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Can Aesthetics Be Counted?

Systematic Annotation and Quantitative Analysis of Narrational Comments in the *Sagas of Icelanders*

Abstract

Over the last years, the Digital Humanities (DH) have provided innovative possibilities to pose new and different questions to large text corpuses. The question whether aesthetics can be quantified indicates that a systematic annotation of aesthetic phenomena must be based on *close reading* but may well go beyond the simple markup of lexical elements. So far, the systematic annotation of literary texts has mainly been used for structural phenomena and has hardly been tested for more complex narratological questions. In our contribution, we wish to focus on figures of aesthetic reflection, in this case specific lexical manifestations that are related to narratorial voice and comments. The example of the Icelandic family sagas will show how the narrative voice and its comments in the tales can be used to detect the inherent concept of authorship. The annotation of these comments is the starting point for a quantitative analysis which then allows a qualitative comparison across texts. We will demonstrate how the quantitative analysis supports and supplements the traditional qualitative literary interpretation and how, at the same time, it forces researchers to phrase their questions more precisely and concisely.

Keywords

Digital Humanities, Annotation, Quantitative Analysis, Sagas of Icelanders (*Íslendingasögur*), Narratology

1. Introduction

In recent years, the field of digital humanities has opened up undreamed-of possibilities for examining texts and text corpora in new ways. For scholars of aesthetics, the application of quantitative methods – e.g., systematic annotation – is still a relative novelty. In that context, the question raised in our title takes up the challenge to show that the systematic annotation of figures of aesthetic reflection presupposes a close reading

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(a classic text-based and hermeneutic analytic process) and can thus go beyond an emphasis on individual lexical elements.

While the annotation of corpora is a long-established practice in computational linguistics, in which linguistic phenomena are often the focus and the annotated data serve machine-learning processes such as training and text data, the structured and systematic annotation of literary texts has just begun to gain significance in digital humanities.¹ This structured and systematic annotation of textual evidence (e.g., with reference to figures in drama, the frequency of their mention and compilation of their constellations; or with respect to temporal sequences in narrative texts) has so far concentrated mainly on structural phenomena and has not often been applied to multi-level, narratological problems – much less aesthetic questions. Especially in the case of annotating figures of aesthetic reflection,² this suggests great potential for innovation with regard to the method, making it operational, and the expected results. This means that, despite the fact that the combination of quantitative and / or digital procedures and hermeneutic work is central to digital humanities, there has so far been little scholarship that focuses explicitly on the general methodological challenge entailed.³ Besides the challenges of algorithmic comprehension of texts, in the case of aesthetic artifacts there is extreme dependence on context and a great number of aspects to be considered, which must be formalized in order to apply the methods of digital humanities to evaluate their quantitative characteristics. The systematic annotation and quantitative analysis of figures of aesthetic reflection and the operationalization necessary for their quantification are therefore also promising with regard to the development and refinement of the methods for working with heterogeneous material.

In this chapter, we take as a starting point figures of aesthetic reflection, i.e., configurations in the text under consideration that provide information about its aesthetic self-conception. They are lexically manifest, stand out as a practice, or become oper-

- 1 The field of digital humanities is notoriously hard to define, which explains its self-definition as a “big tent” (the motto of its 2011 conference). The website <http://whatisdigitalhumanities.com> provides a new definition every time the webpage is accessed. The branch of digital humanities relevant to this chapter can be described as the application of formal and / or algorithmic procedures to objects from the humanities with the goal of feeding the resulting data back into humanistic cognitive processes. This supplements but does not replace the manual procedure of *close reading*. Ideally, manual and automatic procedures are integrated (“human in the loop”).
- 2 Cf. on this concept, which is part of the analytic methodology of the SFB 1391, the contribution by Annette Gerok-Reiter and Jörg Robert in this volume, pp. 3–48, especially section 6.1.
- 3 Cf. Meister 1995, who describes a computer program for analyzing a literary text and suggests employing computers to ferret out differences within texts as well as data sets that would then be manually interpreted. He emphasizes the necessity to operationalize as an advantage of digital procedures (p. 269). See also Moretti 2013; Weitin/Gilli/Kunkel 2016; Reiter/Pichler/Kuhn 2020.

ative in the form of concepts. The approach begins with figures of aesthetic reflection that can occur locally or globally, i.e., throughout the entire text: They are identifiable as individual units, e.g., in a single text, but can also have an effect beyond the single artifact.⁴ In the systematic annotation and qualitative analysis of the narrative voice in the anonymous medieval *Sagas of Icelanders* (Old Norse *Íslendingasögur*) that are the subject of this chapter, concepts and formulations that are manifest as self-reflective utterances can be identified and annotated with relative ease. The *Sagas of Icelanders* are methodologically especially suited for this kind of analysis, since in them, narrative comments evince elements of self-reflective thought and thereby of a literary strategy. These elements are realized as figures of aesthetic reflection in the form of verbs or verbal phrases (e.g., *sem áður var sagt*: as was said before). Central to our argument are figures of aesthetic reflection in the form of smaller units that contain a potential for concept formation we cannot assume to be proven. In the anonymous *Sagas of Icelanders*, the manifestations of the narrative voice form figures of aesthetic reflection, which we place at the center of our observations. Thus, for example, the realization of the narrative voice in narratorial comments – both in individual texts and in text comparisons – enables statements about a possible inherent concept of authorship. Our initial focus is on identifying aesthetic reflection and its implementation, followed by quantitative analysis and the operationalization of text-related concepts, which then make possible qualitative comparisons between texts. In brief, we are interested in identifying indications and traces of aesthetic reflection, which in their manifestation within an aesthetic artifact – how they appear as well as their relations to one another – develop an aesthetic potential that can be understood as a literary strategy.

A precondition for the quantitative analysis of narrative comments in the sagas is to operationalize them, i.e., to establish routines that allow us to recognize them when they occur in the texts.⁵ One can apply different methods to do this either manually or automatically. Manual methods of identification in texts are the same as the annotation process in linguistics. Human annotators apply rules defined by annotation guidelines

- 4 In the course of annotation, we found that practices such as linguistic purism and its figures of aesthetic reflection (cf. the contribution by Sarah Dessì Schmid and Jörg Robert in this volume, pp. 51–86, here pp. 52f. and 67) or concepts such as that of co-creativity (cf. Bauer / Zirker 2019) require different approaches than in the case of manifestations. By manifestations, we mean chiefly working with small, variable units whose aesthetic status is not always manifest as a clear-cut concept but can only be determined in its frequency and obligatory nature, e.g., through analysis of their linguistic environment. On the use of the concepts *practices*, *manifestations*, and *concepts*, cf. Annette Gerok-Reiter and Jörg Robert in this volume, pp. 3–48, here section 7.2.
- 5 Cf. Pichler / Reiter 2020 for fundamental thoughts on what a critically reflected practice of operationalization can look like in digital humanities. Pichler / Reiter 2021 applies this practice concretely to an interpretation of Heinrich von Kleist's *Erdbeben in Chili* (The Earthquake in Chile).

to identify a certain textual phenomenon or the instance of a concept and – typically with the help of computer-based tools – to flag it explicitly and precisely.⁶ The rules defined by the guidelines can rely on a high level of text comprehension since they have been developed and repeatedly used by humans. At the same time, human attention is limited, and, especially in repetitive tasks, the effects of weariness are evident and can compromise the identifications. There is also the problem that, even with a high degree of text comprehension, complete consensus is often impossible. Despite great efforts to achieve clear operational definitions, experiments in annotating the narratological phenomenon of narrative levels have failed to achieve much agreement.⁷ Since we focus on manual annotation in this chapter, we will not return to the potential and preconditions for automatization until the end of this chapter.

