

conference version

Neither Telling nor Describing Reflective Passages and Perceived Reflectiveness 1700-1945

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Abstract. The paper analyses within-fiction reflections in 250 years of literary history. To this end, we formalised the concept of "reflective passage", demonstrate how our annotation categories are deduced from literary theory and derive three subphenomena – COMMENT, GENERALISATION, and NON-FICTIONAL SPEECH – that constitute literary reflection. A collaborative annotation serves (a) as basis for the training of a neural classifier and (b) as dataset for a reception experiment leading to the calculation of a "reflection score", a measurement for the perceived reflectiveness of a textual passage. The classifier is applied to a diachronic corpus of German-language literary fictions derived from the KOLIMO corpus through extensive metadata enrichment and filtering. The results suggest three boom periods of reflective passages: around 1755, 1835 and 1920 and show effects of text length, canonisation status and authors' sex.

1. Introduction

In 1795, Friedrich Schiller, in his famous poetological treatise "On Naïve and Sentimental Poetry", claims that "ancient" and "modern" poetry differ in their degree of reflection. While the naïve poet moves us by imitating nature, "by sensuous truth, by living presence" (Schiller 1985[1795], 194),¹

"[t]he case is quite otherwise with the sentimental poet. He *reflects* upon the impression that objects make upon him, and only in that reflection is the emotion grounded which he self experiences and which he excites in

1. The German original reads: „durch sinnliche Wahrheit, durch lebendige Gegenwart“ (Schiller 2004[1795], 717).

us.” (Schiller 1985[1795], 196)² 9

This poetological distinction is linked in Schiller’s treatise with a philosophy of history in such a way that naïve poetry is possible in the present, but “latently anachronistic” (Prill 1994, 521): under the conditions of modernity, in which a “correspondence between [...] feeling and thinking” is hardly possible any more,³ poetry must increasingly become sentimental poetry, that is, a poetry that is moved “through ideas” (Schiller 1985[1795], 194, 197).⁴ 10
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More than 220 years after Schiller formulated this influential thesis, which has found a diverse echo especially in discourses on the “reflexivity” of the modernist novel (see Beebe 1976, Orr 1981), computational philological methods offer the possibility to study inner-literary reflections on a broad empirical basis. Using the example of German-language narrative fiction, the present paper will investigate whether literature indeed became more and more “sentimental” – as Schiller has it –, that is, whether it exhibits an increasing degree of reflectiveness. 16
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Of course, the concept of “literary reflectiveness” or – maybe more wide-spread – “literary reflexivity” is till today a very complex one and there is no direct route from Schiller’s concept of sentimental (reflective) poetry, which is embedded in an entire anthropology and philosophy of history, to an annotation based and narratologically underpinned approach like ours. The concept of “literary” or “narrative reflexivity” (Williams 1998) belongs to a whole semantic field of (often interchangeably used) ‘big concepts’ like “metatextuality”, “metafiction”, “self-reflexivity” on the one hand (see Julie Tanner 2022) and rather text-passage oriented concepts like “authorial intrusions”, “commentary” or “digression” on the other hand. This may be one of the reasons why there is little consensus about the historical development of literary reflectiveness: While it is evident from a number of case studies that at least some early-modern works of literature exhibit significant traits of reflectiveness (see Zapf et al. op. 2005, 8, Henke op. 2005), it is by no means clear how this phenomenon developed in the context of a rapidly growing book market in the 19th century and a mass market in the 20th century. 23
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Our approach aims at measuring the degree of reflectiveness of a narrative by identifying so-called “reflective passages”. In the next section, we will introduce our concept of a **reflective passage** and illustrate how we collaboratively annotated three different subtypes of reflective passages. Section 3 will present a questionnaire that was used to empirically assess the contribution of each of these subtypes (and their interplay) to readers’ perception of a textual passage being a reflection. Based on the statistical analysis of the results of this questionnaire we introduce the notion of **perceived reflectiveness** of a given text passage, which is measured by the **reflection score**. Section 4 will describe two neural classifiers: a multi-label and a binary classifier for identifying reflective passages. In section 5, we will present a diachronic analysis of reflective passages as well as perceived reflectiveness in German fiction based on these two classifiers, that allows for evaluating the hypothesis of a gradual increase of reflectiveness in the 37
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2. The German original reads: „Ganz anders verhält es sich mit dem sentimentalischen Dichter. Dieser reflektiert über den Eindruck, den die Gegenstände auf ihn machen, und nur auf jene Reflexion ist die Rührung gegründet, in die er selbst versetzt wird und uns versetzt.“ (Schiller 2004[1795], 720)

3. The German original reads: „Übereinstimmung zwischen [...] Empfinden und Denken“ (Schiller 2004[1795], 717).

4. The German original reads: „durch Ideen“ (Schiller 2004[1795], 717).

modern period. Finally, we will summarise our results and sketch prospects for future research. 49
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2. Reflective Passages and their Annotation 51

When speaking of reflective passages in the context of fictional literature, one may think of various things. Without a doubt, fictional narrative texts regularly stimulate reflections in readers. Authors of such texts also often engage in extensive reflection before or during writing. Reflective passages, in contrast, refer to those reflections that are present on the surface of the text in fictional narrative texts (Gittel 2022). The broad and complex field of the phenomenon of reflective passages becomes clear from the fact that they are referred to in research by many terms that are by no means synonyms, such as "authorial intrusion" (Dawson 2016), "commentary" (Chatman 1980, 226–252), "digression" (Esselborn 2007), "factual discourse" (Konrad 2017), "serious speech acts in fictional works" (Klauck 2015), "gnomic statement" (Mäkelä 2017), "narrator's comment" (Zeller 2007), or *Sentenz* ('aphorism', Reuvekamp 2007). Although reflective passages have been much discussed recently in connection with their specific manifestations in essayistic and encyclopaedic narrative (Ercolino 2014; Gittel 2015; Herweg et al. 2019), they are not a clearly delimited phenomenon either in narratology or in literary history. For a definition of **reflective passage**, however, one can draw on considerations of two more established terms in literary theory – 'comment'/'commentary' and 'non-fictional speech' – and one in linguistics, namely 'generalisation'. We consider a **reflective passage** as a textual passage that is either a comment, non-fictional speech, a generalisation or a combination of these three phenomena. Reflective passages greatly differ regarding their length, ranging from one clause to several sentences or whole paragraphs. The minimal length of a reflective passage being a clause, we will focus in our quantitative diachronic analysis (see section 5) on **reflective clauses** as the minimal unit of a reflective passage. Since the details of our annotation of these phenomena can be found elsewhere (cf. Barth et al. 2021, Gödeke et al. 2022, Weimer et al. 2022, Barth et al. 2022) we will introduce these phenomena by means of examples in the following and use the corresponding tags COMMENT, NON-FICTIONAL SPEECH, and GENERALISATION henceforth. 52
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"Comment" is listed in narrative theory alongside "report", "description" and "speech" as a fourth so-called "narrative mode" (Bonheim 1975, 329, see also Bonheim 1982). These four modes, which can overlap, are sufficient for a classification of all passages in a narrative text according to Bonheim. Comments express an evaluative attitude of the speaker towards diegetic state of affairs, illuminate his relationship to the diegesis, or the representation of the events. Thus, they can reveal the narrator's attitude towards characters or events or his interpretations and explanations of them, as well as his relation to the concrete representation respectively to narration/fictionality in general. To illustrate what this main type of within-fiction reflections may look like, we may take a look at the beginning of Goethe's "Elective Affinities" (square brackets are used here and in the following to highlight relevant passages; original wording of all examples can be found in the appendix): 78
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- (1) Eduard - [let that be the name we give to a wealthy baron in the best years of his life]_{COMMENT} - Eduard had spent the loveliest hours of an April afternoon in his 90
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nursery grafting young trees with shoots newly arrived for him. (J. W. v. Goethe 2008, 3)

