

## 1.1.6 The twenty-first century

### From paper notebooks to keystroke logging

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In the twenty-first century, the digital medium has become an indispensable part of the literary writing process and can hardly be neglected in the study of the literary draft from this – yet very recent – millennium. In this chapter, we examine four manifestations of the twenty-first century literary draft on a spectrum ranging from fully analogue to fully digital: the paper draft of Ian McEwan’s *Atonement*, the self-archived digital draft of Bart Moeyaert’s *Het paradijs*, the hybrid draft of Gie Bogaert’s *Roosevelt*, and the keystroke logging draft of David Troch’s story “Mondini”. These types of drafts offer their respective levels of granularity to examine the writing process, and especially the latter type of draft presents us with a hitherto unprecedented degree of detail, opening up the document’s nanogenesis.

**Keywords:** genetic criticism, analogue draft, digital draft, hybrid draft, born-digital literature, writing process, keystroke logging, nanogenesis

#### Introduction

When the literary draft or “modern manuscript” became an object of study in its own right (either as an aspect of bibliography or as the central focal point of genetic criticism), it was almost self-evidently thought of in terms of ink on paper. The past few decades have seen a rather fundamental shift from analogue to digital writing processes, and the question arises whether the discipline’s object of study is disappearing. Initially, the increase of digital working methods led to the fear that this heralded the end of genetic criticism (Mathijsen 2009). Since then, several explorations of the digital literary writing process that explore digital files, file formats, and media types (Vauthier 2016; Vásári 2019) or use computer forensic techniques to research the digital files (Ries 2018), have proven this doomsday scenario to be unwarranted. It is true that, given the speed of current digital developments, literary drafts are likely to appear increasingly – if not mostly – in a digital format. Yet, this does not imply the obsolescence of pen and paper. This chapter examines four manifestations of the twenty-first century literary draft on a spectrum ranging from fully analogue to fully digital to show the wide range of possibilities to study the literary draft in the twenty-first century:

1. The paper draft is still quite popular amongst writers of the twenty-first century, especially in the early stages of their work’s genesis, as for instance in the case of Ian McEwan’s *Atonement*.

2. Digital drafts provide an often-random snapshot of the writing process, concealing the intermediate steps, as in the digital drafts of Bart Moeyaert's works.
3. Hybrid drafts, in which analogue material is used in combination with writing in a digital environment, illustrate the interaction between analogue drafting and digital writing in present-day writing processes, as in the genesis of Gie Bogaert's novel *Roosevelt*.
4. In writings recorded with keystroke logging software, however, the information about the key-ins challenges genetic criticism's traditional focus on, among others, cancelled and substituted words for our understanding of the creative process. In addition, the software also captures the moment in time of each keystroke, which enables a reconstruction of the sequentiality and duration of the writing and the revisions, as in the keystroke-logged drafts of David Troch. Moreover, this new kind of material allows us to examine the writing process on a hitherto unprecedented level of granularity, enabling a new type of nano-genetic research (Bekius 2021; Van Hulle 2021).

Most genetic studies of born-digital writing processes work with self-archived born-digital materials received directly from the authors in question (see, for example, Vauthier 2016; Crombez and Cassiers 2017; Vászari 2019). And so are we. We therefore want to stress that this study is far from comprehensive and merely draws the contours of a spectrum of shapes that the literary draft is taking in the twenty-first century.

