

The TEI as luminol: Forensic philology in a digital age

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Abstract

The purpose of this article is to introduce and explore forensic philology in the context of electronic text editing. Drawing primarily on the example provided by the development of a TEI P5 conformant edition of *Hafgeirs saga Flateyings*, an alleged Icelandic saga forgery attested in a single, unsigned eighteenth century paper manuscript, this discussion explains how literary, linguistic, and transmission-level interpretations can be employed to describe the saga text and to bear witness to its origin and transmission process. It further explains how encoding the metadata described in these interpretations beside the data described in (near)zero-level text can be accomplished without sacrificing the role of the manuscript as artefact and without sacrificing the appearance of the text as it occurs on the page.

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1 Introduction

A significant number of digital editions have been published in recent years, and many of these serve as exemplars for those of us working within the digital editing community. A glance at *Electronic Textual Editing*, for example, published in 2006, indicates that such projects address a wide berth of editorial problems, ranging from transcriptional practices to document management to authenticity. And they offer a wealth of information to editors working on various types of digital editions.

While much has been written about the challenges of digital editions, in the discussion that follows, I consider a problem that has yet to be resolved. My discussion centers on the difficulties that arise in editing a single, albeit somewhat unusual, Icelandic saga: *Hafgeirs saga Flateyings*. This saga is preserved in an unsigned, eighteenth-century paper manuscript, Additamenta 6, folio (Add. 6, fol.). Today housed in the collection of the Arni Magnusson Institute for Icelandic Studies in

Reykjavík, Iceland, the manuscript was originally held as part of the Arnamagnæan Collection in Copenhagen, Denmark. According to the flyleaf: 'Saga af Hafgeyre flateying udskreven af en Membran der kommen er fra Island 1774 in 4to exarata Seculo xij' (*Hafgeirs saga Flateyings was copied from a twelfth-century manuscript written in quarto, which came [to Copenhagen] from Iceland in 1774*).

While such a manuscript might appear unremarkable, as a number of paper manuscripts were copied during the late eighteenth century in Copenhagen, then the capital of Iceland and the seat of Icelandic manuscript transmission during this period, only twelve Old Icelandic manuscripts of those catalogued in the Copenhagen collections are dated to the twelfth century, while a mere eighteen are dated to 1200 (Jorgensen, 1977; Kalund, 1900, p. 512). The dating on the flyleaf is therefore unusual, and, as it turns out, suspect as well, since no catalogue entry exists to record the occurrence of the alleged source manuscript. Moreover,

as Jorgensen observes, the motif sequence found in *Hafgeirs saga Flateyings* bears a striking resemblance to that found in the well-known mythical-heroic saga *Hálfðanar saga Brönnufóstra* (Jorgensen, 1977). And in a fascinating argument based primarily on this fact, Jorgensen alleges that Add. 6, fol. is a forgery, claiming that Þorlákur Magnússon Ísfiord, an Icelandic student who was studying and working as a copyist in Copenhagen during the 1780s, composed and sold *Hafgeirs saga Flateyings* as a copy of an authentic medieval Icelandic saga (Jorgensen, 1977).

In spite of its questionable origin, *Hafgeirs saga Flateyings* stands as a remnant of Iceland's literary, linguistic, and intellectual history, and Add. 6, fol. can therefore be viewed as an important cultural artefact.¹ As the editor of the *Hafgeirs saga Flateyings* manuscript, my aim is to provide a 'reliable' (see the Modern Language Association's 'Guidelines for Editors of Scholarly Editions' Section 1.1) electronic edition of the text. But the question, at least until recently, was how? What is the best way to represent such a work? Encoding the manuscript according to a markup standard such as the Text Encoding Initiative (TEI) Guidelines is surely a starting point, but doing so doesn't solve one of the primary concerns: How to represent the manuscript reliably (which presents a complex editorial problem of its own), while at the same time describing literary, linguistic, and transmission-level 'interpretations' that can offer readers insight into the saga's origin and the manuscript's transmission history.

At the 2007 Digital Humanities Summer Institute, Matthew Driscoll gave a talk entitled 'Everything But the Smell: Toward a More Artefactual Digital Philology.' The talk provided a brief history of the shift toward 'new' philology (see *Speculum* Vol. 65, No. 1, January 1990) and underscored the significance of the material or 'artefactual' aspect of new philology, which views manuscripts as physical objects and thus as cultural artefacts which offer insight into the 'process to which they are witness' (Driscoll, 2007b). In his discussion of 'artefactual philology', Driscoll emphasized the distinction between *artefact*, the 'physical object which carries the text,' and *text*, the 'series of words in a particular order'

(Driscoll, 2007b). And in a related article he urged editors working within the artefactual tradition to 'retain as many features of the original, and [to] introduce as little interpretation, as possible' (Driscoll, 2007c). While Driscoll grants that interpretations must be added to zero-level text if it is to be of use to its readers, he cautions that 'it should always be clear what is actually written in the source, as distinct from however the editor has decided this is to be interpreted; wherever one is, one must always be able to get back to level zero' (Driscoll, 2007c).