In the following, we will first introduce the corpus of texts and then discuss how we operationalize the narrative comments with the help of annotation guidelines. Finally, we will focus on the annotations of narratorial comments in the *Sagas of Icelanders* as figures of aesthetic reflection and present initial results from the annotations and a comparative analysis. We have two goals: first, to learn more about the strategies used by the narrative voice in these texts to make them more literary, as well as to discover commonalities in their systematic use and deviations between individual texts and text groups. Additionally, this procedure shows how figures of aesthetic reflection in the premodern era can be identified with the help of data-driven methods, which can also enable their further refinement and application to texts beyond the *Sagas of Icelanders*. For this reason, at the end of our chapter we will reflect briefly on interdisciplinary cooperation and on the application of data-driven methods to aesthetic problems.

2. The Corpus of the *Sagas of Icelanders*

The around forty surviving *Sagas of Icelanders* are considered the most important examples of medieval vernacular narrative literature not just in Iceland but in Scandinavia as a whole. They were written anonymously between the 13th and 15th centuries and vary significantly in length. While *Hrafnkels saga* comprises about 9,100 words, *Njáls saga* (the longest) has 100,000 – more than ten times as many.⁸ The structural complexity of the sagas is equally diverse. As a rule, they proceed chronologically but often have several

6 For explicit and precise annotations, individual words and even letters are tagged. The necessity to decide exactly which words to annotate sometimes leads to unfruitful discussions about punctuation and function words. In most cases, it is precisely this necessity for precision that exposes critical cases and contradictory or opposing definitions (or interpretations of definitions).

7 Cf. Gius/Reiter/Willand 2019.

8 Cf. Figures 11.1 and 11.2 in Rowe 2017, pp. 157f.

narrative strands.⁹ Since we know from other sources that many personages as well as quite a few events narrated in the sagas are historical, the scholarly consensus is that at least the sagas' core content must have been passed down orally until they were first written down and that they retain traces of oral narration.

For a long time in the extensive scholarly literature, aspects of aesthetic reflection in the broadest sense came into play only when it was a question of confirming (or denying, under the rubric of fictionality) the sagas' historical accuracy. The realistic style of the sagas' narration, interpreted as the echo of a strong heterological aspect in medieval Icelandic literature,¹⁰ is also reflected in the reception of the sagas in later graphic art.¹¹ Even in very recent scholarship, there are hardly any studies – aside from papers on individual sagas or on individual types of narrative commentaries – that deal with the aesthetics of narration, especially under the aspect of self-reflection.

Although the *Sagas of Icelanders* have hardly anything explicit to say about poetic or poetological questions, brief remarks of the narrative voice as well as narrative techniques – e.g., the organization of content, dramatic structure and staging, as well as the self-representation of the narrative voice – allow us to recognize a consciousness of genre rules as well as the effort to satisfy certain expectations of the audience. Our analysis therefore proceeds from the hypothesis that aesthetic reflection in the *Sagas of Icelanders* is especially apparent where the narrative voice shows evidence of strategies to make the narrative more literary. Of central importance are the narratorial comments: small, reflective, and reflecting units that are easy to recognize (and thus to operationalize) as figures of aesthetic reflection. In agreement with Ranković 2007 and Clover 1982, we assume that the individual sagas arose from a common reservoir of narrative elements from different literary traditions and social practices of literary communication.¹² The goal of our project on narrative self-reflection in the *Sagas of Icelanders* is thus, first, to investigate whether the aesthetic reflections implicit in narrative comments are consolidated in the course of an entire text into a poetological statement on the basis of which one can deduce the narrative self-conception of the sagas. In a further step, we will then ask to what extent the relation between autological and heterological traditions and practices is being negotiated in these comments.

We regard these narratorial comments, which are found in all the *Sagas of Icelanders* in many variations and with different frequency, in the sense of the praxeological

9 On *stranding* or *entrelacement* in the sagas, cf. Clover 1982, especially pp. 61–92.

10 For an understanding of the heterological dimension, cf. the contribution by Annette Gerok-Reiter and Jörg Robert in this volume, pp. 3–48, section 5.2.

11 Cf. Zernack 2017, p. 330.

12 See also Ranković / Ranković 2012.

model¹³ as manifestations of aesthetic reflection that document the productive exchange between literary practice and the extra-literary world of their audience(s). The goal of our investigation is to collect these phenomena – largely neglected by previous scholarship – systematize and contextualize them, as well as evaluate them with regard to narrative self-reflection in the sagas. As a starting point, we choose utterances of the narrative voice that pertain to the act of narration itself. In their individual concrete formulation as well as their frequency, combination, and distribution, these comments vary from saga to saga.

Despite their brevity, the comments reveal how elements of the narrative are selected and organized and thereby steer its reception. An initial manual collection of narrative comments from a few sample texts led us to identify five categories: (1) the intratextual organization of the narrative, (2) the integration of a text into an intertextual structure, (3) referential comments relating especially to the difference between the inner- and extra-textual world, (4) an evaluation of the narrative, and (5) intra- and extra-diegetic references to public opinion as a) the source of the narrative or b) an external source of evaluation. Although some scholars refer to these comments in various ways,¹⁴ they have as yet not been treated systematically.

The analysis of the corpus will show that in the context of an entire saga, the comments are manifestations of aesthetic reflection and reflect authorship with respect both to the texts' inherent aesthetic logic and to the possibilities of communication by, for example, relating events in the saga to the world of the audience. Our assumption is that it will thus be possible to show that the sagas' authors are well aware of the borders between the narrated world of their sagas and the world of the audience.

Our research up to this point has led to the working hypothesis that these narratorial comments serve to distance the narrative voice from the narrated events while at the same time bringing that voice closer to its audience. The comments underscore the achievement of the narrative voice by making visible its act of mediation and hence offer the possibility of aesthetic reflection. We have established that in the sagas there is considerable variation both in the frequency of narratorial comments and in the various categories of comment. Thus, each saga has its own unique individual profile. In order to reach more general conclusions – possibly also with regard to genre – it will be necessary to analyze the entire corpus. In the final analysis, only the collection and evaluation of a large number of examples can clarify the difference between narratorial comments and narration, as well as the varieties of comments and their exact function for the understanding of narration in medieval Iceland.

13 On the praxeological model in this volume, cf. the contribution by Annette Gerok-Reiter and Jörg Robert in this volume, pp. 3-48, section 5.2.

