

# Watch Me Write: Exploring the Effects of Revealing Creative Writing Process through Writing Replay

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## ABSTRACT

The written word is an asynchronous form of communication through which static texts are exchanged. However, the act of writing is a dynamic cognitive process in which evolving ideas are organized into a coherent narrative. This process is not shared with readers because they only see the final product. With the emerging culture of live streaming and sharing creative practice with online audiences, writing replays can be a new expressive medium and content for writers and another way to engage with reading for the audience. In this paper, we explore the benefits of watching a real-time writing replay. We recorded the writing processes of professional writers ( $n = 13$ ) and interviewed them about their and others' replays. These writers found replays engaging. Replays facilitated self-reflection and helped writers empathize with each other. In addition, we conducted an online survey ( $n = 78$ ) to compare readers' comprehension and perception of writing replays with those of traditional text. We found that writing replays enhanced user engagement and the perceived quality of the text for some writing styles. Participants from both studies considered using writing replays regularly.

## CCS CONCEPTS

• **Human-centered computing** → **Empirical studies in HCI**; Asynchronous editors.

## KEYWORDS

Live Streaming, Creative Writing, Liveness, Replays, Collaborative Writing, Live Writing

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## 1 INTRODUCTION

While it is standard practice for creators to share refined final products of their creative efforts with their audiences, they rarely share their creative processes. Recently, however, live streaming platforms such as Twitch and YouTube have fostered the emergence

of a growing culture of enthusiastic creative process streamers and viewers in music, gaming, programming, graphics, crafting, and even painting [11, 16, 20, 21]. Live streaming enable greater immersion, immediacy, and interactivity than is otherwise typically possible [20]. With the growing popularity of this online sharing culture in mind, we aim to investigate the effect of revealing the creative process of writing.

The act of writing is a dynamic cognitive process in which writers organize changing ideas into a coherent narrative [1, 13, 14]. However, most readers only ever see written works in a polished, final form. While polished writing may convey a story more effectively, a transparent view of its progression in the writer's mind is often missing from the final draft. We begin by examining if writers and readers will find watching real-time writing replays valuable and engaging, as replays afford them the chance to intimately experience this progression. In addition, we suspect that revealing the real-time writing process may decrease reading comprehension due to its dynamic information that unfolds over time. We aim to understand the effects of revealing the writing process to readers and writers by recording and replaying the processes of professional writers and playing them back for other professional writers and general audiences alike.

To that end, we conducted two studies: (1) an interview study ( $n = 13$ ) in which professional writers were asked to write a short essay and review both their own writing replays and those of other professional writers, and (2) an online survey ( $n = 78$ ) to investigate how watching a writing replay differs from reading static text. Our results suggest that writers consume watching replays as a content because doing so helps them reflect on their own writing practice and empathize with the author. For readers, writing replays in certain styles, but not all, could enhance readers' engagement level, though it can also harm reading comprehension. The contributions of the paper are as follows

- Insights on perceived values of writing replays from both writers and readers' perspective
- Understanding of challenges and benefits involved in watching writing replays
- Discussion of the potential for revealing writing process as a tool and a new medium

We anticipate that the findings of this study can motivate novel tools and media in various applications. Particularly, we discuss implications and potentials of using writing replays in the context of pedagogical tools, new artistic media for writers, change awareness for collaborative writing, and intelligent writing environments.

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## 2 RELATED WORKS

### 2.1 Revealing the Creative Process

The emerging culture of live streaming has drawn increasing interest from researchers. [20, 21]. Existing social media—Facebook, YouTube, Instagram—and novel platforms dedicated to live streaming, such as Twitch and Periscope, have enabled greater immersion, immediacy, and interactivity among viewers [18, 20, 24]. In particular, revealing the creative process has become a new trend on these social media and live streaming platforms [7, 9, 11, 12, 15, 16].

Researchers have studied on how sharing the creative process can improve our understanding of a work beyond what the final artifact conveys. For example, an observational study found that the process of creating something conveys information not found in the resulting artifact and is crucial for collaboration [48]. However, revealing the creative process to passive viewers (as opposed to collaborators) creates new challenges and opportunities for artists working with this burgeoning medium [15, 16]. While revealing creative practice can be an effective way to engage the audience, artists who host creative live streams have to prepare for making their creative process more performative. While our study does not involve conscious efforts from writers to make live creative streaming interactive and engaging (such as voice narration, behind-the-scenes preparation, and social interactivity through chat), we aim to understand how watching the creative process of writing in its inherent form—that is, when the writer’s intention is not to perform live writing—affects readership and how writers perceive the revelation of another writer’s creative practice.

Researchers found various motivations behind creators’ sharing creative practice or work-in-progress through live streaming or online communities: engaging with their audience in a novel way, or reaching out to new audience [7, 16], the desires to validate their own practice and collect feedback [27], being able to interact with those who are interested in the creative practice for finding potential collaborators [35, 44], and creating a new source for artists’ revenue [7, 15]. In the meantime, viewers of live creative streaming are likely to be those who take an interest in artistic practice, if not artists themselves [16]. Often times, viewers have explicit motivation to learn and seek for inspiration. The interactivity allowed in live streaming enables further interaction engagements that is not allowed in showcasing artifacts in a traditional setting [7].

The motivation of our study also stems from the theoretical background that the act of writing is inherently *dynamic*. Composition is a goal-directed thinking process where writers explore, develop, or regenerate dynamic ideas as they write [14]. Capturing this process has the potential to further engage readers or inspire other writers.