Yet in the case of *Hafgeirs saga Flateyings*, where one of the edition's aims is to offer readers the ability to assess the text's authenticity, the editing process relies on interpretations. By definition, forensic philology portends a kind of evidentiary approach, one that frames interpretations of the text as kinds of evidence. Evidence of what? That is in the hands of the editors and the readers, but conceivably: linguistic development, the transmission process, literary typology, and so on. Because the descriptive framework of TEI's P5 Guidelines defines Extensible Markup Language (XML) as the underlying encoding language, artefactual philology and forensic philology need not be mutually exclusive. TEI-XML digital editions afford editors the 'logic of abundance' (Flanders, 1997, p. 135), such that encoding the metadata described in interpretations beside the data described in (near)zero-level text can be accomplished without sacrificing the role of the manuscript as artefact and without sacrificing the appearance of the text as it occurs on the page; thus:

artefactual philology = (near)zero-level text:
TEI-XML maintains the separation between
(near)zero-level text and a minimum of inter-
pretations



forensic philology = 'interpretations': TEI-XML describes the linguistic, literary, and transmission-level aspects of the text that can point toward transmission history and origin while maintaining the separation between (near)zero-level text and interpretations

And as a result of the encoder's ability to separate data and metadata, there is, as Driscoll suggests, 'no limit to the information one can add to a text – apart, that is, from the limits of our own imagination' (Driscoll, 2007a).

To be sure, this paper does not lapse into what McCarty refers to as the 'mimetic fallacy' (see Dahlström 2004, p. 24), but it does support the premise that digital editions, which foster the distinct layering of data and metadata, have the potential to move the reader beyond the aesthetics of sensory experience, and perhaps even to offer something that cannot be obtained via the olfactory sensation of smell.

In the remainder of this paper, I explain how I employ a forensic framework to address the problem of editing the *Hafgeirs saga Flateyings* manuscript, and I show how I describe and display literary, linguistic, and transmission-level interpretations of the text, which are precisely the kinds of interpretations that can bear witness to its origin and the transmission process.

2 From Artefactual to Forensic Philology

The problem of authenticity raises a unique set of philological questions: Which constituents of the text can be identified as potential evidence of authenticity or inauthenticity? The editorial response to this question demands a particular kind of encoding, one that exploits XML to describe not only the various literary, linguistic, and transmission-level aspects of the text but also the various ways of displaying and analysing these data, and one that allows readers to do the same. In short, the encoding and display should be designed to allow readers to 'generate' (see Vanhoutte, 2006) an edition that can display or suppress descriptors that can lead them to their own conclusions about the text's origin.

In keeping with this editorial goal, I defined three 'forensic' categories for this project:

1. *Literary*: describes motif sequences and poetic lines found in the text (could also include other types of literary information; e.g. poetic devices

Table 1 TEI-XML forensic categories

Literary	Linguistic	Transmission level
<interpGroup>	<archaism>	<abbr>
<interp>	<borrowing>	<add>
@xml:id	@sourcelang	<choice>
<seg>	@borrowtype	<corr>
@xml:id	@borrowdate	
@ana	<foreign>	<expan>
	<modernism>	<gap>
	<neologism>	<orig>
		<reg>
		<sic>
		<supp>

such as enjambment, rhyme scheme, kennings, etc.)

2. *Linguistic*: describes lexical, morphological, and orthographic aspects of the text (does not focus on orthography strictly, since it is unreliable as a dating factor in this case)
3. *Transmission-level*: describes altered, corrected, or erroneous aspects of the text

From a TEI-XML perspective, these categories are organized to include the elements and attributes described in Table 1.

To include additional comments and to link elements, I also incorporated the <note> and <ptr> (pointer) elements from the 'Elements Available in All TEI Documents' Module of the TEI P5 Guidelines, and the <link> element from the 'Linking, Segmentation, and Alignment' Module of the TEI P5 Guidelines. I then designed the transformation of the source XML to display interactively the interpretations of the text described by these elements and attributes so that readers can view or suppress the interpretations and in doing so 'generate' their own versions of the edition. Readers can display archaisms, for example, and assess whether they are 'affectation[s] of spurious age' (Einar, 1958, p. 39) or features consistent with the textual transmission process, and they can view post-Reformation borrowings, for example, and assess whether they preclude a medieval origin or are to be expected in a text ostensibly copied by a scribe living in Copenhagen during the eighteenth century. Or they can suppress these features and, for

1. King Artus of Sweden has a daughter and three sons, the youngest named Fenesius. 2. (1) The king has his friend, Earl Skate, foster Fenesius because he knows his queen prefers their two older sons. 3. (5a) At age 12, Fenesius runs off alone on a day-long chase after a hare. 4. (5h) When he does not return, the earl is so worried that he cannot eat or sleep for eight days. 5. (5b) Meanwhile, Fenesius meets a cannibalistic troll, whom he kills by burying his ax in the giant's head. 6. (5c) He then decapitates and burns the troll's mate, Lúpa, at her house before 5d) finding Godfreyia chained to a post. 7. (5e) The girl tells him to save himself because the giant will kill him if he finds him there. 8. After learning the troll is dead, (5f) Godfreyia relates that it had killed her parents. 9. They burn the giants' house down and (5g) go to Godfreyia's sister with gems. There the two women heal Fenesius. 10. Godfreyia then becomes pregnant by Fenesius, and they decide to have the earl bring up the child if a boy and the mother raise it if a girl. 11. Fenesius returns alone to camp. 12. (3) After just having turned 12 [sic], Fenesius asks the earl if he can go on a Viking expedition and is given twelve ships by the earl and six by his father. 13. After a successful venture, (4) his ship is separated by a storm. 14. (2) He and his companions are attacked by Vikings led by Sóti, who kills Fenesius. Upon learning the sad news, his father dies of grief. 15. (1) The son of Fenesius and Godfreyia, Hafgeir, is raised by Earl Skate until the latter's death. 16. (7) The boy sails about as a merchant and stays with Hálfðan the Black, King of Norway. He proves his prowess by bringing the king booty from a Viking trip. 17. (8) With weapons given him by King Hálfðan, he leaves to avenge his father and finally buries his sword in Sóti's brain. 18. On his way back, he is blown off course, winters on Flatey (whence the epithet of the hero), returns to Norway, later marries and has many famous descendants.