The account of Edward's April afternoon is interrupted here by a (metafictional) comment that identifies the speaker as an entity that exercises power of designation over the entities of the narrated world. Overall, however, comment is a relatively heterogeneous class. In research, for example, comments on the story, which can have an interpretive, judgemental or generalising character, are distinguished from comments on the discourse (Chatman 1980, 226–252, see also the term „non-mimetic judgements“ in Martinez-Bonati and Silver 1981, esp. 32–33). Because of this heterogeneity, two criteria are often involved in the identification of comments, one formal and one content-related: According to the formal criterion, comments are those passages of text that are neither speech, report nor description. Like descriptions, they belong to the static mode according to Stanzel and are accompanied by narrative pauses (Stanzel 1988, 66, Martínez and Scheffel 2007, 46). One often speaks of "pure comment" in reference to such ex negativo identifiable passages (Bonheim 1975, 337). According to the criterion of content, these are passages that express an evaluative attitude of the speaker, his relationship to the event or the representation of the event. If this criterion is taken as a basis, comments can also occur within descriptions, character speech or narrator's report, so-called "integral comments" (ibd.). The following dialogue in Theodor Fontane's "The Stechlin" can serve as an example, in which Woldemar, the son of the old Stechlin, expresses his astonishment:

(2) "Erratics?" "Yes, erratics," repeated Woldemar. "But if that word bothers you, you can call them monoliths too. [It's really remarkable, Czako, how extremely discriminating you get about phrases when you're not the one doing the talking at the moment]_{COMMENT}..." (Fontane 2013, 10)

Please note that COMMENT is a relatively heterogeneous category that comprises different sub-phenomena: ATTITUDE is annotated whenever the speaker comments on fictional events, characters, objects or itself. INTERPRETATION is annotated when explanations or interpretations are provided in a passage through which the diegesis can be understood anew. METACOMMENT is annotated whenever the narrator comments on the fictionality of the story or the process of writing or telling the story.

In addition to comment, there is a second phenomenon relatively well described in literary theory that can be used to formalise the concept of reflective passages: the phenomenon of non-fictional speech in fictional texts. According to many theorists, fictional texts consist not only of fictional speech, which - according to a common characterisation - serves to construct the fictional world but also of non-fictional speech (Searle 1975, Klauk 2015).⁵ The typical case of non-fictional speech with an assertive character (in the speech act theoretical sense) is relevant to the question of reflections in literature. Characteristic of this phenomenon is that (1) an assertion/hypothesis about the real world is suggested in a clearly delimitable text passage and (2) the propositional content of the assertion/hypothesis can be read off from this text passage

5. Konrad also assumes the possibility of "fictional-factual text passages" (Konrad 2014, 447). Without being able to discuss this in detail here: Insofar as these fictional-factual passages have an assertive character, they also fall under the term "non-fictional speech" introduced in the following.

itself.⁶ Corresponding examples are the following: 133

(3) [All happy families resemble one another, but each unhappy family is unhappy in its own way]_{NON-FICTIONAL SPEECH}. (Tolstoy 2017, 1) 134
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(4) [Every country has its Samarkand and its Numancia]_{NON-FICTIONAL SPEECH}. That night, both places were here with us on the Morava. [Numancia, located in the Iberian highlands, had at one time been the last refuge from and bulwark against the Roman Empire, while Samarkand, whatever it may have represented in history, became and remains legendary, and will still be legendary when history is no more]_{NON-FICTIONAL SPEECH}. (Handke 2016, 3) 136
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Example (4) – more precisely the third sentence of the Handke quote – demonstrates that NON-FICTIONAL SPEECH does not always have to take the form of GENERALISATION, even though this is the case most often discussed in research (e.g. Vesper 2014). 142
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Third, the phenomenon of GENERALISATION may be regarded as a subtype of reflective passages in its own right. Although GENERALISATION is considered to be an indicator for 'non-fictional speech' and 'comment' (see Chatman 1980; Vesper 2014), its appearances in narrative fiction are much less explored than 'comment' and 'non-fictional speech' (see Gödeke et al. 2022 for a first attempt). AS GENERALISATION we annotate any statements not made about specific objects, individuals, time periods, or spaces, but about whole classes or groups of entities. 145
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(5) Naphta responded, with disagreeable composure: "My good sir, [there is no such thing as pure knowledge]_{GENERALISATION}." (Mann 1969, 397) 152
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As in this example, non-fictional speech often co-occurs with generalisation. However, generalisations can be about all sort of entities (characters, spaces, events) in the fictional world as well. Generalisations and non-fictional speech (as comments) can also occur within characters' speech: characters can make statements about whole classes or groups of entities and characters can suggest in a clearly delimited text passage an hypothesis about the real world whose propositional content (e.g. "there is no pure knowledge") can be read off from this text passage itself. 154
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Having examined the three reflection constituting phenomena, we will give a brief overview of our annotation results. Our annotation corpus consists of 34 texts with 16893 sentences covering the time period from 1616 to 1942 (cf. <https://gitlab.gwdg.de/mona/korpus-public/-/releases/v5.1> and data publication). In general, the first approximately 400 sentences of each text were annotated by two annotators with a background in German Philology. 2–3 experts (authors of this paper) created gold standards for all texts collaboratively adjudicating (i.e. review, accept, correct or delete) the initial annotations. We compute inter-annotator agreement on clause-level based on Fleiss' Kappa (κ , Fleiss 1971) and Mathet's Gamma (γ , Mathet et al. 2015), cf. table 1. κ calculates agreement based on the differences for each clause while γ respects the individual annotated passages as units in a continuum, and also partial overlapping passages are compared as units instead of disjointed clauses. We, therefore, consider that γ better represents the errors made by annotators for a category with 161
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6. It should be noted that there is nothing attached to the term "non-fictional speech", which is particularly controversial among narratologists. One could also use another term, such as "passages with an assertive character", for the passages that fall under the above definition.

rather long passages such as reflection.⁷ Using Landis and Koch 1977's guideline for interpreting the results of κ , we achieve moderate values for COMMENT and substantial for both, GENERALISATION and NON-FICTIONAL SPEECH (see table 1) for κ . In our perception, γ generally tends to yield more conservative values compared to κ .