### 2.2 Recording the Writing Process in Real Time

Recording the writing process has been a nonintrusive and inexpensive method for understanding how writers write. Previous research involving writing replays has largely focused on their utility in pedagogy research, particularly research involving language learning and translation [8, 29, 39, 43]. Writing researchers have developed a number of keystroke logging applications to aid in their research, including InputLog [34], ScriptLog [46] and Translog [43]<sup>1</sup>.

<sup>1</sup>See [http://www.writingpro.eu/logging\\_programs.php](http://www.writingpro.eu/logging_programs.php) for an exhaustive list of keystroke logging programs.

In addition, keystroke data and visualization of writing activity can provide additional insights on a collaborative writing process. about a writing process. Many researchers suggested such keystroke visualization tools to understand how multiple writers co-write in a shared document [28, 51, 53].

While recording and revealing the writing process have been an effective way for researchers to understand how writers write and how collaborative writing occurs, the effects of watching writing replays have been underexplored in the context of written communication. A writing replay shows how a piece of writing evolves over time, offering researchers, writers, and teachers change awareness in its finest level as they investigate the creative process [47]. We hypothesize that watching the writing process via writing replays or live writing may be a new way of sharing writers’ creative practice or even a novel artistic medium through which readers can enjoy the temporal expressivity of the writing process [32, 33]. While dynamic and temporal playback of text has been extensively used in digital storytelling, interactive fiction (e.g., chat fiction [52]), and games, little is known about the effects of watching the traditional writing process, which we aim to understand in this study. In this regard, transaction data hidden in the real-time dimension of writing may provide rich information on writers’ states, and this information may be useful in communication, collaboration, and self-reflection.

Researchers also have focused on rich insights that one can get from recording fine-grained keystroke data for understanding writers’ activities and the history of a document. This approach can be particularly beneficial in the context of collaborative writing. Hill and Hollan developed one of the early works such that keystroke data is used to visualize editing activities that can facilitate reflection and understanding collaborator’s context [23]. DocuViz is a more recent example, which allows collaborators to understand who wrote where when by visualizing the document history [50]. DraftBack is a commercial tool that is directly related to this paper; the tool can render writing replays to comprehend the change history with visualization on a Google Docs document<sup>2</sup>. However, it is not clear what the effects of such replays are in the context of mental reconstruction or collaborative writing. In this work, we explore the benefits of writing replays that can be rendered with keystroke-level data in creative writing and recreational reading.

## 3 STUDY I METHOD: WRITERS’ PERSPECTIVES OF WRITING REPLAYS

In Study I, we aim to understand how professional writers perceive the act of recording and replaying the writing process. In this section, we introduce the details of the interview study with professional writers.

### 3.1 Generating Writing Replays

Interviewees were shown replays of their own writing and those of other professional writers. Before conducting the interview study, we recruited five Master of Fine Arts (MFA) students in the Creative Writing program at our university and asked them to each write one short essay and one piece of short fiction (approximately

<sup>2</sup><https://chrome.google.com/webstore/detail/draftback/nnaioemfpldioamchanognpjmocgkbg?hl=en-US>

Index	Gender	Age	Occupation	Writing experience
W1	Female	25	MFA student in creative writing	fiction, copywriting
W2	Female	26	MFA student in creative writing	poetry, fiction, nonfiction
W3	Female	44	Freelance writer	nonfiction, journalism
W4	Female	24	Writer	music journalism, poetry
W5	Female	61	Journalist	tech writing, journalism
W6	Female	30	Freelance writer	comedy, television scripts
W7	Male	44	Visiting assistant professor in rhetoric	academic writing
W8	Female	47	Reporter	nonfiction, journalism
W9	Male	62	Writer	wine journalism, magazines
W10	Female	35	MFA student in creative writing	poetry, nonfiction, high school English teacher
W11	Male	25	Video editor	comedy, script writing
W12	Female	29	MFA student in creative writing	fiction, blogging
W13	Female	30	MFA student in creative writing	art journalism, nonfiction, fiction

**Table 1: Information on interviewees in Study I**

400 words each, in less than 30 minutes). We used the Live Writing library (See Figure 1), which extends an editor with recording (keystroke logging) and replay functionality in a video player-like interface [32]. This interface allows a reader to navigate a replay by scrubbing along the timeline and watch the replay at different speeds. The MFA students were asked to use the platform for writing, but they were blind to the function of the editor which record all their keystrokes and mouse interactions. We believed that explicitly disclosing the replay function of the editor could have influenced the way writers wrote, as commonly seen in usability studies [36], and we would like to minimize the potential impact on their naturalistic writing by making them blind to the purpose of data collection. The task setup reflects the setup of the timed impromptu essay writing which is a common pedagogical method in writing education from elementary school through post-secondary education (e.g., GRE analytical writing, TOEFL test) [17]. In addition, if writing replays or live streaming writing becomes a new medium for writers, the duration of writing is likely to be shorter and in a form that can be consumed in the unit of minutes or hours at most. After collecting this data, we presented the writing replays to their respective authors and asked if they would be willing to share the replay data with us for the online survey study. We compensated them for their compositions with \$40 electronic gift cards.