14 Thus, e.g., Andersson 1966; Schach 1970; Heinrichs 1976.

In order to better distinguish between the use of narratorial comment unique to each individual saga and a possible genre-specific repertoire, in addition to the traditional qualitative analysis, we will also undertake a comprehensive, data-driven quantitative analysis of the entire corpus under consideration here. We assume that even if all the sagas use the same types of comments, from the amount of data gathered we will be able both to identify an individual profile of narratorial comments for each saga as well as to discover the extent to which the comments constitute reflection on the aesthetic structure of all the sagas.

3. Methodic Compilation of Guidelines for Annotation

We define annotation in the sense of Pagel et al., as “the process of enriching textual data with additional data.” Thus annotation is understood as a method that can be deployed “to support interpretation and develop theories.”¹⁵ The foundation for working with annotations are the guidelines for annotation, which Reiter characterizes in the following way: “Guidelines for annotation should describe a phenomenon or theoretically given concept as generically as possible, but also as precisely as necessary so that human annotators can annotate reliably and intersubjectively.”¹⁶ Working on and with annotation guidelines is an iterative process of trying to apply them and then evaluating the results, so that insufficiencies can be discovered and the guidelines revised, reapplied, and tested in a further iterative process, and so on.

In the beginning, the focus is on formal aspects such as the selection of the tool and the structuring of the annotation categories. The compilation of guidelines for annotation runs through several repeated cycles of individual operations, i.e., following initial work on definition, there is its practical implementation on the database, and the knowledge and experience gained from this process flow into the revision of the guidelines for annotation.

In order to discover a lack of clarity in the guidelines, it is important that the annotators work independently, since otherwise they could influence one another. Only in this way can one identify passages in which several annotation categories are possible; this also provides the opportunity to notice difficulties that arise which are collected and later discussed. In addition, setting down the annotations in writing forces the annotators to assign clear categories and be able to defend them if necessary. Agreement among the annotators on the assignment of categories over an entire text or an entire corpus is centrally important. Various procedures have been developed to calculate this

15 Pagel et al. 2018, p. 31.

16 Reiter 2020, p. 193. The following discussion of establishing annotative guidelines is based on Reiter 2020, pp. 193–198.

inter-annotator agreement. They permit the establishment of a benchmark that must be achieved in the annotations before the guidelines can be characterized as completed.¹⁷ From that point on, all annotations produced with these guidelines can be used for subsequent steps such as statistical evaluation and interpretation.

4. Annotating the Narratorial Comments in the *Sagas of Icelanders*

For the quantitative analysis of narratorial comments in the *Sagas of Icelanders*, we use the CorefAnnotator software.¹⁸ The initial annotation guidelines were based on the five categories mentioned above¹⁹ that were developed as part of the preparation for investigating narrative self-reflection in the corpus. An initial collection and analysis of narratorial comments in the sagas suggested that the comments displaying (self-) reflection on narration have five primary functions, namely: the intratextual organization of the narrative, the creation of intertextual connections, references to extra-textual elements, an evaluation of the narrative, and appeals to public opinion or narrative tradition in order to rate – sometimes ironically – the narrative. But as we began the annotation process, it soon became clear that although these five categories were a good starting point, to be applied productively, they would need to be sharpened, differentiated, and supplemented with additional categories in order to answer the questions of our research. In the case of the Old Norse corpus analyzed here as an example, the guidelines were reworked – i.e., expanded and made more nuanced – five times and have now reached a first stable form with six categories, most with several subcategories.

The development of annotation guidelines for the *Sagas of Icelanders* proved difficult in two ways. First, the sagas we have annotated so far are very heterogeneous, i.e., they display different patterns and frequency of use of the various categories. The narrative voice has neither a consistent stance nor a consistent style within the saga genre and is instead multifaceted and mutable. This makes it necessary to rework the categories

17 Most metrics for inter-annotator agreement calibrate the scored values so that they lie between $-\infty$ and 1. A positive value (> 0) can then be classified as a non-random agreement. Standard values cannot be specified, but congruent values from 0.8 are regarded as good and values between 0.6 and 0.8 as acceptable. Difficult annotative tasks and values below 0.6 should be a cause to further revise the guidelines.

18 Cf. <https://github.com/nilsreiter/CorefAnnotator> (last accessed: October 23, 2024). For part of the annotative work, we also used the program Atlas.ti, which has no influence on methodological implementation or on this presentation of how we developed the annotative guidelines. Atlas.ti has technical possibilities that offer additional options, for example in the processing and annotation of visual data, which can prove helpful for a diachronic study of narratorial comments in various manuscripts that have not yet been edited or digitally prepared (i.e., are OCR-capable).

19 See section 2 above: “The Corpus of the *Sagas of Icelanders*.”

and sometimes introduce new categories with each newly annotated saga. The second difficulty was the frequent ambiguity characteristic of the *Sagas of Icelanders*. The audience – and thus also the annotator – are often left wondering to which level of the narrative a statement is referring and consequently how it is to be interpreted or annotated. Annotating the *Sagas of Icelanders* often demands patient analysis of intricate individual passages and, in complex cases, must be repeated two or more times.

With a method such as annotation that depends on several reiterated steps, the presentation and discussion of that process are as important as the results obtained. We will therefore both introduce the individual categories and their elaborations and follow their ongoing development. The names of individual categories should thus be understood as working titles.²⁰

(1) *Intratextual References*: This category includes all intratextual references by the narrative voice as it makes narrative selections, reminds the audience of earlier events, announces aspects of the story not yet narrated, and tells the audience which figures are either being newly introduced or will play no further role. Examples of this category are frequent phrases such as *sem fyrr var sagt*²¹ (as has already been told), *Nú er at segja frá*²² (now we must tell about), and *ok nefnu vér hana eigi*²³ (but we do not name her). Especially the latter comment shows how the narrative voice steers the saga's reception through its selections.

Intratextual references also include frequently used formulaic phrases. Originally, we foresaw only one subcategory for formulaic phrases, but we soon realized that they needed to be differentiated. Thus we developed formulaic subcategories for the introduction of new figures on the one hand and formulaic expressions of time on the other. Accordingly, in the analyses below, you will find three different subcategories that contain the word “formulaic” in their names.

Often one encounters the formulaic introduction of new figures at the beginning of a chapter, episode, or scene. Usually, the formula is a sentence such as *M[aðr] er nefndr Bárðr Heyangrs-Bjarnarson*²⁴ (a man is named Bárðr Heyangrs-Bjarnarson). The formulaic quality and emphasis upon a new character are distinctive in such sentences. Both at the beginning and the end of such narrative units, formulaic expressions are often preferred. They constitute a narrative frame and end a scene with a kind of interim balance. For example, in the first section of Chapter 3 of *Reykðæla saga*, we read *Nú er at segja frá*

20 In addition to the categories defined by their content, we created a “question-mark entity” as a collection basket for passages that are difficult to classify and for annotations that were controversial.

21 *Laxðæla saga*, p. 71.

22 Here, e.g., in *Reykðæla saga*, p. 157.

23 Here, e.g., in *Laxðæla saga*, p. 48.

24 *Bárðar saga Snæfellsáss*, p. 107.