### The paper draft: Ian McEwan's *Atonement*

At the beginning of the century, many writing processes were hybrid, as in the case of *Atonement*, a novel whose first part takes place in 1935 at the estate of the Tallis family (McEwan 2001). The beautiful love story between Cecilia Tallis and the housekeeper's son, Robby, takes an unexpected turn when Cecilia's younger sister, the thirteen-year-old Briony Tallis accuses Robby of a crime he did not commit. The accusation is based on an incorrect observation, which is ironic since Briony takes pride in her observational skills as an aspiring writer. Although McEwan made use of a computer to process his text from a certain moment onwards, large parts of the first draft were written in large, green A4 spiral copybooks, held at the Harry Ransom Humanities Research Center in Austin, Texas. In the first sketches, starting on folio 21v of "Notebook 1", McEwan initially tried to use the character Robbie as the main focaliser. But he soon realised that this "privileged access" to Robbie was a "dead end". Asking himself questions in his notebook, such as "What is good about this story?", he self-critically concludes that it is "Only Briony really", because of her role as "the writer, the watcher, the fantasist" and because of her "eagerness to stretch the language" (HRC, McEwan, *Atonement*, Notebook 1, Box 1, Folder 8, fol. 30v; qtd in Van Hulle 2022: 35). This moment of self-interrogation suggests an important role of the draft as a vehicle for critical self-reflection.

The conceptual note already indicates that the story is narrated at the "end of the century", which marks the novel as a conscious effort to look back and evaluate the century from a literary point of view. In many ways, *Atonement* is indeed a retrospective analysis of literary

Modernism's legacy. But at the moment of the conceptual note, early in the creative process, the author was not sure yet who would be the narrator. He temporarily considered the possibility that Briony, realising her terrible deed, would commit suicide out of shame, and that Cecilia would tell the story as an 88-year-old. This brief consideration was soon dismissed, however, by means of the addition: "but she's dead!" (HRC, McEwan, *Atonement*, Notebook 1, Box 1, Folder 8, fol. 30v; qtd in Van Hulle 2022: 36) The whole point of the plot is, indeed, that the narrator imagines a version of the story in which the lovers survive the war, whereas they have actually died, separated from each other. In the conceptual note, the nature of the "violent moment" is not decided yet; it could be "even a murder", or "A rape?"; but what is already clear is that the "Story is an atonement". And then, as if McEwan is developing his thoughts on the novel as he is writing them down, he decides who will be the victim and who the real rapist; what will be the nature of Briony's "terrible deed": "Briony names Robbie – who goes down. Only after the death of her older sister, sixty-five years later, can Briony reveal, in fiction, her terrible deed" (HRC, McEwan, *Atonement*, Notebook 1, Box 1, Folder 8, fol. 30v; qtd in Van Hulle 2022: 35). The concept for the novel does not yet correspond entirely with the plotline of the published version – because eventually McEwan will see to it that Cecilia also dies during the war, as does Robbie – but the note does contain the basic elements, including the central notion of "atonement". It not only concerns the plotline, but also such narratological matters as the choice of focalisation, shifting it from Robbie to Briony.

McEwan does make use of the computer, but mainly as a word processor, in a similar way as twentieth-century authors used a typewriter. At regular intervals, a version was printed out, on which McEwan made corrections. All these drafts suggest the importance of being able to be not only a writer, but also – and importantly – a reader of one's own work. Even in the digital age, paper still seems to be an excellent medium to take a distance from the act of writing and to re-vise, literally, to look again at the text produced so far and let it affect the ensuing creative process.

### The self-archived digital draft: Bart Moeyaert's *Het paradijs*<sup>1</sup>

The Flemish author Bart Moeyaert (1964 –) provided us with a USB-stick with the digital drafts of the Haydn trilogy – a project with the Nederlands Blazers Ensemble (NBE). The trilogy consists of *De schepping* [Creation] (2003), based on Joseph Haydn's "Die Schöpfung"; *Het paradijs* [Paradise] (2010), based on "Die Jahreszeiten"; and *De hemel* [Heaven] (2015), based on "Die Sieben letzten Worte unseres Erlösers am Kreuze". The texts by Moeyaert were both performed as a family concert and published as children's books. In 2020, the stories were collected in *Het hele leven* and marketed for adults (Moeyaert 2020). The files of the trilogy were arranged by the author per title. In this section, we will analyse only the content of the digital files, although it is possible to even dig deeper and discover "hidden" layers by means of digital forensic tools, when the original hard drive is available (Ries 2018).