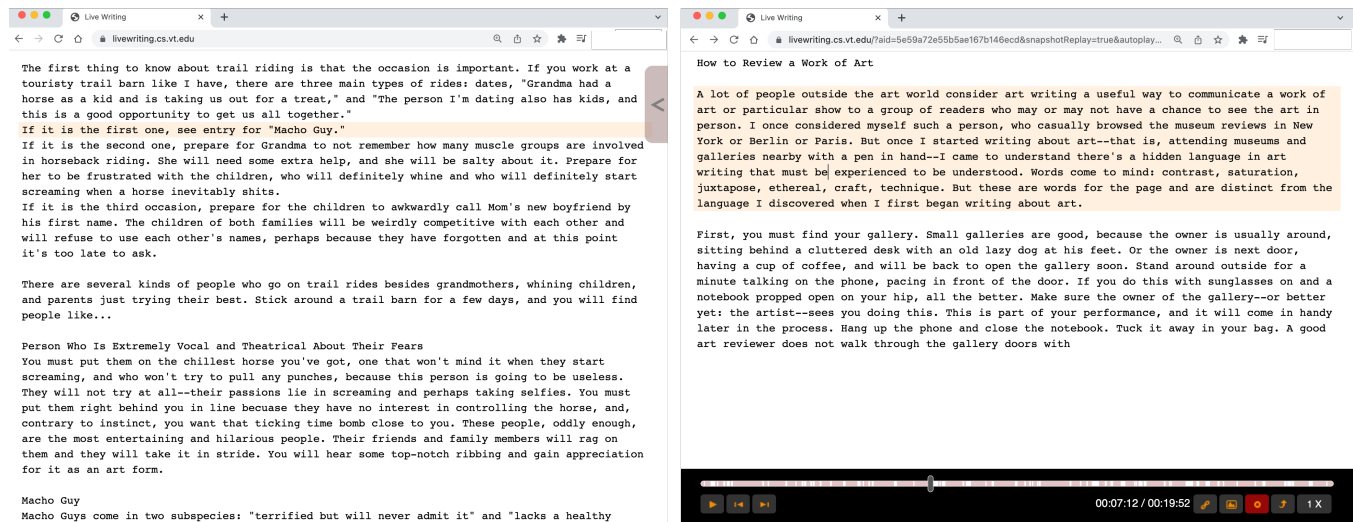
### 3.2 Recruiting Professional Writers

We recruited professional writers for the interview study from Twitter, Facebook groups, and our university’s mailing list, as well as the writers that participated in generating writing replays in 3.1. In the recruitment material, we specified the eligibility criteria that we were recruiting “professional writers,” defined as those whose work has been published (whether as a first author in journal, as part of a book, online, or for internal company documentation) in exchange for monetary compensation (either directly for a piece or in the form of a fellowship, grant, or stipend as part of a job, academia, graduate school, etc.) for writing within the last two years. We screened writers based on their availability and experience, ultimately recruiting 13 professional writers with various backgrounds. Each writer’s background is given in Table 1.

### 3.3 Study Procedure

Prior to the interview, interviewees were asked to write a short essay or piece of fiction (approximately 400 words in no more than 30 minutes), a prompt for which was given on the Live Writing platform (See the writing interface in Figure 1-Left.). The provided prompts are available in Appendix A.1. For the same reason specified in 3.1, writers were blind to the editor’s record-and-replay function. Inevitably, we could not randomize the order of writing and watching replays as knowing that the editor will record the keystroke replay may change how they approach their writing.

We conducted a 90 minute-long interview (via remote video call due to the pandemic) with each writer. The interview was semi-structured, and the first author conducted the entire interview. During each interview, we first asked questions about the interviewee’s writing practice (A.2 (1–6)), then asked them to read their submitted text and reflect upon the writing experience (A.2 (7–8)) before watching the replay of their writing process. After the interviewee viewed the replay, we asked questions about how watching replays was different from reading static text, and about what the interviewee recognized when watching their own replay (A.2 (9–17)). Additionally, we randomly chose one other writer’s text from the collection from 3.1 and asked the interviewee to watch the corresponding replay. Then, we asked questions about what they felt about watching another writer’s replay and how it differed from their own (A.2 (18–24)). Finally, we asked general questions that sought to understand the value that the interviewee perceived in using recording and replays in writing practice. The interview took approximately two hours and we compensated the interviewees with \$40 gift card for their participation in both writing and interview. The following is the summary of the study procedure. All interviews were recorded and the first author transcribed the interviews. Both authors then iteratively conducted thematic analysis—open coding and axial coding on the transcripts until they agreed on codes and emerging themes [5]. The entire procedure of the study was reviewed and approved by the internal review board at the authors’ university.



**Figure 1: The screenshots of Live Writing used in the user study [32]. (Left) The editor for writing has a minimal design with a text area where one can type. (Right) The replay interface. It is modeled after a video media player. It has a set of UI widgets that readers can use to skip part of the replay and change the playback speed. The website is available at <https://livewriting.cs.vt.edu>**

## 4 STUDY I RESULT: WRITERS' PERSPECTIVES OF WRITING REPLAYS

### 4.1 Writers Consume the Process in addition to the Written Artifact.

Of the 13 writers interviewed, all 13 expressed engagement with watching writing replays. Writers differed in their reasons for why they were engaged. Some writers (5/13) simply expressed interest in the novelty of writing replay, stating that they had “*never seen anything like that*” (W3) before. This engagement came not only from watching others’ replays, but also from their own replays. Many participants gave examples of watching a writer making choices in the moment, rather than the content itself, to account for why they felt engaged.