Fig. 1 English text motif sequence: *Hafgeirs saga Flateyings* (Jorgensen, 1977, pp. 156–157)

example, view the semi-diplomatic transcription, view the editorial notes, view one or more of the motifs, compare motifs, or any combination of these.

2.1 Literary interpretations

The literary grouping represents an extension of the work begun by Jorgensen. His description of the motif sequence shared by *Hafgeirs saga Flateyings* and *Hálfðanar saga Brönufóstra* is as depicted in Figs 1 and. 2, where the numbering of the motifs in the English *Hafgeirs saga Flateyings* summary corresponds with the numbering of the motifs in the English *Hálfðanar saga Brönufóstra* summary.

While I adopted the motif sequence and the motifs² as defined by Jorgensen, rather than rely on English outlines to illustrate the shared narrative structures, I turned to the text in Add. 6, fol. and encoded the motif sequence and individual motifs using the <interpGrp> (interpretation group), <interp> (interpretation), and <seg> (segment)

elements as defined in the ‘Simple Analytic Mechanisms’ Module of the TEI P5 Guidelines (see 17.3: ‘Spans and Interpretations’). The <interpGrp> element ‘collects together a set of related interpretations which share responsibility or type’ (TEI, 2008) and nests within it the child element <interp>, which ‘summarizes a specific interpretative annotation which can be linked to a span of text’ (TEI, 2008).

In this edition, <interpGrp> contains the motif sequence, and each <interp> describes a motif within the sequence, as in the following example:

```
<interpGrp resp="#SAS" type="MotifSequence">
  <interp xml:id="FOSTERa">"The king has his
  friend, Earl Skate, foster Fenesius because he knows
  his queen prefers their two older sons."</interp>
  <interp xml:id="DAYLONG_HUNT">"At age 12,
  Fenesius runs off alone on a day-long chase after a
  hare."</interp>
```

Introduction: The saga opens with the genealogy of King Hringr of Denmark, who has a daughter, Ingibjörg, and two sons, the elder called Ásmundr and the younger called Hálfðan. 1. The king's friend, Earl Þorfiðr, fosters the children until 2. they are attacked by vikings led by Sóti, who kill the king and his elder son and defeat his army. The earl hides Ingibjörg and Hálfðan with an old lady in the woods for a short time before sending them away to be fostered by his brother, Earl Óttarr. 3. After turning twelve, Hálfðan asks the earl if he can go on a viking expedition and is given four ships. 4. His ship is separated by a storm and on landing, 5a. he goes off alone on an all day hunt. 5b. Hálfðan meets two cannibalistic trolls in a cave and kills the male by chopping off its head with his axe before 5c. decapitating the giant's mate after a lengthy battle. 5d. He finds Hildr tied to a chairpost in an arm of the cave and 5e. the girl tells him to save himself because the giant will kill him if he finds him there. After learning that the troll is dead 5f. Hildr and Hálfðan find her two brothers who had been about to be killed by the giant. 5g. They stay in the cave for five nights before taking gold, silver, and jewels with them to camp and to Hálfðan's sister, 5h. who was so worried that she could not eat or sleep for days. Following adventures with a troll-woman, Brana, who becomes Hálfðan's lover, 6. becomes pregnant by Hálfðan, and they decide to have the father bring up the child if it is a boy and to have the mother do as she likes if it is a girl. 7. Hálfðan sails as a merchant and stays with Ólaf, King of England, and proves his prowess by defeating the evil Áki. 8. Along with the twenty ships given to him by King Ólaf's daughter, he leaves to avenge his father and finally does so by chopping off Sóti's legs. He remains in Denmark before returning to England, marries the king's daughter and has a famous son.

Fig. 2 English text motif sequence: *Hálfðanar saga Brönufóstra* (Jorgensen, 1977, p. 157)

<interp xml:id="COULDN'T_EAT_OR_SLEEP_FOR_DAYS">"When he [Fenesius] does not, the earl is so worried that he cannot eat or sleep for eight days."</interp>

<interp xml:id="CANNIBALISTIC_TROLLS">"Meanwhile, Fenesius meets a cannibalistic troll, whom he kills by burying his ax in the giant's head."</interp>

<interp xml:id="DECAPITATES_TROLLS_MATE">"He [Fenesius] then decapitates and burns the troll's mate, Lupa."</interp>

<interp xml:id="FINDS_GIRL">Fenesius finds a "girl," Godfreyia, "chained to a post."</interp>

<interp xml:id="GIRL_TELLS_HIM_TO_SAVE_HIMSELF">"The girl [Godfreyia] tells him to save himself because the giant will kill him if he finds him there."</interp>

<interp xml:id="FAMILY_KILLED_BY_TROLLS">"After learning the troll is dead, Godfreyia relates that it had killed her parents."</interp>

<interp xml:id="TAKE_TREASURE">Fenesius and Godfreyia go to "Godfreyia's sister with gems."</interp>

<interp xml:id="GIRL_BECOMES_PREGNANT">"Godfreyia then becomes pregnant by Fenesius, and they decide to have the earl bring up the child if a boy and the mother raise it if a girl."</interp>

<interp xml:id="GIRL_GIVES_GIFTS">Godfreyia gives Fenesius chain-mail, a shield, helmet, and jewels.</interp>

<interp xml:id="EXPEDITION_AT_TWELVE">"After just having turned 12 [sic], Fenesius asks the earl if he can go on a Viking expedition and is given twelve ships by the earl and six by his father."</interp>