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1. Unless otherwise stated, all translations in the following sections are by Lamyk Bekius.

The files for *De schepping* confront us with the limits of self-archived material for genetic criticism. The folder contains only one Word document with a version of the text, called “NED\_Boek\_DeSchepping kopie.doc”, and one Word document with two revisions “AanpassingDeSchepping kopie.doc”. For *De hemel*, on the other hand, the extant material is abundant. The folder lists 50 documents, revealing not only the long history of this story, but also showing how the writing processes of different works were intertwined. The folder of *Het paradijs* contains 26 files, which will be the focus of our brief analysis. Of these, 24 files hold versions of the text at different stages of composition.<sup>2</sup>

In an interview with Karen Ghonem-Woets, Moeyaert stated that during writing he was aware of the potential danger that he would just be writing the story of creation all over again (Moeyaert in Ghonem-Woets 2012: 87). For as long as he had the sense that he was repeating a trick, he would never be able to finish the story. Therefore, he looked for other perspectives. First, he considered approaching the topic from the perspective of God, but that idea did not work either, “het gaf niet de minste spanning. Mannetje, vrouwtje, appel, slang” [it did not generate the slightest tension. Man, woman, apple, snake] (Moeyaert in Ghonem-Woets 2012: 87). It is this search for another perspective and interpretation of the creation story that emerges from the digital files. Moeyaert started writing from the perspective of a male first-person narrator, but then decided to approach the story from the perspective of God, also as first-person narrator.

This search for the right focalisation already transpires in the file names, ten of which indicate that the story is being told from God’s perspective.<sup>3</sup> As soon as the story was written from this perspective, the apple and snake entered the stage as well. One of the documents mentions the tree of knowledge for the first time: “En ginds staat de boom waar ik jullie van gesproken heb vóór jullie vertrokken – weet je nog welke boom dat was?” [And over there is the tree I told you about before you left – do you remember which tree it was?].<sup>4</sup> An allusion is also made to the presence of the snake: “De kop zag er ongeveer hetzelfde uit als de staart. De toekomst gleed

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2. The first file was created on 20 February 2009, and last modified on 23 June 2009 (‘N\_PROBEER\_vanhetparadijs kopie.doc’). The last file was created on 20 February 2010, and last modified on 27 April 2010 (‘PARADIJS\_BM\_DEFVERSIE kopie.doc’)

3. ‘HET\_PARADIJS\_MOEYAERT\_18\_02\_2010\_GODSTANDPUNT kopie.doc’;

‘HET\_PARADIJS\_BARTMOEYAERT\_240210GOD kopie.doc’;

‘HET\_PARADIJS\_BARTMOEYAERT\_250210GOD kopie.doc’;

‘HET\_PARADIJS\_BARTMOEYAERT\_280210GOD kopie.doc’;

‘HET\_PARADIJS\_BARTMOEYAERT\_020310GOD kopie.doc’;

‘HET\_PARADIJS\_BARTMOEYAERT\_030310GOD kopie.doc’;

‘HET\_PARADIJS\_BARTMOEYAERT\_040310GOD kopie.doc’;

‘HET\_PARADIJS\_BARTMOEYAERT\_050310GOD kopie.doc’;

‘HET\_PARADIJS\_BARTMOEYAERT\_080310GOD kopie.doc’;

‘HET\_PARADIJS\_BARTMOEYAERT\_090310GOD kopie.doc’.

4. Modified by Moeyaert on 3 March 2010 (‘HET\_PARADIJS\_BARTMOEYAERT\_030310GOD kopie.doc’).

nagenoeg geruisloos tussen de benen van de man door.” [The head looked nearly the same as the tail. The future slipped almost silently between the man’s legs].

In the next document, dated 4 March, these allusions to the tree and the snake are made more explicit. God now clearly states that the man and the woman are not allowed to eat from this particular tree, and God recognises the snake of which he had made only one.