- (W8) “*You could see in the writing... the thought process. [Thinking] ‘Is this sentence complete enough?’ and then going back and not rewriting the whole sentence, but just a key word that made it better. So there was a thoughtfulness in the editing process, and it was pretty clean.*”
- (W10) “*[after watching her own replay] I love that. It was really interesting. [...] I think the editing afterwards was especially interesting to watch because it was a lot of added details and it was moving out sentences. It was adding more syntactical variety. So it’s very entertaining to see all of that happening, even though I know I do it.*”

Writers considered writing a “*very personal*” (W11) process, meaning that they rarely see other people writing in real time, save for a few people in classroom settings. Similarly, none of them had previously seen a recording of their own writing process. In that regard, watching replay provided novel content that they were interested in; namely, the writing process as it unfolded.

### 4.2 Revealing Imperfections Fosters Connections with the Writer.

Some writers expressed interest in an enhanced sense of connection with the author or with themselves. Of the 13 participants interviewed, nine expressed a sense of connection with the author in multifaceted ways. Here, we present some prominent themes.

**4.2.1 Revision and mistakes fostered empathy.** A number of participants expressed that watching other writers make edits and mistakes helped them connect with other writers. Writers empathized with other writers, watching them struggle through the writing process in the same way they often do themselves.

- (W7) “*It was interesting to see this person almost second guessing themselves in certain parts of the writing... I think sitting down this person and viewing this and having discussions like that would strive to make this person a stronger writer... I sense there might be a little empathy that might not have been there had I just seen the finished project.*”
- (W13) “*It looked like she [the writer] was beginning a sentence one way, and then changing her mind and then beginning it a different way, and then changing her mind and then beginning again, which is something that felt really familiar to me.*”

By watching others’ replays, writers were able to reflect on their own practices and empathize with their fellow writers in the replays. Writers were able to quickly connect to the creative efforts which the other writers were putting into their work, finding the experience of those real-time efforts “*comforting.*”

**4.2.2 A writing replay humanized its author.** Of the nine writers who expressed a sense of connection with the author of a replay, three additionally expressed that the replay humanized the replay’s author. Readers generally only interact with writers through polished final drafts, so writers often give the impression that they

are naturally perfect at organizing and presenting their thoughts. Writing replays interested these participants because it allowed them to watch writers make mistakes, allowing the participants to see the author's process as messy and imperfect, like their own. The following comment reflects writers' interest in watching writing replays.

- (W3) *"I think it would give you more of a sense this author is a real person. Because most people only see the finished product after it's been edited by multiple people, it's been slaved over for months, and I think the average reader—including professional writers—we get the impression that everyone else is better at this than we are. We know the process we've gone through to get a good, finished piece, and yet we have a hard time remembering, sometimes, that other writers are going through that exact same thing. This did not leap from their head fully formed. So I think as a writer, it's comforting to see that process play out. It assures you that you are not alone."*

Seeing the imperfect nature of others' drafts allowed participants to find common ground and a comfort zone in which the other writers and they reside.

### 4.3 Writing Replays Promoted Liveness and Offered New Expressive Dimension.

Out of the 13 participants, 7 expressed a sense that writing replays felt more live than traditional static writing. One participant (W8) noted that watching the replays felt like they were *"having a conversation with the writer"*. Most of these expressions came in the form of comparisons to audible forms of media, including audiobooks and film.

- (W10) *"I think there's something to listening to a piece and reading a piece as it appears on screen that are similar. Like listening to an audiobook you don't know what's going on."*
- (W12) *"The writer doesn't know how it's going to end. I don't know how it's going to end. I'm just watching the story unfold. Nobody knows what's going to happen."*
- (W1) *"I certainly feel a stronger connection to a work I've seen play out in scene and be created... I get a greater understanding of this piece by seeing the individual steps and the individual decisions. You are right there beside them watching this happen. And I think there's a strong connection... To the creator, the piece—both."*

It is interesting that W1 expressed that they felt the sense of being there – or *presence* and felt that they felt connection to both the story and the author. Indeed, the writing process was *live* at the time of recording, and the participants were excited by the idea of watching a story unfold in front of them without being able to see what comes next, understanding the impromptu nature that the author had at the moment. One of the central causes appeared to be the continuous visibility—which is part of the definition of liveness [30, 31]—offered by the medium, even though the medium was technically not live because the replays did not occur at the same time as the writing itself.

Even though the writers who generated writing replays while participating in this study were not aware of the fact that readers would watch their replays, the results demonstrated the potential for a writer to imbue the playback with suspense, humor, or

thoughtfulness. A few writers found the temporal dimension of writing particularly interesting:

- (W10) *"I didn't want to skip the inactive parts. Yeah, I wanted to see where the stalling happened. I think one thing I was interested in is whether certain phrases poured out faster. [...] And so I was interested in seeing where those long pauses were and in seeing what, what phrases just flew out, I'm sure."*
- (W7) *"It was strange at first, but within the first couple of minutes, that strangeness turned into more curiosity, and then looking at my process, and seeing how things are happening at semi-regular cadences was... I found it very interesting, and that was something I never even considered before doing this study."*

Interestingly, the temporal dynamics of writing replay encouraged other writers to read writers' emotional and cognitive states that manifest from the replay.

### 4.4 Writing Replay Facilitated Self-reflection.

In response to the question asking if writers learned anything new about their writing practice from watching their own replays, 7 of the 13 participants recognized writing habits in themselves which they were not previously aware of. Many of them were especially surprised how much effort they put into finding the right expressions through writing, deleting, and rewriting a passage until it *"works"*.