*ferð þeira Háls ok Vémundar*²⁵ (now we must tell of the journey of Háls and Vémundr), and after some brief action, the section closes with *Ok nú tóku þeir Vémundr Björn á sitt vald*²⁶ (And now Vémundr and Háls took Björn by force).

Another category of intratextual reference are the formulaic transitions between scenes or plot strands. These phrases emphasize how much time has elapsed in the meantime. They are often temporally quite vague and sometimes reminiscent of the fairy-tale formula *Once upon a time*. In the sagas, one encounters phrases such as *Þá var þat á einni nótt*²⁷ (Then one night it was) or *Nú er eigi langt at bíða, áðr en*²⁸ (Now one didn't have to wait long until).

The final intratextual specification is foreshadowing. This subcategory annotates passages in which either the narrative voice or a figure expresses a premonition of what may come to pass, which then usually does so. For example, in *Reykðæla saga* it is stated in direct speech that the figure named Hánefr will cause much harm: *mikit illt mun af Hánef hljótask*²⁹ (much misfortune will be brought about by Hánefr). On the other hand, in *Eiríks saga rauða* the prediction is made in indirect speech: *Hann [...] kvað hennar forlög mikil mundu verða*³⁰ (He foretold a heavy fate for her). In both cases, these predictions come true.

(2) *Intertextual References*: The category of intertextual references with which the *Sagas of Icelanders* establish connections to a larger (and usually Old Norse) literary context remained relatively unchanged in the course of annotation. Primarily, we annotated references to other works that either are immediately quoted in the course of a saga (e.g., individual skaldic verses) or whose titles are mentioned. Thus in *Bárðar saga Snæfellsáss*, it is stated that another saga gives a detailed report of the relationship between the giant mountain king Dofri and the future Norwegian king Haraldr Hálfðanarson: *[E]ptir því sem segir <í> sögu Haralds konungs Dofrafóstra*³¹ (According to what is reported in the saga of King Haraldr Dofrafóstri). At first, we also annotated well-known figures who appear in several sagas (e.g., Leifr Eiríksson and Grettir Ásmundarson), but we ultimately decided against doing so since it is nearly impossible to identify all the figures who also play a role in other sagas.

(3) *Referential Connections*: We annotate as referential those comments in which the narrative voice emphasizes the discrepancy between the time in which the saga is sup-

25 *Reykðæla saga*, p. 157.

26 *Reykðæla saga*, p. 158.

27 *Bárðar saga Snæfellsáss*, p. 104.

28 *Reykðæla saga*, p. 157.

29 *Reykðæla saga*, p. 165.

30 *Eiríks saga rauða*, p. 216.

31 *Bárðar saga Snæfellsáss*, p. 104. The peculiarity of this reference is that no saga with this title has been preserved or is mentioned elsewhere.

posed to have happened and the time of narration.³² Apropos this long period of usually several centuries, both sociocultural differences and toponymic changes are repeatedly mentioned and commented upon. With this bridging of the temporal gap, the sagas ensure continuity of cultural tradition as well as their own preservation. For instance, in *Laxdæla saga*, we read the following: *Í þann tíma var þat mikil tízka*³³ (In that time, that was very fashionable).

Moreover, the first rounds of annotation showed that additional specifications within the category of referential connections made sense. For that reason, three new subcategories were added. First were the brief background stories explaining how a figure came to have an epithet,³⁴ often ending with a sentence such as *Af því var hann Sigurður fótur kallaður*³⁵ (That's why he was called Sigurður Foot). The second specification includes place names that have changed over time, cases in which the narrative voice confirms an explicit divergence of interior and exterior worlds, for example, *ok því heitir þat síðan á Arnþrúðarstöðum*³⁶ (and that's why ever since it is called Arnþrúðarstaðir). In the third new subcategory, the narrative voice introduces background information on individual figures or families that would otherwise be inaccessible to the audience. Thus *Reykðæla saga* informs us about a habit of the figure Hánefr (*þat var siðvani Hánefs*;³⁷ That was the habit of Hánefr), and in *Egils saga Skalla-Grímssonar* a long family tradition is referred to (*hann tók lends manns rétt, svá sem haft höfðu langfeðgar hans*;³⁸ He held the status of a vassal, as had his forebears before him).

(4) *Ironic Distancing or Narrative Voice*: We initially entitled the fourth main category “ironic distancing” and included statements of the narrative voice in which, with apparent humor, it distances itself from the narration. The most obvious example we have found so far is from *Bárðar saga Snæfellsáss*: *ef svá skal kalla*³⁹ (if one can call it that). This comment refers to the preceding description of an especially ugly man. The narrative voice here expresses doubt about the accuracy of the term *mann* (person, man), which can be understood as a metapoetic signal of reflection by the narrative voice itself on correct or incorrect diction. At the same time, the phrase expresses the uncertainty of the protagonist Þórðr upon seeing this figure.

32 While the action of most of the *Sagas of Icelanders* claims to take place between c. 870–1050 CE, we must place the narrative voice in the 13th to the 15th centuries. However, this does not jibe with the dating of the corresponding manuscripts, some of which date to the early 19th century.

33 *Laxdæla saga*, p. 145.

34 Countless epithets are mentioned in the sagas. Not all get annotated, but only the ones about which the narrative voice gives a brief account of how they came about. The narrative voice thereby explains an aspect that the audience of its time might otherwise not understand.

35 *Sigurðar saga fóts*, p. 78.

36 *Hrafnkels saga Freysgoða*, p. 97.

37 *Reykðæla saga*, p. 60.

38 *Egils saga Skalla-Grímssonar*, p. 4.

39 *Bárðar saga Snæfellsáss*, p. 148.

But it soon became clear that there were only isolated cases of such ironic distancing, and so it had no advantage as a subcategory. We therefore restructured it to include comments in which the narrative voice either intervenes relatively directly in the action or provides aids in understanding what is happening. This is done through explanations or rationales (*Þat þótti vera skaði mikill, því at hann var virðuligr höfðingi*;⁴⁰ This was regarded as a great loss, for he was a noble leader), in evaluations of the action (*ok váru þat miklar gersemar*;⁴¹ and those were important valuables), or – in rare cases – in narrative statements in the first person singular or plural: *Ok vitu vér þó eigi, hvárt honum hefir heldr at bana orðit*⁴² (But we don't know if this was how he died).

(5) *Public Opinion*: Narratorial comments that express public opinion are collected in the fifth category. In this case, too, it became clear from the start that differentiation was necessary. Public opinion is formulated on both the extra- and intradiegetic level; in the latter case, the annotative guidelines call for a distinction between utterances in direct and indirect discourse. Here is an example of extradiegetically expressed opinion from *Eiríks saga rauða*: *Ok er þat sumra manna sagn*⁴³ (And that is what some people say). From *Grænlandinga saga*, here is an example of intradiegetic public opinion in indirect discourse: *Nú var umræða mikil um Vínlandsförf Leifrs*⁴⁴ (Now there was much talk about Leifr's Vinland voyage). Public opinion exercises significant social authority over both the narrative and the narrative voice but is obviously unreliable because disparate in and of itself. Although extradiegetic, the narrative voice thus behaves like a member of the society it is portraying. In its evaluations, it has recourse to public opinion; in each case, however, it chooses which public opinion is worth staging and reporting and is accordingly significant for the audience.