<interp xml:id="SHIP_SEPARATED_BY_STORM">"After a successful venture, his ['Fenesius'] ship is separated by a storm."</interp>

<interp xml:id="VIKING_ATTACK_BY_SOTI">"He [Fenesius] and his companions are attacked by Vikings led by Sóti, who kills Fenesius."</interp>

<interp xml:id="FATHER_DIES">"Upon learning the sad news, his father dies of grief."</interp>

<interp xml:id="FOSTERb">"The son of Fenesius and Godfreyia, Hafgeyr, is raised by Earl Skate until the latter's death."</interp>

<interp xml:id="MERCHANT_JOURNEY">Fenesius' son, Hafgeyr, "sails about as a merchant and stays with Hálfðan the Black, King of Norway. He proves his prowess by bringing the king booty from a Viking trip."</interp>

<interp xml:id="AVENGES_FATHERS_DEATH">"With weapons given him by King Hálfðan, he leaves to avenge his father and finally buries his sword in Sóti's brain."</interp>

</interpGrp>

The English descriptions contained in each <interp> are taken from Jorgensen's original summary, while the @xml:id was added during the editing process. A series of <seg> tags, which 'may be used at the encoder's discretion to mark almost any segment of the text of interest for processing' (TEI, 2008), is used in the body of the saga to wrap Icelandic text which contains the motifs described in the <interp> elements, and each <seg> is linked to its corresponding <interp> by means of the @ana (analysis). For example, the motif *Couldn't eat or sleep for days* is described by <interp xml:id="COULDNT_EAT_OR_SLEEP_FOR_DAYS"> within the <interpGrp> and is expressed in the body of the saga as:

```
<seg ana="#COULDNT_EAT_OR_SLEEP
_FOR_DAYS">var íarle nú sva
<pb n="14r"/><milestone unit="page"
n="27"/>
<lb/>Þúngt i skape at hann mátte
<lb/>eige alleina ganga ok var
<lb/>hann boren af mnnum
<lb/>sínum heim til hallar
<lb/>sinnar tók íarl ser Þetta
<lb/>sva nær at hann lagðiz
<lb/>Þegar i Reckiu ok neytte
<lb/>hvarke Svefins ne matar
<lb/>í viij daga.</seg></p>
```

Because it is constructive in this edition to enable readers to compare the motifs in *Hafgeirs saga Flateyings* with those in its alleged source text, I also identified and encoded the motif sequence and individual motifs in an Icelandic normalized

version of *Hálfðanar saga Brönufóstra*³ and made the text of the saga available in a TEI Lite edition. The motif sequence within *Hálfðanar saga Brönufóstra* is encoded as follows:

<interpGrp resp="#SAS" type="MotifSequence">

<interp xml:id="FOSTER">King Hringr of Denmark's friend, Earl Þorfiðr, fosters the king's three children: his "daughter, Ingibjörg, and two sons, the elder called Ásmundr and the younger called Hálfðan."</interp>

<interp xml:id="VIKING_ATTACK_BY_SOTI">"They are attacked by vikings led by Sóti, <interp xml:id="FATHER_DIES">who kill the king and his elder son and defeat his army.</interp> The earl hides Ingibjörg and Hálfðan with an old lady in the woods for a short time before sending them away to be fostered by his brother, Earl Öttarr."</interp>

<interp xml:id="EXPEDITION_AT_TWELVE">"After turning twelve, Hálfðan asks the earl if he can go on a viking expedition and is given four ships."</interp>

<interp xml:id="SHIP_SEPARATED_BY_STORM">Hálfðan's "ship is separated by a storm."</interp>

<interp xml:id="DAYLONG_HUNT">Hálfðan "goes off alone on an all day hunt."</interp>

<interp xml:id="CANNIBALISTIC_TROLLS">"Hálfðan meets two cannibalistic trolls in a cave and kills the male by chopping off its head with his axe."</interp>

<interp xml:id="DECAPITATES_TROLLS_MATE">Hálfðan decapitates "the giant's mate after a lengthy battle."</interp>

<interp xml:id="FINDS_GIRL">Hálfðan "finds Hildr tied to a chairpost in an arm of the cave."</interp>

<interp xml:id="GIRL_TELLS_HIM_TO_SAVE_HIMSELF">Hildr "tells him to save himself because the giant will kill him if he finds him there."</interp>

<interp xml:id="FAMILY_KILLED_BY_TROLLS">"Hildr and Hálfðan find her two brothers who had been about to be killed by the giant."</interp>

<interp xml:id="TAKE_TREASURE">"They stay in the cave for five nights before taking gold, silver,

and jewels with them to camp and to Hálfðan's sister" Ingibjörg.</interp>

<interp xml:id="COULDNT_EAT_OR_SLEEP_FOR_DAYS">Ingibjörg "was so worried that she could not eat or sleep for days."</interp>

<interp xml:id="GIRL_BECOMES_PREGNANT">Hálfðan has adventures with a troll-woman named Brana, "who becomes his lover;" Brana "becomes pregnant by Hálfðan, and they decide to have the father bring up the child if it is a boy and to have the mother do as she likes if it is a girl."</interp>

<interp xml:id="MERCHANT_JOURNEY">"Hálfðan sails as a merchant and stays with Ólaf, King of England, and proves his prowess by defeating the evil Áki."</interp>

<interp xml:id="GIRL_GIVES_GIFTS">Brana gives Hálfðan three gifts: magical herbs to aid him in winning the love of the King's daughter, magical clothes that will protect him from weapons, and a ring that turns color to warn him of enemies.</interp>

<interp xml:id="AVENGES_FATHERS_DEATH">"Along with the twenty ships given to him by King Ólaf's daughter, he leaves to avenge his father and finally does so by chopping off Söti's legs."</interp></interpGrp>