- (W2) *"I don't know that I self-identified that before: that I pay a lot of attention to word-level choices, probably way more than large scale structural choices."*
- (W12) *"I can actually see how my brain works... I didn't know there were so many corrections I do on the spot."*

These participants were both startled and pleased to discover that despite the fact that writing was their profession, seeing their writing processes played back helped them glean new insights about their processes.

Furthermore, watching others' replays helped some writers (5 out of 13) notice how drastically one writer's style can differ from another's, allowing them to reflect further on their own process by examining the contrast. Most of their observation was on the temporal and structural dynamics that were manifested through the replay—how linearly or how non-linearly others write

- (W2) *"I never would have thought anybody would write like this. [...] I don't know why it's so shocking, but it's just so different from mine. It was really cool to see this style of writing. I thought it was kind of cool to see how much it changed, and to, like, see someone jump around their piece so much. I wouldn't do it, but it was cool."*
- (W3) *"It was definitely more linear than mine. It seemed more in line with what people probably think writers do, which is just to sit down and type it out. I was surprised, also at the end, that the writer didn't seem to go back and do any overall edits—they were just done. But it was a great piece of writing. It was surprising."*
- (W13) *"I thought I was reading a poem. And then, I realized that it was a sequence of events in a linear timeline from beginning to end. And it took me a while to figure out what notes were about the conflict and notes to self [the author in the writing replay]. So that surprised me. It surprised me that the details didn't come*

*with the first run through, but it looks like she went back and added extra details to each section. So that surprised me because [writing in detail] is the kind of thing that I do on a first run."*

When asked if what they saw in watching the replays of others made them want to adjust their own writing practices, few participants said they would change anything. However, it clearly brought more awareness to their own practices and the ways in which they can differ from those of other writers. Particularly, writers recognized how other writers temporally organize their writing differently from themselves e.g., linear and improvisational vs. nonlinear and structured. This suggests that watching writing replays could be a powerful tool for self-reflection, enabling a writer to better understand their own style and process and to perhaps discover novel ways of writing.

Indeed, seven of the 13 participants interviewed wanted to incorporate watching writing replays in their own writing practices. Writers suggested this could take a number of forms, from self-reflection to reviewing purpose.

- (W2) *"It was easier for me to spot [key details] versus when I was just on a page. So I would use [writing replays] drafting-wise."*
- (W7) *"I could see people that write for a living, like I do, using something like this much in the same way a football player will watch a film of themselves throwing."*
- (W6) *"It's a shortcut to what's going through your brain as you're writing. If I were editing something that I wrote a year ago and I was like, 'what was I trying to do with this chapter?' I think it would be useful to go back and watch the playback."*

The writers found that watching their own replays was effective in helping them reflect on their writing. The method of retrospection often used in human-computer interaction lend further support this idea of facilitating reflection [40, 41].

## 5 STUDY II METHOD: READERS' PERSPECTIVES OF WRITING REPLAYS

The goal of Study II was to understand the effects of watching a writing replay in reading and how it influences readers' comprehension and perceptions of a work of writing. We sought to understand how watching a replay can affect readers engagement and their perceived quality of a work. In addition, we aimed to understand how it can impact reading comprehension. Particularly, it can be argued that watching someone in the process of writing may adversely affect reading comprehension. Writing replays are mutable and dynamic; any text that is written may later be deleted or changed, and the writer may jump around to different parts of the piece while writing. To that end, we conducted an online survey where we asked participants to read four different written works (two short, fictional stories and two short essays) collected in Study I.

We created an online survey featuring the four pieces of writing we chose from Study I (T1–T4). We limited the number of pieces to four so that there would be a sufficient number of responses per text for a between-subject study. The first author has been teaching writing classes as part of a Creative Writing program for three years at the author's university and selected the four pieces of writing used in the study based on its quality as a recreational reading piece for general readers and diverse approaches emerged in its

replays. As part of the survey, the first author produced four reading comprehension problems (See Appendix A.5) per piece for the reading comprehension test. The reading comprehension score is the proportion of correct answers on this test, with 0.0 representing no correct answers and 1.0 representing correct answers to all 4 questions. We refer to each text using the following labels: T1 ("How to review a work of art," essay), T2 ("Horse Riding," essay), T3 ("Rising from bed," fiction), and T4 ("Jewel Case," fiction).<sup>3</sup>

The survey began with an interactive tutorial that taught participants to play a recording, pause it, skip inactive writing periods, and change the playback speed within the replay editor. They were allowed to use any of these functions during the online survey. The editor playback left in inactive writing periods by default and readers had the option to see a chart with the number of additions and deletions in the replay over time (Figure ??-Right). For each participant, two pieces of writing were randomly selected to be presented as static text, while the other two were presented as writing replays. Each participant thus read each text in only one format, making this a between-subjects study per text. We presented the four pieces in a random order, and we presented reading comprehension questions after each piece of writing. Readers were instructed to spend as much time on the survey as they needed, but they were not allowed to revisit a text after advancing to the reading comprehension questions.

To minimize the potential influence of respondents perceiving the reading process as a test (or exam), and to situate them in the context of recreational reading, the survey respondents were informed that the goal of the study was to understand the effects of watching writing replays, not to assess their reading comprehension ability. For the same reason, participants were not told whether they had answered the reading comprehension questions correctly.