This category, now with three subdivisions, is problematic to the degree that statements of public opinion in the sagas are often ambiguous and, in many instances, it is difficult to distinguish between the intra- and extradiegetic levels. Moreover, the narrative voice likes to hide behind public opinion and references to tradition. In such cases, we usually undertake double annotations. Here is an example from *Reykðæla saga*: *Þótti þat fám mönnum skaði, þó at hann væri drepinn*⁴⁵ (It seemed a loss to only a few people, although he had been killed).

(6) *Superlatives and Hyperbole*: Inspired by the article of Theodore M. Andersson,⁴⁶ we added a sixth category for superlatives and hyperbole. Andersson sees expressions of

40 Stjörnu-Odda draumr, p. 470.

41 Reykðæla saga, p. 184.

42 Reykðæla saga, p. 159.

43 Eiríks saga rauða, p. 210.

44 Grænlandinga saga, p. 254.

45 Reykðæla saga, p. 169.

46 Andersson 1966, p. 7.

this kind as a rhetorical means of emphasizing the information they highlight and thus to direct and also influence the reception of the narrative. Thus in *Stjörnu-Odda draumr*, we read of a woman of royal blood: *var hon fegrst ok fríðust ok bezt at sér ger um alla hluti*⁴⁷ (she was gorgeous and very pretty and very talented in every way). In the course of the annotation process up to now, this category has not proved completely successful, and it is unclear whether a consistent annotation of all superlatives and hyperbolic expressions will in the end be informative and capable of further elaboration. This question arises especially in view of the tendency of Old Norse – as well as of modern Icelandic – to prefer the superlative to the comparative or the use of intensifying adverbs when describing or comparing things.

In the course of our continuous revision of the annotation guidelines, individual categories became more focused while the spectrum of aspects of meta-reflection in the sagas broadened. The expanded collection of textual passages that resulted allows a better overview of the expressive and compositional tools of the narrative voice. Saga passages relevant to the inquiry into narrative aesthetic self-reflection can be better selected and differentiated in a second step. It is especially the categories with many examples – for instance, the original intratextual references and intratextual formulaic time expressions – have grown considerably and offer a rich stock of diverse expressions of the narrative voice. These intratextual categories, which are so far heavily represented in the annotations (see Fig. 2), are relevant in two ways. First, they account for a large portion of the intratextual text organization and thus make an important contribution to the coherence of the narratives; and second, they are often formulaic expressions that let the audience know what sort of information or undertaking they can expect now.

5. Initial Analyses of the Annotations

In what follows, we present the results of some quantitative analyses we have been able to carry out based on the manual annotations completed so far. This procedure makes it possible to investigate a very large textual corpus systematically and analyze the results both quantitatively and qualitatively. So far we have completely annotated four sagas that are regarded as marginal within the genre of the *Sagas of Icelanders*. Although *Stjörnu-Odda draumr* is often counted as belonging to the circle of *Sagas of Icelanders*, it is formally a *þáttr* – a short prose narrative. In the manuscripts, such texts are usually included as parts of larger saga compendiums.⁴⁸ Nevertheless, the texts we examine here illustrate the heterogeneity and range to be expected within the genre. While *Reyk-*

47 *Stjörnu-Odda draumr*, p. 476.

48 On the problematic genre of the *þættir*, cf. Ármann Jakobsson 2013.

dæla saga tells of feuds and judicial disputes in northern Iceland, *Bárðar saga Snæfellsáss* recounts the colonization of Iceland, and *Grænlandinga saga* narrates the discovery and settlement of Greenland. In the latter two sagas, paranormal beings often appear, while the theme of Christianization is also repeatedly mentioned. The textual corpus annotated in the initial eleven months of our project is still very small but already confirms two assumptions: first the fact that narratorial comments in each saga display a markedly individual profile, i.e., a unique frequency and distribution. And, second, that some of the annotation categories and subcategories introduced above are present in every profile, which suggests that they are probably compulsory within the genre.⁴⁹

Saga	Number of Sentences	Number of Tokens
<i>Bárðar saga Snæfellsáss</i>	959	14,850
<i>Grænlandinga saga</i>	352	6,720
<i>Reykðæla saga</i>	1,163	25,549
<i>Stjörnu-Odda draumr</i>	225	5,343

Table 1: Basic Characteristics of the Corpus

As is evident from Table 1, the four sagas are extremely different in length. Instead of words, digital humanities and computational linguistics use the term “tokens”, as in the right-hand column. In addition to words, punctuation marks as well as separated affixes also count as tokens. The calculations and graphics below are thus based on the analysis of annotated tokens. Table 1 shows the number of sentences as a comparison.

The different lengths of the sagas make a direct comparison of the absolute numbers of annotations implausible. In the following analyses, the frequencies will be normalized,⁵⁰ so that the direct comparison of quantitative results is ensured. There are several ways to do this, but the easiest is to divide a given frequency by the theoretical maximum, which for annotations would be that every single token was annotated. Thus,

49 In the meantime (October 2024) the annotation guidelines have long been finalized based on the annotation of 24 sagas, including *Sagas of Icelanders* (*Íslendingasögur*), legendary sagas (*fornaldarsögur*) and chivalric sagas (*riddarasögur*). For the sake of scope, the corpus has been reduced to 11 *Sagas of Icelanders* (*Íslendingasögur*). The analysis of these sagas further confirmed the two assumptions: In the family sagas, there is overall a generic distribution of the main categories of narratorial comments, while each saga also has its own individual profile. Cf. Heiniger 2023 and Heiniger (forthcoming).

50 Many cases of quantitative text analysis involve a comparison of multiple texts. This presents a problem since different texts typically are unequal in length. Longer texts have more opportunities than shorter ones to include a textual phenomenon. For that reason, the absolute frequency of the phenomenon is divided by the length of the texts, i.e., normalized on the basis of the texts’ length. This results in values between zero and one that are comparable across texts.

we divide the actual number of annotations by the total number of tokens in a saga, resulting in values between zero and one. Since the theoretical maximum in this case is very far from a practical, realistic maximum (most tokens are, after all, not annotated), some of the normalized values analyzed below are very close to zero.

5.1. Frequency of Annotations

We will now look at the frequency of annotations in Figure 1. Since the frequencies of annotations were normalized using the length of the texts (measured in number of tokens), the difference in the number of annotations is not only the result of the difference in text length.

It is obvious that among the *intratextual references*, formulaic references to characters were annotated especially in *Grænlendinga saga* and *Bárðar saga*, while temporal formulas hardly occur at all. *Foreshadowings* are represented in all the sagas. In the case of *referential connections*, *Reykðæla saga* exhibits many fewer annotations than the other three sagas. It is also noteworthy that references to time and place are unevenly represented in the four sagas. On the other hand, they all display similarities in the occurrence of *public opinion* – the amount of direct and indirect discourse is approximately the same in all the sagas, while references to tradition are more frequent in *Stjörnu-Odda draumr* and *Bárðar saga*. References to the *narrative voice* are clearly more frequent in *Stjörnu-Odda draumr* and *Reykðæla saga*. The relative frequency of the subcategories “rationale” and “evaluation” seems to be constant, while the subcategory “first person” is less present in *Stjörnu-Odda draumr* and *Reykðæla saga*.