	κ (σ)	γ (σ)
GENERALISATION	.65 (.19)	.63 (.16)
COMMENT	.52 (.25)	.46 (.21)
NON-FICTIONAL SPEECH	.74 (.21)	.61 (.17)

Table 1: Clause-level inter-annotator agreement for each phenomenon, averaged over all texts (standard deviations in parentheses).

So far, we have presented the theoretical background for and our operationalisation of 'reflective passages' and the associated phenomena of 'comment', 'non-fictional speech' and 'generalisation' as well as our annotation results. We stipulated that whenever at least one of these three phenomena is present, such a passage is a **reflective passage**. In the following section, we will introduce the second central term for the envisioned diachronic analysis: perceived reflectiveness as represented by the "reflection score".

3. Survey and Reflection Score

We tested the perception of reflectiveness in a reception experiment conducted via a survey. In particular, we were interested in the contribution of individual phenomena (GENERALISATION, COMMENT, NON-FICTIONAL SPEECH) to the overall reflectiveness of a text passage and whether the passages that were not annotated with any of the above mentioned phenomena can be perceived as reflective. Our objective is to quantify the contribution of the three phenomena and their combinations to the perception of a textual passage as reflective.

The survey was designed as follows: First, we extracted passages from our corpus, more precisely, from texts after 1850 (because we assumed that our participants would more readily understand the language in these more modern texts than in many of the earlier texts). The extracted passages consisted of one sentence and were annotated with the tags GENERALISATION, COMMENT, NON-FICTIONAL SPEECH or their combinations.

Second, we manually chose ten sentences for each of the following groups:

- COMMENT only
- GENERALISATION only
- NON-FICTIONAL SPEECH only
- COMMENT + GENERALISATION + NON-FICTIONAL SPEECH
- COMMENT + NON-FICTIONAL SPEECH
- GENERALISATION + NON-FICTIONAL SPEECH
- COMMENT + GENERALISATION

Additionally, we extracted passages that do not carry any of these tags as negative examples. Altogether there were 100 passages in the survey.

7. This assessment was already given in a similar form in Weimer et al. 2022.

★Trifft folgende Aussage Ihrer Meinung nach zu?
 "In der marklierten Textpassage wird über etwas reflektiert."

Den Rotschimmel ließ ich natürlich auch zurück; ich brauchte ihn nicht mehr. Wir alle waren der Ansicht, daß meine Abwesenheit nur eine kurze sein werde. Es sollte aber anders kommen. Wir befanden uns, was ich noch gar nicht erwähnt habe, weil es auf die bisher erzählten Ereignisse keinen Einfluß gehabt hatte, mitten im Bürgerkriege.

Bitte wählen Sie eine der folgenden Antworten:

- trifft zu
- trifft eher zu
- teils-teils
- trifft eher nicht zu
- trifft nicht zu

Figure 1: Example question from the survey

For the better understanding of the passage, we provide the survey participants with the context of one sentence before and one sentence after the passage. The passage in question is highlighted (see Figure 1). We attach the following question to each of the passages with the corresponding answer options on the scale from 1 to 5:

In your opinion, is the following statement true: "In the highlighted text passage, something is reflected upon"?⁸

- 1: false
- 2: somewhat false
- 3: neither true nor false
- 4: somewhat true
- 5: true

For our experiment, we used the web-based survey tool LimeSurvey (LimeSurvey 2023). It allows us to give the participants 30 randomly selected passages. We chose 30 passages as a good trade-off between obtaining a sufficient coverage for each passage in the survey while at the same time limiting the experimentation time for the participants. In total, we received 118 complete answers, in which the participants provided their assessments for all 30 passages.

For a statistical analysis, we averaged the ratings from all participants for each passage. When we speak of "reflection ratings", we refer to these averages. The left column in Table 2 shows that all three phenomena correlate with the reflection ratings, but to a varying degree. Using Dancey and Reidy 2004's naming convention, the correlation is weak for NON-FICTIONAL SPEECH and GENERALISATION, and moderate for COMMENT. This illustrates that none of our phenomena is perfectly congruent to (perceived) reflection.

In a next step, we created a logistic regression model to get insights into the interplay between the phenomena. As features, we used the three phenomena as main effects as well as all combinations as interaction effects. We ran both forward selection and backward elimination to determine the best model in terms of the Akaike information criterion (AIC), both leading to the same result: a model that uses all main effects and the interaction effect GENERALISATION*COMMENT. The model's coefficients are shown in the right column of Table 2. Note that the regression coefficients of the main effects sort

8. The survey was conducted in German.

	corr. (<i>p</i>)	coef. (<i>p</i>)
COMMENT	.61 (.000)	1.29 (.000)
GENERALISATION	.35 (.000)	.72 (.000)
NON-FICTIONAL SPEECH	.29 (.003)	.34 (.023)
GENERALISATION*COMMENT	–	–.61 (.039)
const.	–	–.72 (.000)

Table 2: Spearman’s correlation coefficient (left) and logistic regression weights (right) for the three phenomena (main effects) and the only significant interaction effect. *p*-values are shown in parentheses.

in the same way as their correlation coefficients. 237

Using the regression coefficients we can calculate a reflection score *r* for any passage 238
with known labels for GENERALISATION, COMMENT OR NON-FICTIONAL SPEECH as follows: 239

$$r = \sigma([1.29 \cdot f_{\text{COMMENT}}] + [0.72 \cdot f_{\text{GEN.}}] + [0.34 \cdot f_{\text{NON-FICT. SPEECH}}] - [0.61 \cdot f_{\text{COMMENT}} \cdot f_{\text{GEN.}}] - 0.72)$$

$\sigma(x)$ denotes the logistic sigmoid function $\frac{1}{1+e^{-x}}$. This means that, for example, a 240
passage that is annotated as COMMENT but neither GENERALISATION NOR NON-FICTIONAL 241
SPEECH receives the following reflection score: 242

$$r = \sigma([1.29 \cdot 1] + [0.72 \cdot 0] + [0.34 \cdot 0] - [0.61 \cdot 1 \cdot 0] - 0.72) = \sigma(1.29 - 0.72) = 0.64$$

The value of *r* lies between 0 and 1. Since $0.64 > 0.5$, the reflection score for COMMENT-only 243
passages can be interpreted as “reflective”. Table 3 shows that: 244

- passages that feature none of our phenomena or only non-fictional speech are not 245
perceived as reflective, 246
- passages that feature only generalisation are equally often perceived as reflective 247
or non-reflective, 248
- while passages that contain both non-fictional speech and generalisation as well 249
as passages that contain comment are perceived as reflective. 250

Generally, the presence of each of our phenomena increases the reflection score. 251

<i>r</i>	phenomena
.33	–
.41	NON-FICTIONAL SPEECH
.50	GENERALISATION
.58	GENERALISATION & NON-FICTIONAL SPEECH
.64	COMMENT
.66	COMMENT & GENERALISATION
.71	COMMENT & NON-FICTIONAL SPEECH
.73	COMMENT & GENERALISATION & NON-FICTIONAL SPEECH

Table 3: Reflection scores for all label combinations

While further research would be necessary to understand why certain combinations tend to be perceived as reflective more often than others, another question is, whether the perception of a reflective passage actually triggers reflection on the part of the reader. We have to leave such intriguing questions for (psychological) researchers, but may emphasize two more general insights from our experiment: On the one hand, we can assume that our 'flexible' operationalization of a "reflective passage" captures basic intuitions about what it is "to reflect upon something". On the other hand, this results in a hierarchisation of the subphenomena we examined, which have a varying degree of influence on whether a certain passage is perceived as reflective.