The paragraph about the snake is modified and expanded in the next document (last modified on 5 March 2010). The following insertions that Moeyaert made in this document foretell the evil that comes along with the snake: “De camelia die daarnet nog zoet geurde, stonk ineens naar bagger” [The camellia that had smelled so sweet only a minute ago, suddenly reeked of dredge] and “Hoe dan ook werd de man sissend het zwijgen opgelegd. De lucht knetterde zachtjes en ik dimde het licht” [Anyway, the man was hissed off. The air crackled gently and I dimmed the light].

The following document (dated 8 March 2010) mentions that the woman talked to a few animals, most of which did not reply. This version also refers to an apple. The woman suggests giving the name “apple green” to a particular shade of green. Then she asks whether he is in the mood for apple pie or perhaps prefers a change. He wants change, she wants apple pie. What this version does not clarify, however, is whether the woman thinks of apples and apple pie because of her conversation with one of the animals.

That is what becomes clear in the next document (dated 9 March 2010). The man finds the woman with the snake on her lap. After her conversation with the snake, she is hungry. All these adjustments fit in with Moeyaert’s search for the right perspective. As long as he kept writing from God’s perspective, the story remained focused on a man, a woman, an apple, and a snake.

But then, in the file created only the day after, the perspective suddenly changes again: the story is no longer narrated by God but by a male first-person narrator.<sup>5</sup> As soon as God was no longer present, Moeyaert seems to have felt free to also discard the tree and the snake. He could write his own book of genesis. Only the apple pie remained.

The files given by Moeyaert indicate that the amount of information one can find in digital drafts is tied to – and largely determined by – the author’s working method and his habits of saving the files. Intermediate stages within one document might be discovered using digital forensic methods, e.g., a hex-editor, a binary parser, an undelete tool or a file carver (Ries 2018). But even without these techniques, the digital files by Moeyaert already indicate that, in case the author saved intermediate draft stages, a digital writing process can leave sufficient traces to enable genetic analysis.

### **The hybrid draft: Gie Bogaert’s *Roosevelt***

For each of his novels, the Flemish novelist Gie Bogaert (1958 –) divides his writing process into two stages. During the first stage – “the creative process” as Bogaert calls it – he makes notes in an Atoma notebook.<sup>6</sup> This special kind of notebook allows him to rearrange the pages and

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5. Dated 10 March (‘HET\_PARADIJS\_BARTMOEYAERT\_10\_03-10 kopia.doc’).

insert all kinds of other documents. In the notebook he devises the concept and the structure of the novel, writes character descriptions, and inserts source material, including printouts from digital sources. This notebook has to give him a sense of being “finished” before he can start with the second part of the writing process: the “linguistic creative process”. This part consists of the actual writing of the novel, which takes place digitally in a word processor. Bogaert’s drafts are therefore hybrid; they are partly analogue and partly digital.

Bogaert used the same working method to write his tenth novel *Roosevelt* (2016), with one difference: the “linguistic creative process” was logged with the keystroke logging software Inputlog (Leijten and Van Waes 2013). Inputlog is developed to be as non-intrusive as possible; the author writes in a word processor they are already familiar with – in this case Microsoft Word – and in the background the software logs every keystroke and mouse movement. In addition to collecting keystroke information, Inputlog also saves the Word document in a separate folder with the date and the session number each time the software is activated and de-activated. This results in a “session-version” of the text for each session, which enables researchers to examine the text’s gradual development. In this section we will primarily focus on this concept of the session-version.<sup>7</sup> By focussing on the microgenesis, we want to address the relation between the analogue notebook and the digital Word document in Bogaert’s writing process.