This analysis of the four sagas suggests that narratorial comments have an individual profile in each one. This supports the hypothesis with which we began. For reasons of space, in the following analyses we will concentrate on the category of intratextual references. The annotations of the other categories can be analyzed in a similar way.

5.2. Distribution of Annotations in the Text

Figure 2 illustrates the distribution of annotations in the category intratextual references across each saga. Each annotation is indicated by a vertical line, while the colors represent the various subcategories.

As expected, the annotations are generally distributed across the entire text, although there are occasionally large gaps. It is also noteworthy that the frequency of annotations varies. *Reykðæla saga* contains far more annotations than the other three. In a further step based on that density of annotation, one can track the beginnings of new large episodes or the beginning and ending of narrative strands. The quantity and distribution of annotations reflect the episodic nature of *Reykðæla saga*, characterized by short, compact individual scenes that follow immediately upon one another and

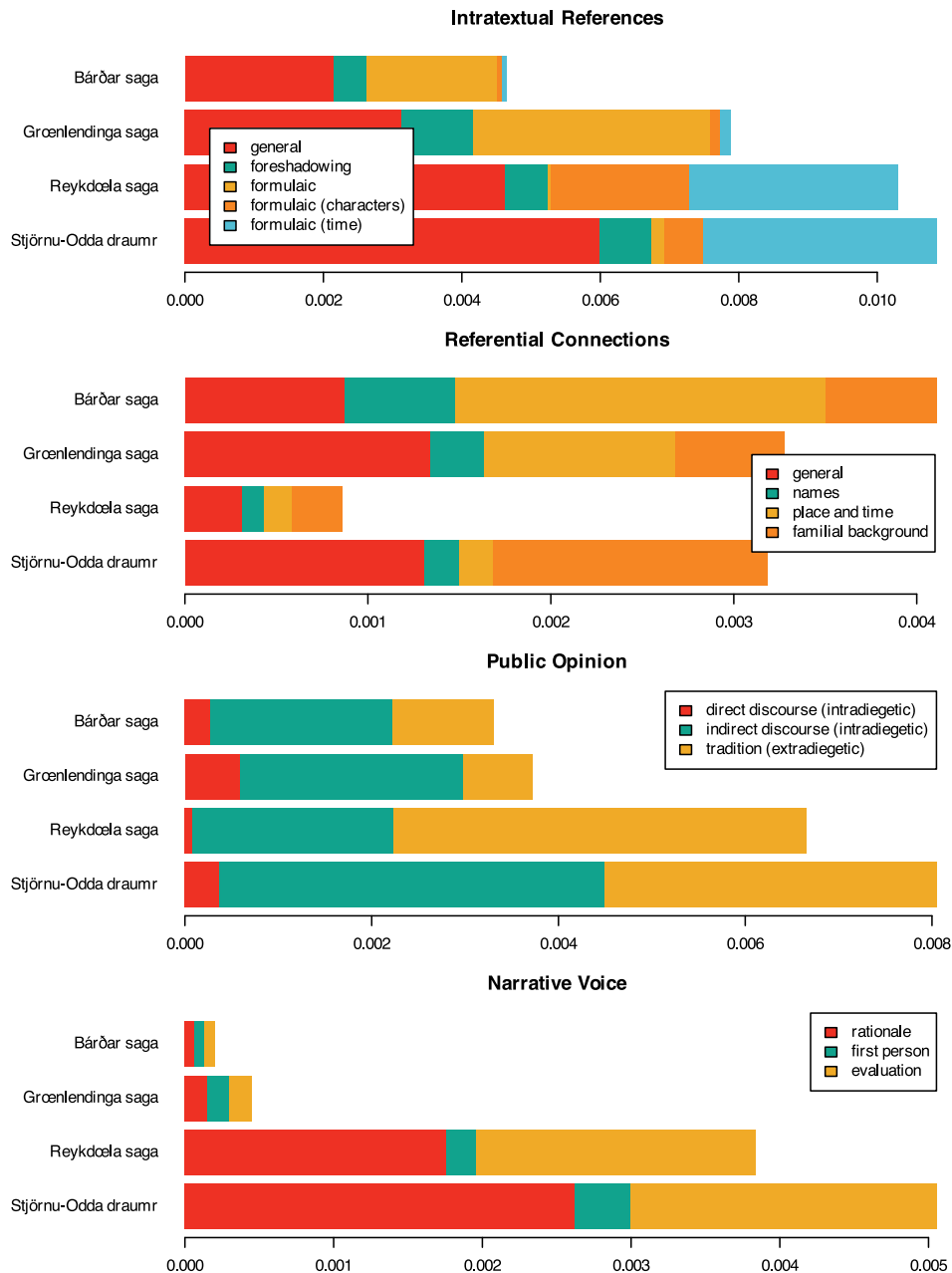


Fig. 1. Number of Annotations per Category with Subcategories. Values were normalized on the basis of text length measured in tokens.