4. Neural Classifier for Reflection

So far, we developed a basic definition of "reflective passage" and a more complex reflection score in order to analyse literary reflection. Since both rely on the identification of the three reflective subphenomena (GENERALISATION, COMMENT and NON-FICTIONAL SPEECH), we trained two neural classifiers for the automatic tagging of these phenomena: one multi-tagger and, additionally, one binary tagger (reflective vs. non-reflective passage). To our knowledge this has not been tried before. Each classifier takes a text span of three sentences as input, where one clause of the inner sentence is marked, and was trained to predict the categories of the marked clause.⁹ We split our corpus text-wise into training, development and test set so that the distribution of GENERALISATION, COMMENT and NON-FICTIONAL SPEECH is similar in all sets. Wieland's "The History of Agathon" and Seghers' "The Seventh Cross" are held out for the evaluation of the models, and Fontane's "The Stechlin" and Mann's "The Magic Mountain" serve as development set, while the other texts are used for training.¹⁰ The classifiers are available through the software package (Dönicke et al. 2022).¹¹

We followed the approach of Schomacker et al. 2022. The multi-label classifier has three output neurons, where each neuron corresponds to one tag (GENERALISATION, COMMENT, NON-FICTIONAL SPEECH), and the binary classifier has one (REFLECTIVE). Both classifiers are based on a large BERT model, that was pre-trained on German data (Chan et al. 2020),¹² and were trained for 20 epochs with a batch size of 8. To increase the convergence speed, we used the LAMB optimiser with a learning rate of 10^{-4} (You et al. 2020). Furthermore, we set the hidden dropout to 0.3 and the attention dropout to 0.0.

Table 4 shows Precision, Recall and Fscore of our classifiers on the test texts (cf. Sokolova and Lapalme 2009). For GENERALISATION, the multi-label reflection classifier performs with 61% F1 like the binary GENERALISATION-only classifier from Schomacker et al. 2022, which illustrates that the other two phenomena can be learned in addition without performance loss. The same classifier achieves with 69% F1 the best results for COMMENT, and hereby outperforms the statistical COMMENT-only classifier from Weimer et al. 2022 by 10%. Overall, the multi-label reflection classifier achieves a micro-averaged F1 score of 66% and the binary reflection classifier adds 3% on top of that. While the multi-label

9. The clauses are detected within our NLP pipeline MONAPipe (cf. <https://gitlab.gwdg.de/mona/pipy-public> and software publication) using our own algorithm for clause segmentation (Dönicke 2020).

10. We also excluded Kleist's "Michael Kohlhaas" from the training set, because the annotated text part does not contain one of our phenomena (non-fictional speech).

11. See <https://gitlab.gwdg.de/mona/pipy-public> and software publication.

12. <https://huggingface.co/deepset/gbert-large>.

classifier achieves a similar performance on both test texts ($\pm 7\%$), the binary classifier shows a greater variation in F1 ($\pm 18\%$).

		GENERALISATION			COMMENT			NON-FICTIONAL SPEECH			micro-avg.		
		P	R	F	P	R	F	P	R	F	P	R	F
NN-multi	all texts	.52	.74	.61	.79	.61	.69	.78	.53	.63	.68	.63	.66
	└ Wieland	.53	.74	.62	.80	.68	.74	.70	.50	.59	.68	.66	.67
	└ Seghers	.52	.73	.61	.75	.38	.51	1.00	.59	.74	.68	.53	.60
NN-binary	all texts	–	–	–	–	–	–	–	–	–	.77	.62	.69
	└ Wieland	–	–	–	–	–	–	–	–	–	.77	.69	.73
	└ Seghers	–	–	–	–	–	–	–	–	–	.80	.42	.55

Table 4: Clause-level Precision (P), Recall (R) and Fscore (F) of our neural models for classifying clauses according to reflection in the test texts.

5. Diachronic Analysis

This section will first introduce our diachronic corpus “KOLIMO-selection” (1700-1945, see 5.1). In a second step, we report the results of our diachronic corpus analysis (see 5.2). In addition to the “reflection score”, we analysed the presence of the three subtypes of reflective passages (COMMENT, GENERALISATION, NON-FICTIONAL SPEECH), that according to our initial definition constitute a “reflective passage”. In a third step, we took into account potential covariates that may relate to the distribution of reflective passages in literary history, like text length, canonisation status and author’s sex (see 5.3).

5.1 Corpus Building, Metadata Enrichment and Data Cleaning

For our analyses, we used a subset of the “German Corpus of Literary Modernism” (KOLIMO, Herrmann 2023), which comprehends more than 41k texts and spans the period mainly from 1500-1930. We filtered KOLIMO to obtain a subcorpus (“KOLIMO-selection”) which fulfils the following criteria:

- only German fiction
- no translations into German
- only first editions
- only works with known first publication year
- no duplicates
- being balanced in the sense of single authors not being overrepresented
- minimum text length of 10 sentences

Concretely, we proceeded as follows. For each step either an annotation is performed or a filtering is applied (see table 5):

1) Metadata enrichment: We identified texts with metadata on first publication years, and enriched the corpus with data on the canonisation status (see Brottrager et al. 2021) and data on the authors’ sex (relying on publicly available data on German first names, Neumann 2018). We also relied on metadata concerning publication years from the Corpus d-Prose (Gius et al. 2021, a metadata-enriched subset from KOLIMO which covers the period from 1870-1920 only).

2) Author annotation: We manually annotated at the author-metadata level “predomi-

nantly fiction-author" vs. "predominantly non-fiction-authors". We filtered KOLIMO 322
and excluded a) texts without author or title, b) duplicates, c) works from overrepre- 323
sented authors (>500 texts) and d) works from predominantly non-fiction-authors such 324
as Kant, Freud, or Hegel. The treshold of more than 500 texts is a qualitativly explored 325
boundary set to exlude artifacts of highly productive authors that (apparently) have 326
been created by adding texts from text collections or chapters/paragraphs from books 327
as separate texts from one author/ editor to KOLIMO. This left us with 9467 texts. 328

3) Neural classifier: We applied the neural classifier for the corpus, which tags reflective 329
clauses. Some texts (196) could not be processed by the classifier due to artefacts in the 330
text file such as unexpected character encodings etc. These texts were dropped. 331