As part of the online survey, we asked 5-point scale questions about the engagement of each piece ("How would you rate your level of engagement with this passage?"; 1 = not at all engaging, 5 = completely engaging) and the quality of the piece ("How would you rate the quality of writing in this passage?"; 1 = poorly written, 5 = very well written). We asked participants to evaluate the text in two distinctive ways because we were not sure where readers would discover values from watching writing replays—they may feel more engaged or they may value the writing more or less due to the form in which it was presented. Lastly, we asked follow-up questions about participants' format preferences (replay vs. static text) and inquired about the pros and cons of watching writing replays.

We recruited 100 participants from various university mailing lists. Eligibility criteria for the study included age (18 years or older) and fluency in English reading. All participants were compensated with an electronic gift card (worth \$9) for their time. The average age of the subjects was 28.2 ( $\sigma = 6.8$ ), ranging from 19 to 59. 53 of the participants were female, 46 were male, and 1 identified as nonbinary. Once all participants had completed the survey, we excluded responses based on answers to attention-check questions and survey completion speed (e.g., all responses completed at a

<sup>3</sup>A static version of each text is presented in the Appendix A.4. The writing replays are available at the following URL: [https://livewriting.github.io/cc2022\\_writingreplay.html](https://livewriting.github.io/cc2022_writingreplay.html).

speed beyond human reading capability were removed) [2]. In the end, we were left with 78 responses.

We conducted thematic analysis on the responses to the open-ended questions at the end of the survey [5]. The first author initially reviewed and qualitatively coded the responses. In a series of meetings, all authors then discussed and combined the codes iteratively until they agreed upon the codebook, leading to the emergence of recurring themes identified from the codes. The entire study was reviewed and approved by the internal review board at the authors' university.

## 6 STUDY II RESULT: READERS' PERSPECTIVES OF WRITING REPLAYS

### 6.1 Not All Writing Replays Enhanced Engagement Levels or Harmed Reading Comprehension.

We ran Kruskal-Wallis tests on engagement scores and perceived quality scores; the results are shown in Table 2. We found that participants were most engaged with one of the replays (T3). Based on the engagement scores, participants found it more engaging to watch the writing replay for T3 than to read it as static text, and this difference was statistically significant ( $p < 0.05$ ). Although not significant, a similar tendency was observed for T2 ( $p < 0.1$ ). While we do not understand what about this particular text (T3) facilitated the increase in perceived engagement when watching the replay, the result demonstrates that revealing the creative process of writing with readers has the potential to engage them beyond the potential inherent in the content itself. However, this effect was not consistent across texts, and the effect on engagement levels of watching replays varied. The difference in engagement was not statistically significant for the other pieces (T1, T2, and T4). From these results, we can infer that some component or property of T3 contributed to the difference in engagement scores. This suggests that the way in which a text is written can positively affect readers' level of engagement with the text.

Similarly, the effect of watching replays on reading comprehension was not consistent. Our results indicate that watching replays can negatively impact readers' experiences in some instances, but not always. Watching the writing replay negatively impacted readers' comprehension of the text for T4 ( $p < 0.05$ ). Apart from this case, we found no evidence that watching replays negatively impacted readers' comprehension of T1, T2, or T3. However, the perceived quality of T4 was lower when participants watched the writing replay versus when they read the static text. This difference was statistically significant ( $p < 0.01$ ). In 6.2, we discuss why watching the replay lowered the perceived quality of T4 and readers' comprehension of this text relative to the other texts.

### 6.2 How Writers Develop the Story Matters: The case study of T3 and T4

Our search for potential reasons for the differences in engagement, perceived quality, and reading comprehension scores in Study II was confounded by many factors: genre, preparation, spontaneity, rhetoric, content, pacing, eloquence, and so on. We observed the replays carefully to understand potential reasons which might

account for the differences in engagement and reading comprehension. One characteristic that apparently differed between two replays (T3 and T4) was the extent to which the authors linearly developed the stories. For example, the replay of T4 was detrimental to reading comprehension; this may be attributable in part to the author's nonlinear manner of writing. Not only was T4 nonlinear, but the author began by typing a series of brief, agenda-like notes at the top of the page before proceeding to write the actual text. These notes summarized the plot of the story and would have made sense to the original author, but they made no sense to the readers as they were intended to serve as narrative "landmarks" for the writer. Most readers likely found these plot notes confusing because it was unclear how they would be used, how they were related, and what they represented. Here is one comment that is relevant to this non-linearity in writing and shows how it might have affected their reading experience.

- (P38) *"I had to keep rereading passages [of T4] to remember what was going on in them when the author returned. When the author created an outline before writing, it ruined the suspense of the story or sometimes confused me. I was concerned when the 'reading comprehension' part came up that I would remember old facts that had been deleted or revised."*

Meanwhile, T3, which showed an increase in engagement level, was written fairly linearly and with little revision. Some participants' responses after reading T3 accurately demonstrate the nature of the live evolution manifested in the replay. Here we share one comment from a participant who directly compared T3 with T4.

- (P41) *"With the video replay, you observe the text being written 'in real time,' which makes it difficult to read in numerous ways. With the first video replay [T3], while the typing was nowhere near as wild as the second video replay, it still was a 'stream of consciousness' in terms of presentation - in that it feels like you are following a person speaking, almost. With the second video replay [T4], it was erratic and hard to follow since the text was being manipulated constantly, throughout the page, and text was being rewritten after being completed before, passages were deleted, and extra information was being presented that served no purpose. With normal text, it is clear that the final product was what was desired so there is no 'in process' work being displayed."*

Notably, the author of T4 deleted the agenda-like notes and replaced them with actual passages; this may have confused readers.