And motifs within the body of *Hálfðanar saga Brönufóstra* are encoded as shown in the example below:

<seg ana="#COULDNT_EAT_OR_SLEEP_FOR_DAYS">Ingibjörg,
<lb/>systir hans, vakti bæði nótt ok dag ok neytti hvárki
<lb/>svefns né matar</seg></p>

The <interp> elements are identical to those from *Hafgeirs saga Flateyings*, but their sequencing has been adjusted to reflect the order in which they occur in *Hálfðanar saga Brönufóstra*, and while the English summary within the <interp> elements is again adopted from Jorgensen with the @xml:id defined during the editing process, the English summaries depict the characters and events from *Hálfðanar saga Brönufóstra* not from *Hafgeirs saga Flateyings*. Finally, each <seg> in the body of the saga again points to its <interp> description in the motif sequence defined by the <interpGrp> via the @ana.

Table 2 provides an example of the XML source used (1) to describe one of the motifs (*Couldn't eat or sleep for days*) in the motif sequence shared by *Hafgeirs saga Flateyings* and *Hálfðanar saga*

Table 2 Enabling motif comparison

<i>Hafgeirs saga Flateyings</i>	<i>Hálfðanar saga Brönufóstra</i>
<interp xml:id="COULDNT_EAT_OR_SLEEP_FOR_DAYS"> "When he [Fenesius] does not return, the earl is so worried that he cannot eat or sleep for eight days."</interp>	<interp xml:id="COULDNT_EAT_OR_SLEEP_FOR_DAYS"> Ingibjörg "was so worried that she could not eat or sleep for days."</interp>
<seg ana="#COULDNT_EAT_OR_SLEEP_FOR_DAYS"> var iarle nú sva <pb n="14r"/><milestone unit="page" n="27"/>	<seg ana="#COULDNT_EAT_OR_SLEEP_FOR_DAYS">Ingibjörg, <lb/>systir hans, vakti bæði nótt ok dag ok neytti hvárki <lb/>svefns né matar</seg></p>
<lb/>Þúngt i skape at hann mátte <lb/>eige alleina ganga ok var <lb/>hann boren af mönnum <lb/>sínum heim til hallar <lb/>sinnar tók iarl ser Þetta <lb/>sva nær at hann lagðiz <lb/>Pegar i Reckiu ok neytte <lb/>hvarke Svefns ne matar <lb/>i viij daga.</seg></p>	

Brönufóstra and (2) to enable comparison in the edition's display (see Section 3 for an illustration of the transformation of this source code).

2.2 Linguistic interpretations

In representing linguistic interpretations, I focused primarily on lexical and morphological description, since these are often useful indicators in determining a text's date. While the textual transmission process is known to introduce changes in text, orthographic changes in particular, the dates of lexical items such as content words like nouns, verbs, and adverbs that are central to the narrative can be indicative of the text's date. In this case, it might be argued, as Jorgensen notes, that the twelfth century dating on the flyleaf provides 'a convenient *terminus post quem*' (Jorgensen, 1977, p. 163), and should a reader determine that a sufficient number of late loan words and modernisms are present, sixteenth century borrowings and seventeenth century nouns for example, he or she might leverage relative chronology to rule out a twelfth century source. On the other hand, the presence of archaisms may lead a reader to a different conclusion: either that the text stands as a remnant of Icelandic at an earlier stage and is therefore authentic or perhaps that the scribe intentionally archaized the text to give the impression of an early medieval source.

In order to facilitate these kinds of analyses, the edition's schema⁴ defines four new elements. Drawn from the perspectives of historical and sociolinguistics, these elements have been selected to aid readers in a linguistic evaluation of the saga:

1. The `<borrowing>` element describes a non-native word which has been adopted into the language. Distinct from the `<foreign>` element, a borrowing may have the following attributes: `@sourcelang` (source language), `@borrowdate` (date of borrowing), and `@borrowtype` (type of borrowing; e.g. calque, such as *ubermensch* borrowed from German and translated into English as 'Superman'; or loanword), in addition to the TEI global attribute set.
2. The `<modernism>` element describes a word, phrase, usage, or peculiarity of style which represents an innovative or distinctively modern feature.

3. The `<neologism>` element describes a word or phrase which is new to the language or one which has been recently coined.
4. The `<archaism>` element describes an archaic morphological, phonological, or syntactic feature or an archaic word, phrase, expression, etc.

Because the linguistic assertions made by this type of encoding rely on secondary sources⁵ to inform the content, these descriptors are generally encoded with an accompanying `<note>` element providing the reference and/or other relevant source information, and where a word or usage occurs repeatedly, subsequent instances of the word or usage are linked to the original note by means of a `<ptr>`.

2.3 Transmission-level interpretations

Transmission-level interpretations are often descriptive rather than interpretive (e.g. ``, `<add>`, `<gap>`, and `<abbr>` where indicated by the scribe), though some, including `<corr>`, `<sic>`, and `<reg>`, remain interpretive. The majority of the TEI-XML elements included in this category are discussed in the 'Elements Available in all TEI Documents' Module of the TEI P5 Guidelines, including those shown in Table 3.