4) Publication year annotation: We manually annotated the first publication year of 332
texts without publication year relying on the following digitally available databases and 333
multi-volume reference works: Arend et al. 2022, Arnold 2020, Kühlmann 2012, and 334
only as last resort GoogleBooks. Annotators were also asked to mark non-German, non 335
narrative, non-fictional and translations into German. Based on this data, we filtered 336
our corpus a second time, which left us with 6218 texts. 337

5) Fiction status annotation: Since we observed that our corpus still contains non- 338
fictional narrative texts, we undertook a further annotation: We manually annotated 339
the fictionality status (fiction/ non-fiction / unclear) of texts that contained more than 340
9.94 percent non-fictional speech at clause-level (the 75-percent quantile) according 341
to the results of our multi-label classifier, thereby using a disproportionately high 342
share of non-fictional speech as a heuristic to identify remaining non-fiction in our 343
corpus. Subsequently, we removed texts that have been identified as non-fiction by our 344
annotators from our corpus. 345

6) Data cleaning: In a last step, we removed outliers regarding the proportion of re- 346
flective clauses per text (interquartile range method), that are partly due to wrong or 347
incomplete texts being part of the KOLIMO corpus (e.g. novel-prefaces instead of the 348
novel itself). The resulting subcorpus ("KOLIMO-selection", 1700-1945) contains 5209 349
original German language fictions with known first publication year. 350

Table 5 provides an overview of the filtering process and Figure 2 of the resulting 351
KOLIMO-selection corpus. 352

Step	Dropped	Remaining
1) Metadata enrichment	0	41,382
2) Author annotation		
Texts without author and without title	340	41,042
Texts without author-classification	23	41,019
Duplicates	924	40,095
Texts from non-fiction authors	15,740	24,355
Overrepresented authors (>500 texts)	12,789	11,566
Texts from non-German writing authors	2,099	9,467
3) Neural classifier		
Texts with exceptions during processing	196	9,271
4) Publication year annotation		
Texts without first publication*	2,633	6,639
Translations	44	6,595
Non-german language texts	0	6,595
Non-fictional texts	192	6,403
Non-narrative texts	4	6,399
Texts with less than 10 sentences	181	6,218
5) Fiction status annotation		
Non-fiction or texts with unclear fiction status	360	5,858
6) Data cleaning		
Texts before 1700	167	5,691
Texts after 1945	134	5,557
IQR-based outliers (> 61.68% reflective clauses)	348	5,209

Table 5: Overview of filtering the KOLIMO corpus; * at this step we additionally excluded 463 texts from one over-represented author with the same publication year

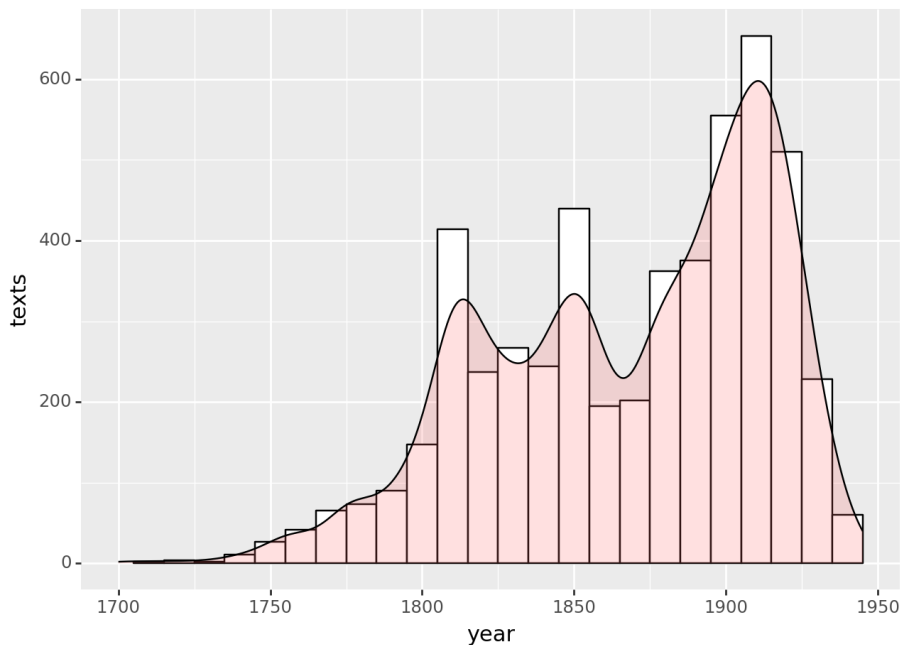


Figure 2: Distribution of texts in KOLIMO-selection corpus over time

5.2 Reflective Passages and Perceived Reflectiveness

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Since the reader is by now familiar with our diachronic corpus and the assumptions built into it, we can start with the intended analysis of the development of reflective

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passages in 250 years of literary history. In a first step, we take a look at the reflection score, which represents the perceived reflectiveness of a text as explained above. Figure 3 shows the annual mean of the reflection score.

