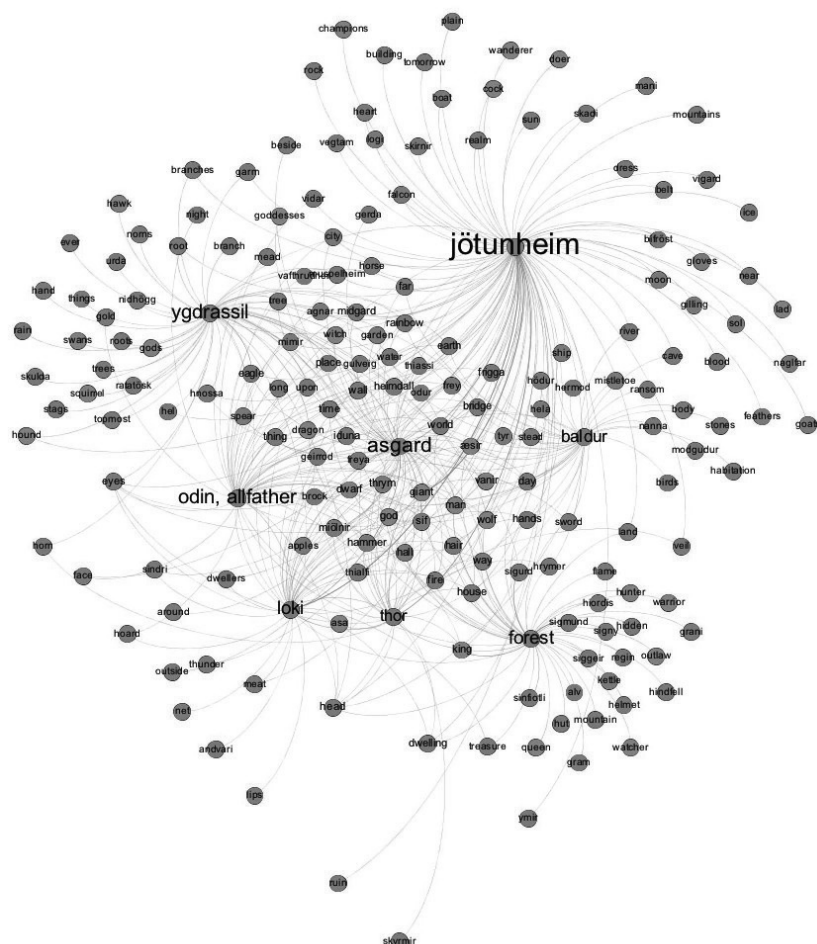Figure 5: Map of mytheme attribute relations in Snorri's Edda.

Figure 6: Map of mytheme attribute relations in Colum's Children of Odin (1920)

Conclusions and Perspectives

The aim of the present article was to show that it can be rather productive to understand geographical imaginations as narrative geographies, and that these geographies can be described as repertories of mythemes of social knowledge in use at a given time and place. Mythemes are the constitutive units of narratives—at the level of the narrated, not the narration. If we want to investigate the discursive grammar of the North at a given moment, we have to study the relations of the chronotope mytheme "North" to connected mythemes in the

repertory of social knowledge. This North is more than a direction, it is as a chronotope structuring narrations that use the North as a setting, and that are, since the 19th century at least, often narrations of identity.

However, in the course of the present article, it has also become evident that the preliminary reflections I have presented transgress the initial geographical interest of the project: if we are to understand man as *homo narrans* because of the importance of stories for the processing and transmission of data that have been discussed above, not only are geographies to be understood as products of narration, but much of the knowledge that structures our being-in-world. I would propose to call the latter "social knowledge," as it is created and maintained in social narrative exchange, be it in expert circles or popular culture.

To identify and analyze repertories of mythemes of social knowledge could thus be an interesting approach for the analysis of orders of narrative knowledge at a given time and place, allowing us to describe change and stability both of mythemes and their interrelationships. The latter can be understood as the grammar of discourse, defined as the probability of connectivity of mythemes in narration. Neither these grammars nor mythemes are stable, as they change through cultural use in time and space. What might seem to be stability in *longue durée* is an effect of what Wittgenstein called *family resemblance.*

The last part of the article showed that this can be proven quantitively by automated data analysis—the next step to take—collectively, as this cannot be the work of one researcher only. The databases to develop and the tools to elaborate ask for collaborative efforts, and in this sense, the present article is even a query for joining the project, a project that might open up new perspectives on our understanding of the cultural circulation of knowledge of the North, and beyond.[34]

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[34] A first version of such a database is under development in collaboration with Ludovic Strappazon from the Strasbourg university's *Direction numérique* and can be consulted at <http://mythemes.u-strasbg.fr/w>. Other elements can be found under <https://mythemes.u-strasbg.fr>.