*Roosevelt* is a city novel with a square – the Franklin Roosevelt square in Antwerp – as its central narrator, describing the whereabouts of an eclectic range of characters during one warm day in June. Since the square is not only one of the narrators but also the most important setting, descriptions of the square can be found throughout the novel. To account for realistic descriptions of the square, Bogaert went to the actual Franklin Roosevelt square in Antwerp to observe and make notes of everything that caught his eye. For example, the section narrated by the square, “Franklin”, within the overarching chapter “Vier uur” [Four o’clock] describes the urban scenery on the square at the start of the afternoon rush hour. For this timeframe, Bogaert wrote in the notebook, among other things, that it is getting more crowded; that a lot of busses and trams pass by; that he smells people’s sweat, deodorant and perfume; that a tram shows advertisements for Turkey; that someone splashes water at somebody else; and that the police officers stop a group of adolescents for ignoring the traffic light. To the latter note he added: “conversatie weergeven?” [show conversation?].

During the second phase, the “linguistic creative process”, Bogaert uses the word processor to transform his observations into observations made by the square Franklin. Some appear almost in the same wording in the novel as they were first written down in the notebook, while

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6. This is how Bogaert, in a private conversation, described his own writing process. He elaborates on the importance of the Atoma notebook for his writing process in a video for the Belgian publishing house Standaard Uitgeverij: <https://youtu.be/EhRFiw-RZOY>

7. We will discuss the keystroke logging data in more detail in section 4, as we focus on the draft material of David Troch.

others are modified more extensively or serve as inspiration for a dialogue. Whenever Bogaert uses one of his observations, he marks it with a tick.

In total, there are 23 session-versions of this section narrated by Franklin. The first session-version of this section was written during writing session 267 (30 March 2015) and consists of a short list, which addresses the afternoon rush and refers to the relevant section in the Atoma-notebook: “Over de namiddagdrukte. K. 78!” [About the afternoon rush. K. 78!].<sup>8</sup> This note indicates Bogaert’s plans to incorporate some of his observations in this section.

In session 285 (27 April 2015) Bogaert deletes the preparatory note and inserts a fragment of text that he had apparently already written elsewhere. In this fragment, some of the observations from the notebook are already included. During the writing session, Bogaert adds even more observations based on the Atoma notebook, such as the note about the police and the boys; the observation that a tram shows advertisements for Turkey, and that a boy splashes water at a girl. This latter observation is also slightly modified: “Een jongen spuit water naar meisjes” [A boy splashes water at girls] is changed into “Kijk hoe die jongen water spuit naar meisjes” [Look at that boy splashing water at girls]. This modification changes the general remark into a statement by Franklin, addressing the reader and urging them to “look”. Modifying sentences to make an appeal to the reader’s spatial and sensory imagination is exemplary for the transition from note to draft during Bogaert’s writing process.

The modification that addresses the readers’ spatial imagination can be related to a note, in a smaller font, that Bogaert inserts in the next writing session and in which he listed several verbs in the imperative mood that are related to looking, smelling, and listening. During this session, Bogaert immediately starts putting this into practice. For instance, next to the general note “Sweat odours” he adds “Do you smell the sweat?”. In addition, after the question “Hoor je ze?” [Do you hear them?] – “them” being smoking bus drivers – he adds some utterances of the bus drivers about passing women: “Amaai, zo’n kont” [Wow, what a butt]. Bogaert also starts changing some details from the observations, for example, in session 286, the tram publicity for Turkey is now advertising more specifically for Istanbul. This session-version therefore shows how making things more specific is the key to the gradual contextualisation and fictionalisation of the observations.

In sessions 287 to 290 (28–30 April 2015) Bogaert keeps refining and contextualising the observations from the notebook. He writes the dialogue between the police officers and the boys who ignored the traffic light – as he planned in the notebook. In session 287, the sentence about the tram advertising for Istanbul is modified again; now it is a tourist bus advertising for Istanbul. In the course of session 289 all the notes Bogaert wrote to himself have been addressed and deleted.