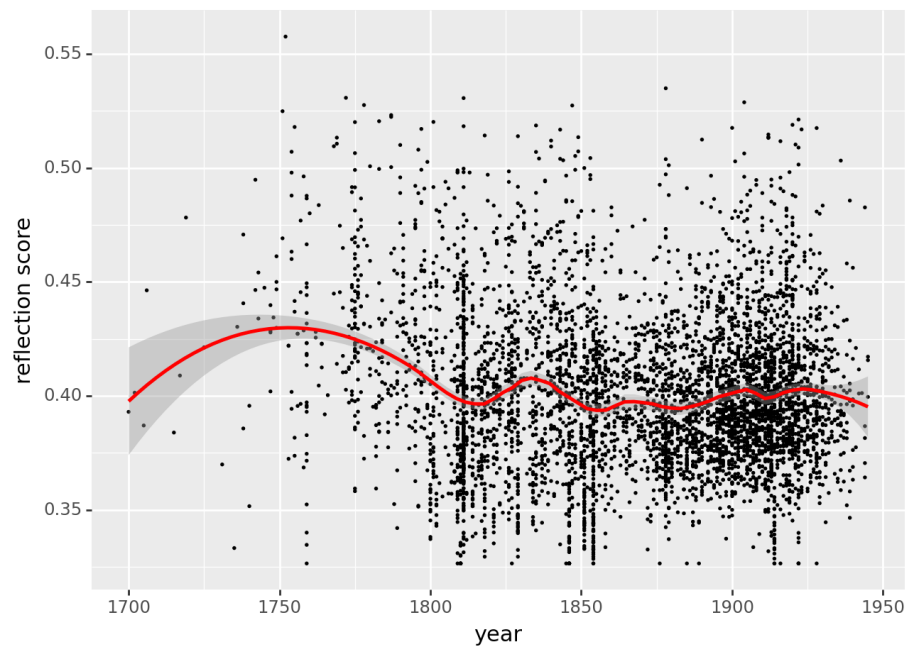


Figure 3: Perceived reflectiveness from 1700 to 1950

It can be observed that the average perceived reflectiveness is relatively stable (between 0.38 and 0.43) over time. Keeping in mind that the baseline reflection score, that means where none of our three phenomena is present, is 0.33 ($\sigma(-0.72)$) (cf. Table 3 above), this is very plausible: The average German fiction contains some reflections. A second interesting result are the three local maxima around 1755, 1830 and 1920. The first maximum may explain how Schiller, when he wrote "On Naïve and Sentimental Poetry" in 1795, arrived at his initially cited claim, that literature is becoming more and more reflective: In fact, Schiller looked back on a period in which fiction was more reflective than before. Although, in his famous essay, he mainly cites examples from antiquity – Homer as naïve and Horaz as sentimental (reflective) poet – he does mention "the sentimental poets of the French, and the Germans, [...], of the period from 1750 to about 1780", who seemed long time more appealing to him than 'the naïve Shakespeare'. (Schiller 1985[1795], 191). Figure 3 seems to confirm Schiller's subjective impression. The local peak around 1920 (which forms a saddle with the local peak shortly after 1900) dovetails nicely with the research thesis that there was a boom in essayism in the beginning of the 20th century that describes one aspect of the general trend toward the "dissolution of the boundaries of forms" (Kiesel 2004, p. 153): on the one hand, fictional essays emerged, and on the other, essayistic passages increasingly found their way into fiction, especially into the novel (see Ercolino 2014; Jander 2008; Just 1960; Müller-Funk 1995). However, the increase of perceived reflectiveness is less pronounced as one might have expected from the amount of research that exists on the phenomenon of essaysim in that period. The peak around 1835 is an interesting finding, which may relate to a politicisation of literature during the *Vormärz* period. However, further research beyond

the scope of this paper is needed to underscore such an hypothesis. 382

In a next step, we take a closer look at the frequency of reflective passages and their 383
 subtypes. Please recall that reflective passages greatly differ regarding their length, 384
 ranging from one clause to several sentences or whole paragraphs. For that reason, 385
 we carry out the following analyses at the clause level and speak of **reflective clauses**. 386
 Figure 4 represents the proportion of reflective clauses over time. Please note that we 387
 count a clause as reflective –according to our initial definition–, if at least one of our 388
 three phenomena (COMMENT, GENERALISATION, NON-FICTIONAL SPEECH) is present. The 389
 confidence intervals, here as in the following, are calculated with Python’s ggplot2 390
 implementation “plotnine” employing LOESS smoothing with a span parameter of 0.3. 391

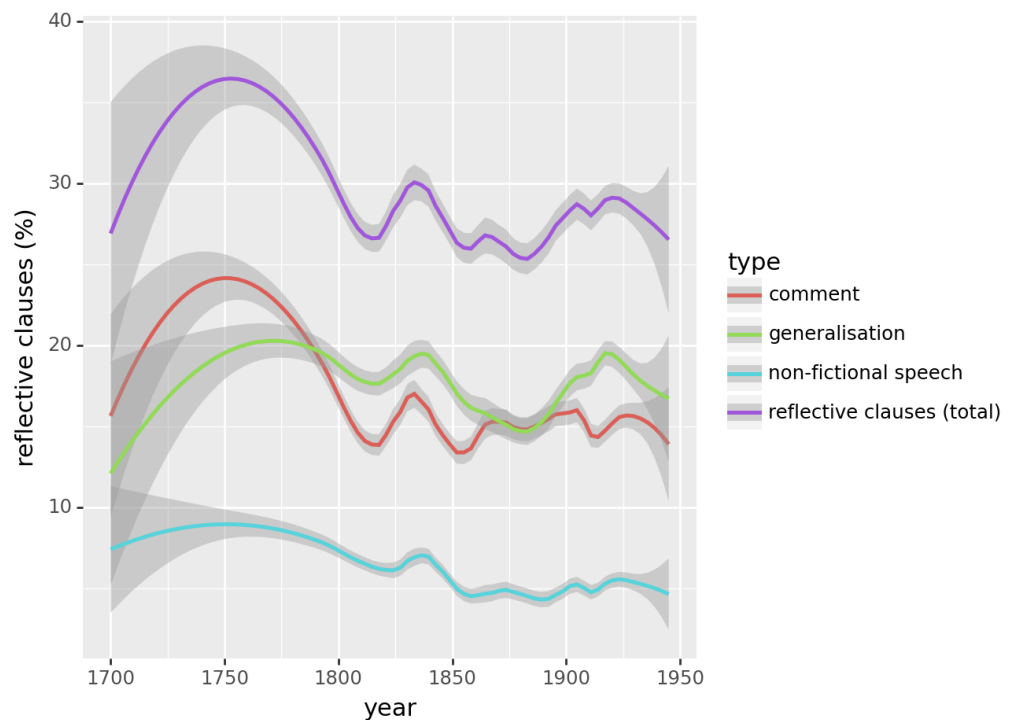


Figure 4: Reflective clauses and their subtypes over time

One may observe four things: 1) The proportion of reflective passages (violet graph) 392
 is high over the 18th century (>30%), drops below 30% in 1800, reaches a local peak 393
 1830 and another 1920. However, these local peaks in the 19th and 20th century never 394
 reach the level of the 18th century. The period of realism forms a tale, in which literary 395
 reflections are less widespread. 2) The shape of the graphs are very (or for COMMENT: 396
 relatively) similar one to another and to the reflection score graph in Figure 3. This 397
 indicates that the three phenomena do indeed co-evolve and represent different aspects 398
 of the overall phenomenon of reflection in fiction. 3) Only two graphs intersect: GENER- 399
 ALISATION (green) and COMMENT (red). In the end of the 18th century COMMENT loses its 400
 position as most common subtype to GENERALISATION, which it more or less keeps till 401
 1945. Only during the period of realism, GENERALISATION is less predominant, its “pole 402
 position” being contested by COMMENT again. 4) As one might expect, NON-FICTIONAL 403
 SPEECH is the least frequent subtype. Interestingly, its development can be cut into two 404
 halves: Between 1700 and 1840 it has a significant share between 7.5 and 10%, but after 405

conference version

1850 its proportion is more or less stable around 5%. 406

5.3 Effects of Text Length, Canonisation Status and Sex 407

This section is dedicated to the analysis of three factors that plausibly may correlate 408
 with fictions' degree of reflectiveness: text length, canonisation status and authors' sex. 409
 For example, the fact that the phenomenon of within-fiction reflections has attracted 410
 attention primarily in novel research might indicate that reflective passages occur more 411
 often in novels than in shorter texts. To scrutinise this hypothesis, we calculated quantiles 412
 in the distance of 25% based on text length in tokens separating our corpus in four parts: 413
 very short, short, long and very long texts. Very long texts have more than 58k tokens (i.e. 414
 > 4800 sentences based on an estimate of 12 tokens per sentence). Since our diachronic 415
 corpus contains almost only prose fiction, this category can be interpreted as "novels". 416
 Table 6 shows the proportion of reflective passages grouped by text length. 417

	Mean	SD	SEM
Text length			
Very short	26.63	14.70	0.41
Short	27.63	11.88	0.33
Long	29.26	9.88	0.27
Very long	29.22	9.46	0.26