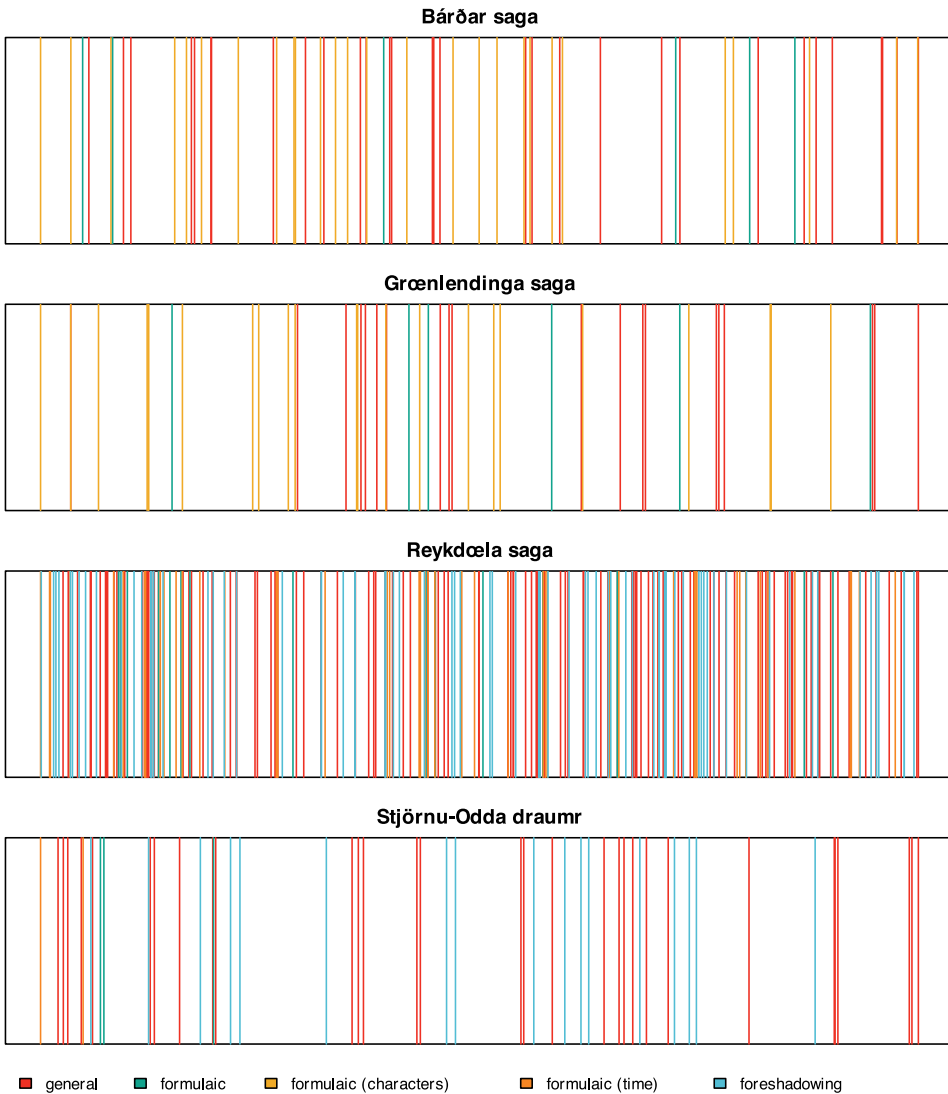


Fig. 2. Graphic Representation of the Distribution of Annotations in the Category “Intratextual References” within the Four Example Sagas of Icelanders.

always require orientation in time and space as well as a conclusion. Moreover, the frequent use of the subcategory of general intratextual connections also suggests that this saga is engaged with the process of narration and especially with divergent narratives of events and the question of interpretational sovereignty. As one can see from Figure 2, the latter is expressed by frequent reference to various publicly circulating opinions.

By contrast, in *Stjörnu-Odda draumr* we can see an atypical narrative structure for a saga: a frame narrative and two closely related interior stories. Except here, one sees no particular concentration of annotations at the beginning or end of the sagas. This points to an open-ended narration so that in principle, every saga could be continued and supplemented with additional episodes. In what follows, we will take another look at the course of annotation density per chapter.

5.3. Annotation Density per Chapter

The density of annotations in certain categories in individual saga chapters is shown in Figure 3. There is a data point for each chapter and each category, and the data points of a category are then connected by a line. Since the chapters vary in length, the number of annotations was divided by the number of tokens in each chapter. The resulting values are thus comparable.

The density of annotations within the chapters confirms the open-ended, episodic narratives of the sample sagas; every chapter or narrative unit displays its own structure based on the annotations, indicating its own narrative climax. Because of its brevity, *Stjörnu-Odda draumr* is the exception. Its distribution of annotations and thus of narratorial comments suggests a design and structure which, in its distinct symmetry, is atypical of the longer *Sagas of Icelanders*.

With the help of the preceding figures, one can also identify and track the narrative focal points of each saga. The first two peaks in the graph of *Bárðar saga Snæfellsáss* are in chapters three and six and represent first, Bárðr's arrival in Iceland and settlement on the Snæfellsnes peninsula (Chapter 3), and second, the moment of Bárðr's retreat into the mountains after the dramatic and painful – but only apparent – loss of his daughter Helga (Chapter 6). The peaks in the last third of the saga mark the challenge of the revenant Raknarr and the subsequent departure of Bárðr's son Gestr to find and subdue Raknarr.

In *Reykðæla saga*, the peaks in annotation density occurring in Chapters 3, 12 and 13, as well as 20 similarly stand for three central events: the suspicious disappearance of Björn (Chapter 3) that in the end is exposed as a cleverly staged escape attempt; the “sheep's head incident” (Chapters 12 and 13) in which the troublemaker Vémundr induces a man to strike Vémundr's enemy Steingrímur ignominiously with a singed sheep's head; and finally, the return of the man who killed the universally beloved leader Áskell (Chapter 20). All three events are central to the saga's plot, are repeatedly mentioned, and several times lead to further entanglements.

The interpretations of *Bárðar saga Snæfellsáss* and *Reykðæla saga* sketched out on the basis of Figures 2 and 3 suggest that by using quantitative analyses, we can both confirm already existing qualitative and hermeneutic analyses and open the possibility of better understanding the process of narration and therefore also the struc-

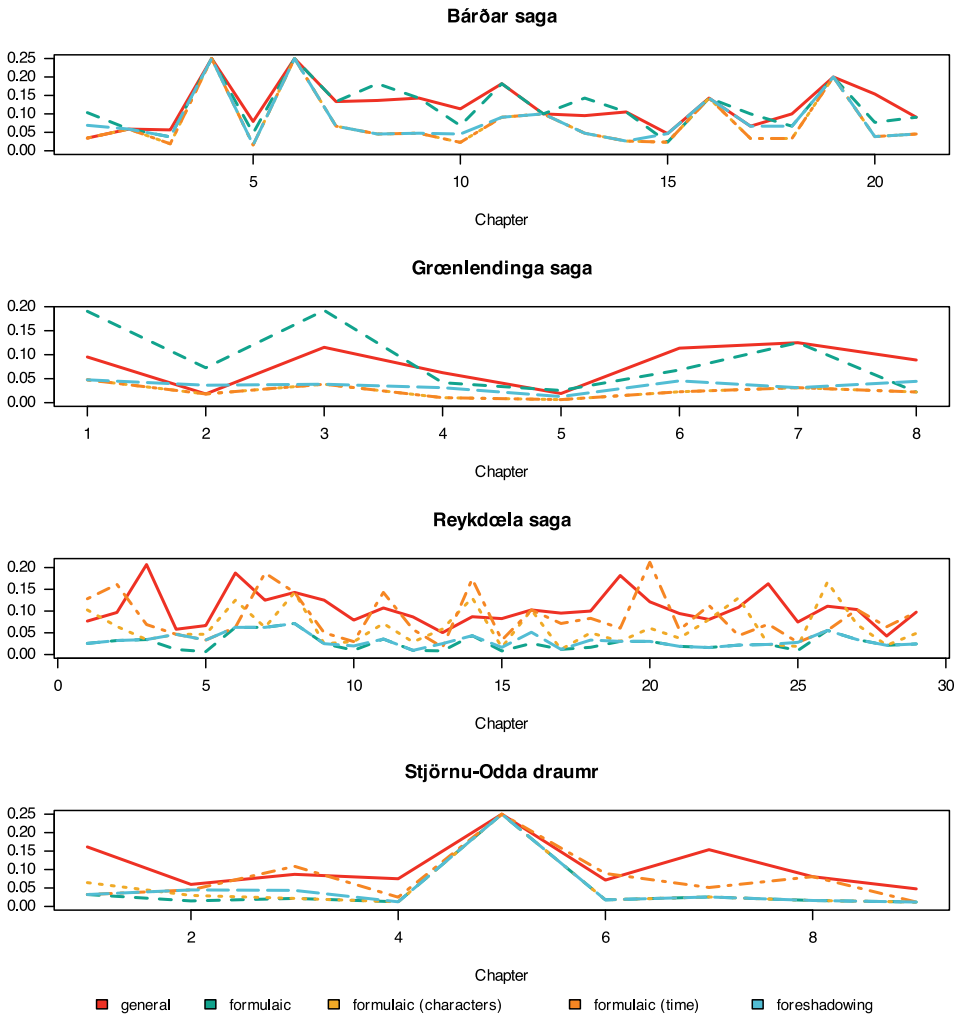


Fig. 3. Annotation Density per Chapter. The number of annotations of intratextual references are visualized per chapter, normalized using the chapter lengths (in tokens).