After session 290, another 14 sessions follow to finetune this section narrated by Franklin. In these sessions Bogaert mainly focuses on refining the formulations by making surface revisions (on the level of the word and the sentence). Again, the advertisement for Istanbul is a

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8. “K.78” refers to page 78 in the Atoma notebook (Bogaert’s numbering). It concerns the page that contains Bogaert’s notes from the square, specifically those made at four o’clock.

good example, for it is changed two more times. The first modification, in session 291, changes the structure of the sentence from “Een toeristenbus maakt reclame voor Istanbul” [A tourist bus advertises for Istanbul] to “Op een toeristenbus wordt reclame voor Istanbul gemaakt” [On a tourist bus, Istanbul is being advertised]. In the second modification, in session 292, Bogaert specifies that the tourist bus is advertising *a summer holiday* in Istanbul. Details from the initial observation during the writer’s initial “field trip” on the square are thus gradually and systematically chiselled to make the contours sharper. Sometimes, however, this careful chiselling goes so far that it is simply undone. That is what happened to the sentence about the advertisement: it eventually did not make it into the published text.

In Bogaert’s writing process, notes from the notebook are often first typed out and then gradually become more specific. Content wise, the whole novel is almost entirely conceived on paper, and the digital part of the genesis is mainly a matter of linguistic and stylistic processing. As Inputlog saved the Word document at the start and end of each writing session, the result is an abundance of data to analyse the interaction between the analogue “creative process” and the digital “linguistic processing”.

### The keystroke logging draft: “Mondini” by David Troch

We discussed Bogaert’s drafts with a focus on the microgenesis by analysing the inter-document variation between the session-versions. As such, we disregarded the keystroke logging data and therefore also the exact order of the intra-document text production. That is what we would like to focus on in this chapter’s last section. When the writing process is recorded with a keystroke logger, the draft versions (including the keystroke logging data) contain valuable information about the sequentiality of text production and revision. These fine-grained keystroke logging data enable a new type of nanogenetic research. Central to the nanogenesis is the author’s movement through the text, which can be deduced from the order in which the text was typed; the way in which letters and words were deleted; passages abandoned mid-sentence; and the exact sequence of the production of new text and revisions (Bekius 2021). To illustrate the fine granularity of keystroke logging, we will discuss an example from the writing process of the Flemish author David Troch (1977 –) as he worked on his story “Mondini” (Troch 2020).<sup>9</sup> The story is set in a post-apocalyptic future. A man fled from the drought and heat caused by climate change and lost his partner and daughter on the way. He now tries to survive on his own, in a small apartment in a mountain village in Italy, called Mondini.

In the final version of the story, there is a clear connection between the second and the tenth paragraph. In the second paragraph, the narrator muses on how much the interaction between people has changed: people used to wink at each other, flirt, buy each other a drink,

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9. For the NWO funded project “Track Changes: Textual Scholarship and the Challenge of Digital Literary Writing” (Huygens Institute and University of Antwerp), David Troch logged his writing process with Inputlog between 8 August and 4 October 2020. We owe a debt of gratitude to Floor Buschenhenke, who assisted the participating authors in logging their processes, and of course to Troch, for his willingness to participate.

share a cigarette, and end up in bed with each other. In the tenth paragraph, the first-person narrator recalls a memory of his partner Evelina. One of the things he remembers is that she came home after buying cigarettes, and that, after a series of minor events, she lit a cigarette and offered one to him in exactly the same way as after the first wink she ever gave him.

When first reading the second paragraph, the reader could interpret it as a description of how people used to interact *in general*, like winking at each other and sharing a cigarette, before climate change affected the world and made people fear each other. Only when the reader gets to the tenth paragraph does the second paragraph acquire additional meaning. After reading this *particular* memory of Evelina offering the first-person narrator a cigarette in exactly the same way as after that first wink, the reader understands that the sentence in the second paragraph was not just a description of old, long-gone – yet very recognisable – behaviour, but a description of how the first-person narrator met his partner. She was the one who winked at him, they flirted with each other and shared a cigarette and later the bed. This raises the question when the connection between these two paragraphs was made. Was this connection already present from the moment those paragraphs were both incorporated in the document or was it only established later in the writing process?