Table 6: Proportion of reflective clauses (%) and text length

Longer texts tend to be more reflective than shorter texts, although differences are 418
 delicate, overall. There is almost no difference between long texts (e.g. novellas) on 419
 the one hand and very long texts (e.g. novels) on the other hand. A further analysis 420
 revealed that long and very long texts contain on average more COMMENT passages 421
 (almost 18%) than very short and short texts (12% resp. 14.6%), while the values for 422
 the other subtypes are very similar. 423

Another plausible hypothesis is that canonical texts are more reflective than others, 424
 because complexity is often seen as a text-related standard that may favour canonisation 425
 (see Winko 2002, pp. 21-22). Therefore, we added information on the canonisation 426
 status (the so-called "canonisation score" based inter alia on work-mentions in literary 427
 histories and anthologies as proposed by Brottrager et al. 2021), of 357 texts that we 428
 were able to identify in our KOLIMO-selection. Table 7 compares these texts against all 429
 other (non-canonical) texts. 430

	Mean	SD	SEM
Canonisation status			
Canonical	30.71	11.16	0.59
Non-canonical	28.00	11.74	0.17

Table 7: Proportion of reflective clauses (%) and canonisation

The group difference presented here is statistically significant as a *t*-test reveals: Canon- 431
 ical texts contain on average 2.7% more reflective passages than non-canonical texts 432
 ($t(5207) = 4.22, p < .001, d = 0.23$). However, the relation between the degree of reflect- 433
 iveness and canonisation is more complex as Figure 5 reveals. It represents the relation 434

conference version

between canonisation score (highest degree of canonisation, values from 0 to 1) and the proportion of reflective clauses of a text (taking only the 357 texts with canonisation score into account).

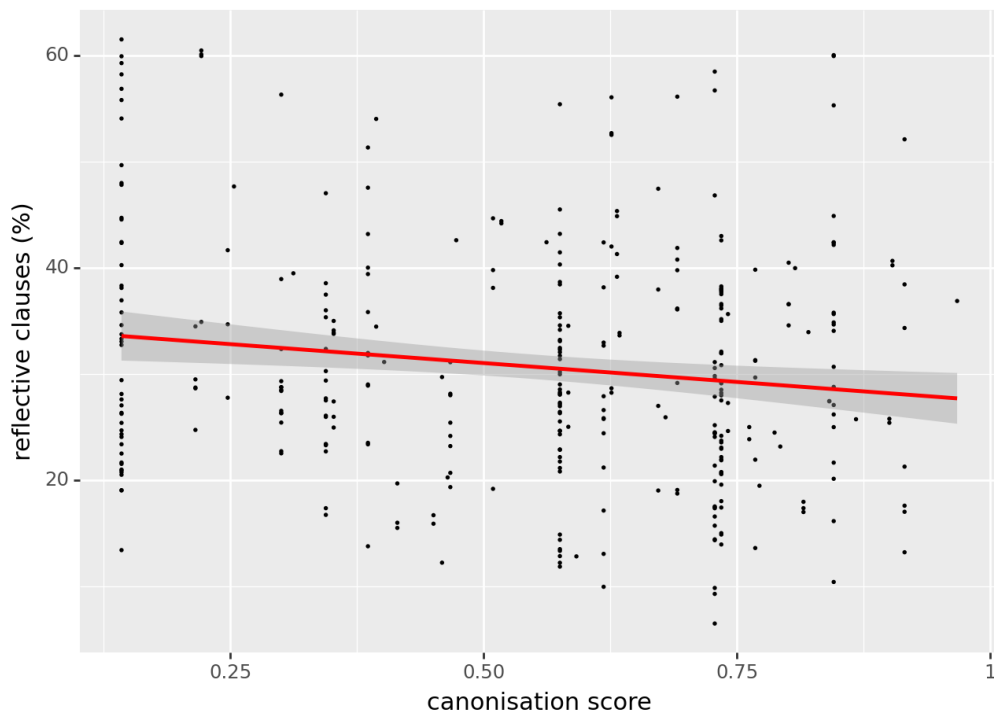


Figure 5: Proportion of reflective clauses in function of canonisation status, n = 357

One observes that the relation is negative: the *less* reflective clauses a text contains, the more canonised the text is. Taking this result together with the previous one (that canonised texts contain on average more reflection), this seems to suggest that a *moderately* increased degree of reflectiveness favours canonisation. We intentionally formulate this hypothesis in cautious terms, because there are many other factors involved about which we have no information. However, there is one aspect of the complex relationship we can explore: the diachronic dimension (see Figure 6). The restricted temporal coverage is due to the fact that there are no canonical works before 1750 in our corpus.

conference version



Figure 6: Proportion of reflective clauses and canonisation status over time

Figure 6 reveals several things: 1) The observed mean difference for reflective clauses 446
 between canonical and non-canonical texts is due to relatively specific time periods, 447
 especially in the middle and in the end of the 19th century and in the beginning of the 448
 20th century. 2) There is a remarkably steep increase for COMMENT and NON-FICTIONAL 449
 SPEECH for canonical texts in the beginning of the 20th century. For canonical texts, one 450
 may indeed witness the boom of reflection that one could have expected given the above 451
 mentioned research. This underscores how much traditional research is driven by its 452
 attention to relatively few more or less canonical texts; the ratio between canonical texts 453
 and non-canonical texts in our KOLIMO-selection being 1 to 13,6 (357 to 4852 texts). 454

As a third factor for analysis, we selected the authors' sex. From 5.2k texts more than 455
 1.4k texts are from female authors. Table 8 shows that there is an association with the 456
 mean proportion of reflective clauses: Male authors tend to use reflective passages on 457
 average more often than female authors. 458

	Mean	SD	SEM
Authors' sex			
Female	26.28	12.25	0.33
Male	28.66	11.49	0.20

Table 8: Proportion of reflective clauses (%) and authors' sex

This finding is confirmed by a *t*-test ($t_{(4561)}=6.23, p<0.001$), which reveals a small 459
 effect ($d=0.20$). However, this is only a very general result in the light of the highly 460
 varying presence of female authors in literary history. For this reason, Figure 7 enables 461
 the reader to take a closer look on the interrelations of reflective clauses and authors' 462
 sex over time. 463