The `<supplied>` element, which "signifies text supplied by the transcriber or editor for any reason, typically because the original cannot be read because of physical damage or loss to the original" (TEI, 2008) has also been enlisted from the 'Representation of Primary Sources' Module of the P5 Guidelines. Together, these descriptors are designed to aid the reader in drawing conclusions about the transmission of the text. For example, a reader might conclude based on apparent errors such as homoeoteuton, for example:

```
<lb/><sic>í</sic><note>Homoeoteuton:
<emph rend="italics">í</emph> is written
twice.</note>
```

or dittography, for example:

```
<lb/><sic>hefir</sic><note>Dittography:
<emph rend="italics">hefir</emph> is
written twice.</note>
```


Table 3 Transmission-level elements (adapted from: ‘11.3.1 Core Elements for Transcriptional Work’ TEI, 2008)

Element	Description
<abbr> (abbreviation)	Contains an abbreviation of any sort.
<add> (addition)	Contains letters, words, or phrases inserted in the text by an author, scribe, annotator, or corrector.
<choice>	Groups a number of alternative encodings for the same point in a text.
<corr> (correction)	Contains the correct form of a passage apparently erroneous in the copy text.
 (deletion)	Contains a letter, word, or passage deleted, marked as deleted, or otherwise indicated as superfluous or spurious in the copy text by an author, scribe, annotator, or corrector.
<expan> (expansion)	Contains the expansion of an abbreviation.
<gap> ⁶	Indicates a point where material has been omitted in a transcription, whether for editorial reasons described in the TEI header, as part of sampling practice, or because the material is illegible, invisible, or inaudible.
<orig> (original)	Contains a reading which is marked as following the original, rather than being normalized or corrected.
<reg> (regularization)	Contains a reading which has been regularized or normalized in some sense.
<sic> (‘thus’ or ‘so’, Lat.)	Contains text reproduced although apparently incorrect or inaccurate.

or such as inserted words, for example:

```
<add place="supralinear">
```

deleted words, for example:

```
<del rend="subpunction">
```

or transposed words, for example:

```
<choice><orig>syne<corr rend="supralinear">b
</corr>kongs<corr rend="supralinear">a</corr>
<reg>kongssyne</reg></orig></choice>,<note>
Written above <emph rend="italics">syne
</emph> and <emph rend="italics">kongs
</emph> are ‘b’ and ‘a’, respectively, apparently to
correct <emph rend="italics">syne kongs</emph>
to <emph rend="italics">kongssyne</emph>
</note>
```

that the scribe was copying from another source document, an earlier exemplar manuscript, a draft of his own work, or some other source.

3 Transformation and display

The display of the edition, and in particular the three encoding groupings, is generated by a customized implementation of the TEIViewer,⁷ an application consisting of a TEI-XML source layer, an XSLT transformation layer, and a jQuery-driven interactive layer. This application allows readers,

by means of a control panel, to select descriptions and interpretations of the text to display or to suppress. The control panel mirrors the forensic encoding groupings described above, allowing readers to display or suppress *Motif Features*, *Linguistic Features*, and *Edition Features* as well as *Notes* and *Line Numbering*, as shown at center in Fig. 3.

While Fig. 3 shows the primary display interface, Fig. 4, Example of motif comparison (in draft form), provides an alternate display option, the ability to view the transformation of the motifs described by <interpGrp> and <seg> (as explained in Section 2.1 above), demonstrating how the XML source, when transformed, enables readers to compare the text of the motifs from *Hafgeirs saga Flateyings* with the text of the motifs from *Hálfðanar saga Brönufóstra*.

Fig. 5, Interactive display, demonstrates the user’s ability to generate views of the semi-diplomatic transcription, the edited transcription, or a combination of these.

While in Fig. 3 the control panel is configured to display the ‘original’ (i.e. near-zero-level) transcription of the text at the beginning of Chapter One of *Hafgeirs saga Flateyings*, in Fig. 5, the control panel is selected to display the ‘edited’ (i.e. regularized) transcription of the text at the beginning of Chapter One. This interactive display

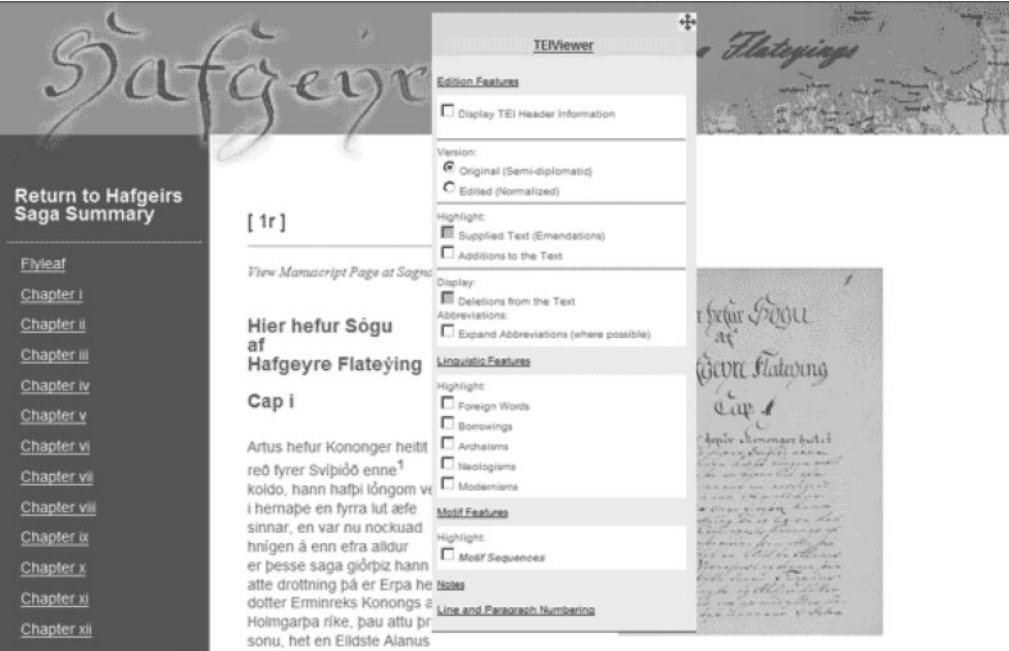


Fig. 3 Hafgeirs saga Flateyings edition interactive control panel



Fig. 4 Example of motif comparison (draft)