The reconstructions of Troch's writing process show that he only made this connection explicit in the 24th writing session: on 27 August 2020, Troch adds to the narrator's description of Evelina in the tenth paragraph that she offered him a cigarette in the same way as she did after that first wink. Only now does it become explicit that the cigarette mentioned in the second paragraph is not just any cigarette. The particular memory would be of little interest without the recognisability of its general character, while the general statement would have been rather bland without the *couleur locale* of the particular memory. It is the combination that turns this into good literature.

Thanks to keystroke logging, it is now possible to see when the author made that connection. The nanogenetic analysis shows that this actually happened much earlier than session 24, namely in session 15: on 19 August 2020, Troch started this session by revising the second paragraph, making the description of the interaction between people more specific. Before the revisions, the paragraph stated in rather colourless, general terms that people used to greet each other, have a chat, and maybe even invite each other for a drink. After the revisions, the sentence specifies that people greeted each other, flirted with each other, offered each other a glass, and ended up in bed with each other. But there is no mention of the cigarette – yet.

After these revisions in the second paragraph, Troch continues making revisions, he adds new sentences to the story, and makes a decision as to the name of the narrator's partner: Evelina. He adds her name to a sentence in the tenth paragraph about imagining that she has just gone out to buy some cigarettes. Re-reading this sentence was therefore most likely the incentive for the subsequent revisions. Immediately after changing the name in the tenth paragraph, Troch moves his cursor back to the second paragraph to add: "shared a cigarette" and "winked at each other".

By means of the nanogenesis, we can infer that the addition of sharing a cigarette was triggered by the rereading of the sentence about Evelina. The moving of the cursor between these

revisions allows us to see that Troch made a connection between the sentences in paragraph two and ten in session 15, which means that he envisioned this relation long *before* this connection is made explicit in the text in session 24. In this way, the nanogenetic analysis provides information about how this cohesion in the text is established during the writing process and, indirectly, it may also shed light on the cognitive processes involved in (creative) writing as studied in writing studies according to models such as the ones proposed by Linda Flower and John R. Hayes.

In Hayes' 2012 model of the writing process, the various cognitive functions at work in a writing process are categorised as "proposer", "evaluator", "translator" and "transcriber" (371). The "proposer" is the part of the mental writing process that suggests an idea; if the "evaluator" agrees to it, the "translator" translates it into a linguistic form, after which the "transcriber" is activated to create the actual written text (Lindgren et al. 2019). The (external) text produced so far is, in Hayes' model (2012), therefore controlled by the internal transcriber. But as Lindgren et al. observe, the interaction between the text produced so far and the internal writing process remains ambiguous, and they state that there are dynamic ways in which the text produced so far may feed into the internal writing processes (2019: 348). After re-reading the text, the author might be dissatisfied with certain parts of it; in that case "the proposer would suggest a new idea that is evaluated and translated into linguistic form before being transcribed" (348). It is this "feedback loop from the text produced so far into the internal writing process and back again" that we see at work in the example above (348). Troch re-read the sentence about Evelina going for cigarettes in the tenth paragraph; this led to a suggestion of the "proposer" that is then being evaluated, translated into linguistic form, and eventually transcribed into the second paragraph. In other words, without the possibility to "enter the author's mind", the fine granularity of nanogenetic data does enable us to come closer to an understanding of the underlying cognitive processes.