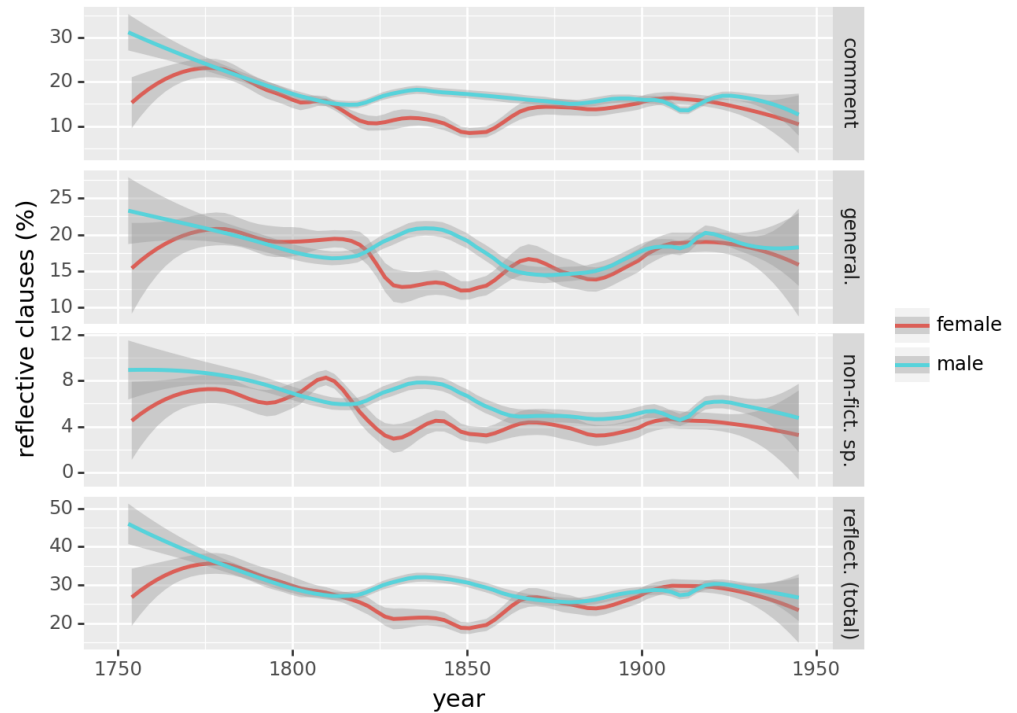


Figure 7: Proportion of reflective clauses and authors' sex over time

From Figure 7 it becomes clear that the more frequent usage of reflective passages by male authors is mainly due to developments before 1875, where female authors – with one exception in the beginning 19th century – reflect less often on average in their fictions. From 1875 onward female authors use reflective passages on average as often as their male counterparts. Only in the 1920s, a new discrepancy seems looming regarding NON-FICTIONAL SPEECH, which tends to be used less often by female authors.

6. Summary

A so far unfulfilled promise of Computational Literary Studies is to write a more empirically saturated history of literature. Our aim in this paper was to contribute to this new literary history through a diachronic analysis of the narratological phenomenon of reflective passages. Our approach illustrates how many different elements have to come together to get closer to this goal: After 1) a resource-intensive annotation of more than 16k sentences for the phenomenon of reflection, we were able 2) to build a multi-label and a binary classifier for reflective passages. 3) We studied how different types of reflective passages are perceived by actual readers and introduced the reflection score as a measure for perceived reflectiveness of a textual passage. 4) Through a complex filtering process, we build an suitable diachronic corpus of 5.2k original German language fictions from the much larger KOLIMO corpus and 5) enriched their metadata regarding fictionality status, canonisation status and authors sex. Finally, we were able to analyse the frequency of reflective passages over 250 years of literary history. Our findings suggest three boom periods of reflective passages: around 1755, 1835 and 1920. GENERALISATION is the most common phenomenon (M=17.6% of all clauses), COMMENT the second common (M=15.6%), while NON-FICTIONAL SPEECH is rather rare (M=5.6%).

In terms of perceived reflectiveness, all sub-phenomena contribute to a textual passage's reflectiveness, while COMMENT is the best indicator, GENERALISATION plus NON-FICTIONAL SPEECH also indicate reflectiveness. Important covariates of the proportion of reflective clauses are text length, canonisation status and authors' sex. On average, longer texts, canonised texts, and texts from male authors contain more reflective clauses than their respective counterparts. Since our diachronic corpus itself is only a (small) sample from the literary production in German language (cf. Gittel 2021, 5), and —due to limited metadata— does allow to control only a few potential covariates that steer literary production, our results should be regarded as motivation for further quantitative research in the future. Nevertheless, our research represents a step forward towards an empiricisation of literary studies. It demonstrates that quantitative research can underpin existing hypotheses in literary studies (like the one from a boom of essayism in the beginning of the 20th century) and set new questions on the agenda (e.g. about the nature of the boom of reflection in the *Vormärz* period). To answer such questions, Computational Literary Studies and hermeneutic research need to go hand in hand in our opinion. Quantitative research may in the future shed light on the thematic contents of the different subtypes of reflection and their combinations – a question deliberately put aside in the present paper – and hermeneutic research may formulate justified hypotheses about the functions of different types of reflective passages in specific contexts. In this way, literary studies may advance towards an empirically saturated functional literary history.

7. Appendix: Examples in Original Wording

- (1') Eduard – [so nennen wir einen reichen Baron im besten Mannesalter]_{COMMENT} – Eduard hatte in seiner Baumschule die schönste Stunde eines Aprilmittags zugebracht, um frisch erhaltene Pflanzfreier auf junge Stämme zu bringen. (J. W. Goethe 2021[1809], 7)
- (2') „Findlinge?“ „Ja, Findlinge,“ wiederholte Woldemar. „Aber wenn Ihnen das Wort anstößig ist, so können Sie sie auch Monolithe nennen. [Es ist merkwürdig, Czako, wie hochgradig verwöhnt im Ausdruck Sie sind, wenn Sie nicht gerade selber das Wort haben]_{COMMENT} ...“ (Fontane 2015[1897/98], 17)
- (3') [Все счастливые семьи похожи друг на друга, каждая несчастливaя семья несчастлива по-своему]_{NON-FICTIONAL SPEECH}. (Толстой 1998[1878], 7)
- (4') [Jedes Land hat sein Samarkand und sein Numancia]_{NON-FICTIONAL SPEECH}. In jener Nacht lagen die beiden Stätten hier bei uns, hier an der Morava. [Numancia, im iberischen Hochland, war einst die letzte Flucht- und Trutzburg gegen das Römerreich gewesen; Samarkand, was auch immer der Ort in der Historie darstellte, wurde und ist sagenhaft; wird, jenseits der Geschichte, sagenhaft sein]_{NON-FICTIONAL SPEECH} (Handke 2008, 7)
- (5') Naphta erwiderte mit unangenehmer Ruhe: "Guter Freund, [es gibt keine reine Erkenntnis]_{GENERALISATION}." (Mann [1924] 1991, 207)

8. Data Availability 527

Data can be found here: <https://zenodo.org/records/10246193>, and here: <https://doi.org/10.5281/zenodo.11164190> 528
529

9. Software Availability 530

Software can be found here <https://doi.org/10.5281/zenodo.11163719>, and here <https://doi.org/10.5281/zenodo.11164036> 531
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Tillmann Dönicke: Data curation, Formal analysis, Methodology, Resources, Software, Writing – original draft, Writing – review & editing 546
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Luisa Gödeke: Conceptualization, Investigation, Writing – original draft, Writing – review & editing 548
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Thorben Schomacker: Software, Writing – original draft, Writing – review & editing 550

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Anna Mareike Weimer: Conceptualization, Investigation, Writing – original draft, Writing – review & editing 552
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Caroline Sporleder: Funding acquisition, Methodology, Supervision, Writing – review & editing 555
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