We wondered whether the effects of nonlinearity might also be associated with specific genres of writing—T4 was a work of fiction in which the narrative unfolds sequentially, without a clear thesis and a series of subordinate points independent of each other. One participant who read T4 as a writing replay left a comment reflecting this concern:

- (P75) *"The 'serial' nature of narration [in T4] is not maintained, that's a little unsettling. If you did not go back to edit what was previously written, it would not be so bad"*

Therefore, the fact that T4 had autonomous paragraphs operating within a clear structure might have hindered the effect of the replay format on perceived quality and reading comprehension. Participants may have assessed T4 to be of lesser quality because they were confused by its writing process.



Text	Type	Writing Speed (WPM)	Engagement		Perceived Quality		Reading Comprehension	
			Replay	Static	Replay	Static	Replay	Static
T1	essay	37.6	2.76 (0.93)	2.68 (0.84)	3.16 (0.96)	3.59 (0.8)	0.82 (0.23)	0.87 (0.19)
T2	essay	21.8	3.0 (0.99) <sup>+</sup>	2.64 (1.06)	3.03 (0.65)	3.10 (0.91)	0.78 (0.22)	0.74 (0.29)
T3	fiction	31.4	<b>3.36 (0.99)*</b>	2.87(0.98)	3.51 (0.85)	3.41 (0.79)	0.85 (0.23)	0.92 (0.16)
T4	fiction	14.6	2.52 (1.09)	2.71 (0.87)	3.03 (0.86)	<b>3.44 (0.89)**</b>	0.78 (0.23)	<b>0.88 (0.19)*</b>

**Table 2: The result of online survey study. We evaluated four texts (T1–T4) in terms of writing speed and nonlinearity and applied a Kruskal-Wallis test to the online survey results (+  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ ). For T3, the group that watched the writing replay felt more engaged than the other group. For T4, the group that watched the replay had lower reading comprehension scores and gave lower perceived quality scores than the static group.**

While we speculate that linearity in the writing process may effectively safeguard readers’ engagement, there exist many relevant factors: genre, preparation, spontaneity, rhetoric, content, and so on. Further research is needed to better understand which factors of the writing process influence readers’ engagement, their comprehension, and the perceived quality of a work.

### 6.3 Readers diverged in their assessments of writing replays.

We asked readers which reading format they preferred. Among 78 participants, 24 of them (30.8%) chose the replay format, 50 of them (64.1%) chose the static format, and 4 of them had no preference. Given the participants’ unfamiliarity with writing replays in general, we believe the proportion of those who preferred the replay format demonstrates the potential for writing replays as a new medium for reading. Below, we present the results that emerged from the open-ended questions.

**6.3.1 The “erratic and fluid nature” (P76) of replays can be engaging, yet distracting.** Aligned with our own motivation, many of the participants (29/78, 37.1%) identified being able to “witness the creative process” (P62) as both a pro and a con of watching writing replays. The following comment from one participant describes their engagement with the writing process:

- (P26) “The pros are that you can evaluate the natural and organic thought progression of the author, understand their initial thoughts, and see the progression to the final presentation of the passage. I think that also gives a lot of meaning to the text and unveils the author’s truer feelings or notions about the topic.”

However, watching this creative process in action involves having to comprehend nonlinear, explorative, and unpolished edits. A significant number of participants (43/78, 55.1%) found this confusing, distracting, or even “annoying.” In particular, going back and forth between different parts of the writing was detrimental to not just comprehension, but also immersion in the story.

- (P25) “The first section [T4] was confusing to read the editing as it was happening live. I preferred the second video [T3] that was just written out live.”
- (P12) “Watching a replay [T2, T4] is very confusing and the going back and forth disrupts the flow of the reader to understand what the piece is about.”

These participants had trouble keeping track of where writers were making edits; this, in turn, made it difficult for the readers to keep track of the narrative.

We believe that if the writers can “perform” writing in a certain way—typically linear, but dynamic—this real-time process can create engaging, comprehensible, and immersive reading experiences. A few participants (3/78), all of whom watched T3 in the replay format, mentioned that because it revealed the text gradually, the replay was able to produce suspense.

- (P58) “the pros of watching a replay is like watching a movie. you don’t know what’s going to happen. the suspense.”
- (P19) “I enjoyed the sense of suspense I got waiting for the text to be typed.”

This result shows the potential of recording writing as a performing art and watching a replay of it as a new expressive medium that static text does not afford.

**6.3.2 Watching replays is time-consuming, but it may make reading easier.** A considerable number of participants (21/78, 26.9%) complained that watching writing replays is slow, time-consuming, or daunting. Although participants could theoretically have addressed this by adjusting the playback speed, which was explained in the required interactive tutorial, it seemed that many participants were unable to find the optimal pace at which to watch a replay.

- (P16) “waste a lot of time. I wouldn’t read in a video replay form unless I have a very strong motivation for it.”
- (P24) “Watching a replay - Replay speed could be slower or faster than my own pace of reading, which isn’t going to be the same speed throughout depending on the level of understanding texts.”