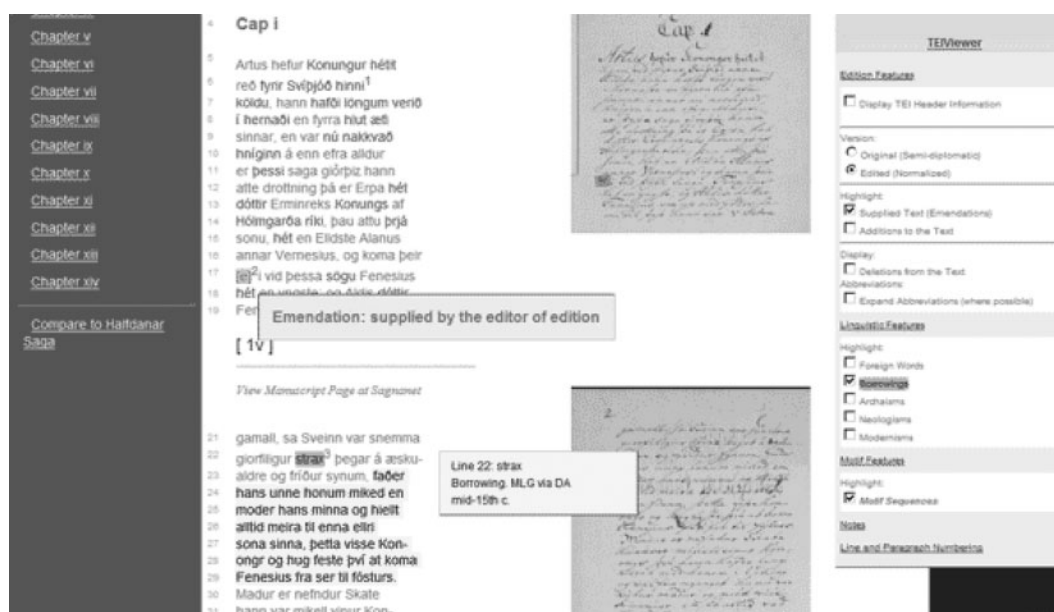


Fig. 5 Interactive display demonstrates the user's ability to generate views of the semi-diplomatic transcription, the edited transcription, or a combination of these

is facilitated by a TEI-XML source layer which utilizes a <choice>, <orig>, <reg> tag sequence as follows:

```
<p>Artus hefur
<choice><orig>Kononger</orig>
<reg>Konungur</reg></choice>
<choice><orig>heitit</orig><reg>hétit</reg>
</choice>
<lb n="2"/>reð <choice><orig>fyrer</orig>
<reg>fyrir</reg></choice>
<choice><orig>Svíþjóð</orig><reg>Svíþjóð
</reg></choice> <choice><orig>enne</orig>
<reg>hinna</reg></choice>
<lb n="3"/><choice><orig>koldo</orig>
<reg>köldu</reg></choice>, hann
<choice><orig>hafði</orig><reg>hafði</reg>
</choice> <choice><orig>Ingom</orig><reg>
löngum</reg></choice> <choice><orig>verit
</orig><reg>verði</reg></choice>
<lb n="4"/><choice><orig>i</orig><reg>í
</reg></choice><choice><orig>hernape</orig>
<reg>hernaði</reg></choice> en fyrra
<choice><orig>lut</orig><reg>hlut</reg>
</choice> <choice><orig>æfe</orig>
<reg>æfi</reg></choice>
```

The Highlight Linguistic Features function (in this example, <borrowing xml:id="strax1" sourcelang="MLG via DA" borrowdate="mid-15th c.">strax</borrowing> is highlighted) and the Highlight Motif Features function (in this example lines 23–29 are highlighted in yellow to indicate the motif), which provides the name of the motif (<seg xml:id="Motif1" ana="#FOSTERa">) upon mouse-over, are also shown in Fig. 5.

To return to the (near)zero-level representation of the text, a reader may choose to suppress the interpretations, to minimize the control panel, and to view each page of the transcription beside an image of the original from Add. 6, fol. In this way, readers can determine how they wish to view and interact with the text and the interpretations of the text.

4 Conclusion

Ultimately, this edition draws from the fields of text editing, linguistics, and, though not discussed in this context, even visual rhetoric to explore new

directions in digital philology. In doing so, it illustrates how P5 XML can be framed as a kind of *luminol* that, when transformed, can be used to illuminate artefactual as well as literary, linguistic, and transmission-level descriptions. In the specific case of *Hafgeirs saga Flateyings*, my goal is identical to that of a crime-scene investigator's: Not necessarily to solve the case, but to preserve and to present the evidence.