ture of the sagas. The systematic annotations in many ways also shed fresh light on Old Norse texts. For one thing, an analysis like that in Figure 3 enables an overview of the annotations across several texts. The visualization of the data makes clear the heterogeneity of textual composition both within a genre – in this case, the *Sagas of Icelanders* – and, we assume, across genres. For another, on the level of individual sagas, we can plot the connection between narratorial comments and plot on the basis of the peaks in the graphs. In their function as a design medium, the narratorial comments

accompany the narrative's high points and turning points and thus influence the narrative strands.

The analysis of annotation density using Figure 3 shows how narratorial comments structure the sagas, but it also raises further questions. For instance, it still remains to be seen whether one can distinguish between primary and secondary narrative strands that are tagged with unequal degrees of emphasis. Conversely, we need to consider what the widely oscillating or relatively flat graphs of individual sagas reveal about their narrative style. In the latter case, does this mean that their narrative style is less episodic and more continuous? So far, we can only speculate about why the narrative voice holds back on comment in some passages. To what extent are the comments in some cases linked to content, for instance in individual episodes? Figure 3 shows the annotation density per chapter, but since the density per chapter is presented as a narrative unit, one cannot tell exactly where in the chapter the narratorial comments cluster. It also remains to be seen which annotation categories and thus what kind of narratorial comments accompany and underscore key passages. As Figure 3 makes clear, the lines of the various annotation categories are mostly different from one another, and only rarely do they achieve a relatively orchestrated path as in *Stjörnu-Odda draumr*. Thus across the sagas, while there is variability in the distribution of annotations and thus of narratorial comments, this should not be evaluated differently. The variability clearly shows that the narrative voice in each saga follows an individual narrative strategy. One must also keep in mind that, at present, Figure 3 shows only the annotation density of intratextual references. To achieve a comprehensive picture of the distribution of annotations, the other annotation categories must also be assessed. Only then will we know whether key passages are characterized primarily by intratextual comments or whether they are linked to other kinds of narratorial comments. We must not forget that, although the narratorial comments annotated here enable conclusions about the creative procedures of the narrative voice, not all comments are equally self-reflective about the aesthetic structure of the texts. Only when we have addressed these still-open questions can we understand how the narrative voice shapes the text, how the aesthetic structure of both individual sagas and groups of sagas is constituted, and to what extent the narrative voice in its comments reflects on the narrative process.

6. Conclusion

Our starting point was the provocative question of whether one can count aesthetics. We have shown that quantitative methods make it possible to differentiate figures of aesthetic reflection, locate them in the texts, and define more precisely their various forms and functions. The analysis of the narrative voice on the basis of the systematic annotation of a selection from the *Sagas of Icelanders* was able to highlight textual fea-

tures which, although already identified in individual occurrences, were not systematically ascertainable in one or several complete texts. As a precondition for annotating the corpus, a detail-oriented close reading was transferred into a quantitative analysis and made possible comparisons across a group of texts.

The methods of digital humanities create evidence for literary investigations – in our case, of the narrative voice as a figure of aesthetic reflection and its central role in the aesthetic structure of the sagas – about which previous scholarship's linear close readings could only conjecture and make limited comparative and generalizing statements. Thus, quantitative analysis supports and complements qualitative interpretation and, at the same time, through operationalization, invites more precise formulation of what should be investigated using which analytic categories and how those categories are distinguished from one another. In this way, literary studies becomes more precise in the way it interrogates texts without replacing concrete analysis of individual passages. We have been able to show that with the help of visualizations, quantitative methods can reveal textual phenomena whose significance across texts has not been previously recognized. For instance, our results suggest that in the *Sagas of Icelanders*, the distribution of narratorial comments is linked to the course of the action. However, this connection needs further analysis, i.e., continuing work must reapply the results of the quantitative analysis to precise textual analysis.

On the other hand, complex literary investigations – e.g., with regard to the aesthetics of texts – challenge the digital humanities and their quantitative methods to broaden their methodological spectrum beyond statistical analyses and model the interaction of quantitative and qualitative methods. In that regard, the annotation of figures of aesthetic reflection has proved to be a promising procedure to further precisely such a development. Quantitative and qualitative approaches to the analysis of aesthetic artifacts are not incompatible but productively compatible. In this study, we employed a manual operationalizing strategy that has produced interesting results. Its unusual perspective on the corpus of the *Sagas of Icelanders* brings new findings to light.

We would now like to address procedures, briefly mentioned above, that are geared towards computer-supported operationalization and clarify to what extent that method is transferable. The most important difference from an operationalization geared towards manual annotation is that computer programs perceive texts in a different way and in particular have no language comprehension that even comes close to that of human beings. Thus, automated operationalization must begin much further down and especially make use of redundancies.

Well into the 2000s, rule-based systems were used for this kind of operationalization. The rules for any given phenomenon were written by human experts and then processed in computer programs. But even for linguistic phenomena, it turned out that the complexity of the rule system increased without a corresponding increase in the recognition rate. That led to the use mainly of systems based on machine-learning pro-

cedures in which computer programs are no longer prescribed rules but only data from which an algorithm⁵¹ then independently learns rules. The resulting rules are labeled a model.⁵² They are not comparable to human-produced rules since they use their own vocabulary that is usually not transparent to human beings. Depending on the purpose of their application, this can be a serious drawback.

Using the annotations introduced in our chapter, however, it is also possible to train and test a machine-learning procedure that recognizes narratorial comments. If this procedure achieves an acceptable recognition rate, further sagas can be annotated automatically, and even in the cases where – as is to be expected – the results are not perfect, manual correction is clearly faster than purely manual annotation.

When one begins to count aesthetics, that is, aesthetic phenomena, nuanced and sometimes surprising results can be expected – and this method is still in its infancy. Next steps aim to expand the corpus and analyze and compare the results across a larger textual corpus. We also foresee refining our annotative tools and automatic annotation. The work on counting aesthetics will continue.

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- 51 An algorithm is a precise specification of actions to reach a result. Algorithms are abstractions that can be (but do not have to be) converted, for example, into computer programs. The procedure for dividing two whole numbers that we have all learned in elementary school is an example of an algorithm.
- 52 The concepts ‘model’ and ‘modelling’ are frequent in digital humanities and have multiple meanings. For an overview, see Kuhn 2020, pp. 12–14.

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