Still, what the "proposer" suggested remains internal and the approximation of these internal cognitive processes may be asymptotic: we can come closer, but the curve may never meet the line at any finite distance. Numerous questions remain unanswered. Were the additions about the flirting meant to make this a personal memory, and did the "proposer" suggest adding the cigarette to the second paragraph after Troch was reminded that Evelina smoked while re-reading the tenth paragraph? Or was the second paragraph still intended as a general description and was the addition of the cigarette primarily proposed to indicate that smoking was also something typical of the past? Or did the re-reading itself prompt the idea of colouring the general description with a personal memory? Or was it something completely different? This indicates that even when we have access to nanoscopic data of the writing process, internal parts of the writing process can still not be fully understood. However, this does not diminish the fact that we can get closer to the writer's decision-making process than ever before.

## Conclusion: Levels of granularity

Whereas, at the beginning of the century, critics were pessimistic about the future of the literary draft as an object of research, recent developments in genetic criticism show that the shift from analogue to digital does not necessarily entail the disappearance of research data. Instead of a lack, there is sometimes an abundance of traces, and it is this new overload of information that we are learning to cope with. In the case of keystroke logging software applied to born-digital works, the data may not be “traces” but rather “records”, but what the resulting granularity of data opens up is a new level of nanogenetic research. The question now is how useful this nanogenesis is for genetic criticism.

First, it is simply a matter of *Dasein*. The author’s willingness to log their writing process constitutes unique data of this process, and with it, a unique opportunity for genetic criticism. To the question why he wanted to climb Mount Everest, George Leigh Mallory answered: “Because it’s there” (Green 2005; Van Hulle 2007: 12). In the same manner, we can argue that we should not squander this opportunity. The data is there, why not investigate its potential? Then again, is it relevant to know that at 5:54 pm, or 5:54 and 35 seconds to be pedantic, a writer typed the word “speling” and one second later corrected the typo? Probably not, but this is also not the reason why a nanogenetic analysis may be interesting for genetic criticism.









Second, to take on another metaphor, it is precisely a nanogenetic analysis that increases the probability of finding the needle, such as a meaningful revision campaign, in the haystack of keystroke logging data. To imagine the potential of this development, it is useful to end with a small thought experiment, supposing Franz Kafka would have written *Das Schloss* on a computer. At the draft stage, there was a remarkable shift from a first-person to a third-person narration. Dorrit Cohn examined the shift in the novel’s manuscript: “all *ichs* [are] subsequently deleted and replaced by *K.s*” (Cohn 1968: 28). Cohn observed that “[t]he *K.* initial was for the first time directly placed into the manuscript toward the beginning of Chapter III of the published text, in the course of the first dialogue with Frieda in the bar of the Herrenhof” (29). She therefore argues that (the difficulty of) the writing of this scene with Frieda may have invoked the shift in person, but clarifies that this is, naturally, not entirely certain: “it may well be that Kafka’s motivation for transposing the manuscript worked by slow accumulation rather than sudden insight” (41).

But if we, hypothetically, imagine Kafka writing *The Castle* on a computer and logging his writing process along the way, we may then also imagine gaining a better understanding of the temporal aspect of this *K.* revision. For example, we would be able to investigate the time that elapsed before the first *K.* appeared in the text – did Kafka pause before writing the *K.* or did it happen in one flow? We would be able to examine whether the first directly placed *K.* was written prior to the substitutions of the *ichs* by *K.s* in the manuscript or whether he started the first-person to the third-person revision before continuing writing the third-person narrative directly.

Cohn also tried to discover which other revisions in the relevant part of the manuscript could be connected to the *K.* revision. Only for three out of ten revisions that Cohn listed as

possibly connected with the *K.* revision was she able to tell with certainty that they were made during or after the *K.* revision. Trying to uncover this based on keystroke logging data would not cause any uncertainties since the order of the revisions would be extracted from the data. It goes without saying that this is only the order of the *actions* of the revisions and not an indication of the moment the *idea* for the revision came to mind. But nevertheless, the keystroke logging data reduce the speculative element when we make connections between writing actions. Why then would we rather dismiss than explore the potential of this unique type of twenty-first century draft?

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