References

- Borovsky, Z. (1998). Norse Saga Home Page. <http://server.fhp.uoregon.edu/norse/>. (accessed 13 April 2007).
- Burnard, L., O'Brien O'Keefe, K., and Unsworth, J. (eds) (2006). *Electronic Textual Editing*. New York: The Modern Language Association of America.
- Dalhström, M. (2004). How reproductive is a scholarly edition? *Literary and Linguistic Computing*, 19(1): 17–33.
- Driscoll, M. J. (2007a). Electronic Textual Editing: Levels of Transcription. <http://www.tei-c.org/Activities/ETE/Preview/driscoll.xml> (accessed 23 November 2007).
- Driscoll, M. J. (2007b). *Everything But the Smell: Toward a More Artefactual Digital Philology*. Victoria: Digital Humanities Summer Institute.
- Driscoll, M. J. (2007c). The Words on the Page: Thoughts on Philology, Old and New. <http://www.staff.hum.ku.dk/mjd/words.html>. (accessed 4 June 2008).
- Einar Ól, S. (1958). *Dating the Icelandic Sagas*. London: Viking Society for Northern Research.
- Flanders, J. (1997). Gender and the Electronic Text. In: Sutherland, K. (ed), *Electronic Text: Investigations in Method and Theory*. Oxford: Clarendon Press, pp. 127–43.
- Jorgensen, P. (1977). Hafgeirs saga flateyings: an eighteenth-century forgery. *Journal of English and Germanic Philology*, LXXVI: 155–64.
- Kålund, K. (1900). Katalog over de oldnorsk-islandske håndskrifter i det store kongelige bibliotek og i universitetsbiblioteket. København.
- Modern Language Association (2007). Guidelines for Editors of Scholarly Editions. http://www.mla.org/cse_guidelines (accessed 15 November 2007).
- Text Encoding Initiative (TEI) (2008). TEI P5: Guidelines for Electronic Text Encoding and Interchange. <http://www.tei-c.org/release/doc/tei-p5-doc/en/html/> (accessed 3 June 2008).
- Vanhoutte, E. (2006). Traditional Editorial Standards and the Digital Edition. In Stronks, E. and Boot, P. (eds), *Learned Love: Proceedings from the Emblem Project Utrecht Conference on Dutch Love Emblems and the Internet*. The Hague: DANS, pp. 157–74.

Notes

- 1 While an anonymous reader has suggested the removal of the descriptor 'important', pointing out that *Hafgeirs saga Flateyings* is unlikely to rival most other Icelandic sagas of its genre in terms of literary merit, the importance of the text lies not in its literary contribution—although it is arguably meritorious in its own right—but, like any manuscript of the period, in its representation of the scholarly milieu in Iceland and Denmark at the time.
- 2 I added two motifs to Jorgensen's original sequence: GIRL_GIVES_GIFTS and FATHER_DIES.
- 3 Although I considered creating an edition from one of the extant *Hálfðanar saga Brönufostra* manuscripts, I elected against doing so because the work is well-documented and widely available in print and electronic editions. The text used for this edition is therefore taken from Zoe Borovsky's Norse Saga Home Page (<http://server.fhp.uoregon.edu/norse/>), which provides 'a digitized version of Guðni Jónsson and Bjarni Vilhjálmsson's three-volume popular edition of *Fornaldarsögur Norðurlanda*' (Borovsky, 1998). Because this *Hálfðanar saga Brönufostra* version provides no chapter numberings, I assigned Chapter divisions and page references based on Lbs. 3936, 4to, an eighteenth-century paper manuscript of the text, available at Sagnanet (sagnanet.is). The saga is divided into seventeen chapters, but the sequencing is 1–14; then 16–17. No chapter is numbered 15. Whether this is an oversight of the scribe's, a copying error, or otherwise, is unclear. Lbs. 2121, 4to, another eighteenth-century paper manuscript of the text, divides the saga into twelve chapters. Like Lbs. 3936, 4to, Lbs. 2121, 4to contains an apparently mis-numbered chapter sequence: Chapter 3 is written twice (32v and 33r), while no chapter is numbered chapter 4. This is noteworthy given that Add. 6, fol. also contains what appear to be chapter mis-numberings. For example, following Chapter X, Chapter XII is written, though Chapter XI is expected, and where Chapter XIV is expected, only 'Cap.' is written. Though Jorgensen suggests this is further evidence to support his forgery

- claim (Jorgensen, 1977), further examination may indicate that such chapter ‘irregularities’ were commonplace.
- 4 The TEI (Relax NG compact syntax) schema for this edition was generated via Roma (<http://tei.oucs.ox.ac.uk/Roma/>).
 - 5 Linguistic assertions primarily reference the following: Ágeir Blöndal Magnússon. *Íslensk Orðsifjabók. Orðabók Háskolans*, Reykjavík (2003). Björn K. Þórolfsson. *Um Íslenskar Orðmyndir Á 14. og 15. Öld og Breytingar þeirra Úr Fornmálinu*. Reykjavík, Fjlagsprentsmiðjan (1925). Cleasby, Richard and Guðbrandur Vigfusson. eds. *An Icelandic-English Dictionary*. 2nd ed. The Clarendon Press, Oxford (1957). Veturlíði Óskarsson. *Middelnedertyske Låneord I Islandsk Diplomsprog Frem Til År 1500*. C.A. Reitzels Forlag, København (2003). Westergård-Nielsen, Christian. *Låneordene I Det 16 Århundredes Trykte Islandske Litteratur*. Einar Munksgaard, København (1946).
 - 6 The <gap> element is used to describe what appears to be a lacuna; on leaf 52r (page 103) the scribe responsible for Add 6, fol. uses a sequence of dots—or puncts—apparently to mark seven of nine prose lines as having been copied from an exemplar/original which was corrupted and thus illegible, of particular interest in the case of forgery if, as Jorgensen suggests, this is a ‘non-linguistic’ effort to authenticate the text (Jorgensen, 1977; p. 162).
 - 7 A poster presentation of my work on this project with Garrick Bodine, entitled *The TEIViewer: Layering XML, XSL, CSS and jQuery*, was presented at the 2008 TEI Members Meeting, and the related article, *The TEIViewer: Facilitating the Transition from XML to Web Display*, is expected in a forthcoming issue of *Literary and Linguistic Computing*.