Evidently, reading text at the same pace at which it was written may not be ideal simply because of the disparity between the average human reading speed (150–250 WPM) and writing speed (average WPM across T1–T4: 26.4). However, even when readers adjust the playback speed, understanding what reading speed would be ideal remains a separate challenge due to individual differences, large variance of writing speed within a replay, as well as the temporally and spatially dynamic nature of writing. Some participants (11/78, 14.1%) who preferred static text stated that they preferred it because they could read at their own pace. The above comment from participant P24 accurately reflects this challenge. While the expressive potential enabled by the temporal dimension of writing



replays presents an exciting opportunity for writers, reading at the pace of real-time writing can limit engagement.

Even so, the potential existence of a distinct perfect pace for each individual was implied by some participants' contradictory responses. Twenty-eight participants (35.9%) mentioned that the way the real-time replay revealed text gradually over time made it easier to comprehend and follow the text. The following responses exemplify such perceived benefits.

- (P51) *"Normal text is easier to just start to gloss over and skim, but watching a replay is more akin to listening to an audio book, where the speed is 'set' and you have to soak in every word, which aids in comprehension."*
- (P27) *"I could set the pace to where I wanted. It was really cool to see the story adapt with the edits in real time. It wasn't daunting or exhausting to see the whole passage and think 'ugh I have to read all this.'"*
- (P71) *"You can't read too [far] ahead with a replay—you have to live in the sentence you're on. You can't get ahead of yourself. It kind of helps you focus more in a way."*

Not immediately showing the whole text and instead revealing it incrementally helped to capture some readers' attention. There seems to be a similar effect in *"listening to an audiobook"* (P51), where the narrator controls the listening pace. However, some people found the extra work of fine-tuning the setting for a perfect reading experience to be a flaw in writing replays.

## 7 DISCUSSION

### 7.1 Differences in Writers' and Readers' Attitudes towards Writing Replays

While there were some common responses from both writers and readers, we noticed that writers generally had a more favorable view of writing replays than did readers. Again, we believe this is because the writers were able to find value in simply watching the process itself, beyond (or even without) comprehending the text per se. In addition, the connections that the writer group was able to make with the replays' authors seemed stronger than those which the reader group made. This indicates that for those who write, a replay is a novel way to consume both a written artifact and the process of creating it. This tendency is aligned with the previous finding that those who watch live creative streaming are often themselves creators who are motivated to learn and get inspired [16]. Therefore, writing replay, as it is, can be a new form of content that writers would not only find entertaining to watch, but also enjoy as a tool for reflection.

### 7.2 Revealing Writing Practice to Help Other Writers and to Engage Their Readers in Novel Ways

One implication from the study that we found is that, similar to the motivation of watching live streaming, viewers can engage with writing replay content when they are writers themselves. This tendency is similar to previous findings that show the most common motivation among viewers who watch live streams of creative practice was to learn and get inspiration from the live streaming content [16]. In that regard, we argue that writing replays can be a

great resource that facilitate self reflection, learning from others, and perhaps inspiration for the viewers to pursue their own creative practice. Many participants from both studies actually mentioned the potential of writing replay as an educational resource. For example, if an instructor live writes or shows replays in a classroom setting this could encourage students to reflect on their own writing practice and initiate a discussion about how writers approach writing differently.

Another future work is to gauge if writing replays can elicit feedback on the writing process that could not be given about to traditional, static works of writing. This question can be explored in pedagogical settings and online creative collaborations. The one distinctive characteristic of writing replays is that writer-viewers can focus on the creative process as opposed to the outcome. Many process-centric creative practices—which typically incorporate audiovisual media—are shared in various online communities to receive feedback and enable creative collaborations [27, 35, 37]. We anticipate that writing replays could promote a discourse about writing practice, beyond the traditional critique of static, work-in-progress written artifacts.

Lastly, writing replays can provide different behind-the-scene content for readers, especially when readers are already familiar with the content or the writer. A parallel practice may be making behind-the-scene footage for movies production, especially computer graphics or visual effects to show the performers' efforts. Writing replays provide a new perspective, may create additional content to original written artifacts, and could provide fans with an additional way to connect with their favorite writers, which can be combined with emerging social media of subscriber-exclusive content in fan-based services [4]. Recently, near the time of publishing this paper, we found an online application<sup>4</sup> that encourages readers to connect with their favorite poets by watching writing replay, much like this paper.

### 7.3 Temporal Dynamics as a New Expressive Dimension for Writers

The results of two studies highlight the potential for writing replays as a novel expressive medium for writers. In the setting in which writers take advantage of this new medium, since writers would be aware of how their writing would ultimately be presented to readers, they may be able to exploit additional dimensions for expressivity: *temporal*—when to write or at what pace; *spatial*—where to write (at a given moment); and *editorial*—what, how, and when they edit, revise, and delete. For example, various types of emotions (e.g., calmness, outbursts, rage, hesitation, confusion, reluctance) connected with the semantic meaning of the text can be presented through variation of input and pauses between letters, words, and sentences. We also believe that nonlinear edits could be intentionally used to help readers become more emotionally involved in a text and heighten the drama. For instance, extra details added to the earlier part of a text in the later stages of writing could be used to change nuances in recollection, or even to construct a reversal of the plot.

In practice, we anticipate that writers will be aware of the live nature of new media and understand the differences in how audiences

<sup>4</sup><http://www.midst.press/read>

experience writing replays or live writing compared to static text. Writers' awareness of the medium, we believe, will change how they approach writing and create a new channel through which writers can engage with readers [33]. This potential motivates a future work which could study how writers change their writing practices when the presentation medium is a replay or when they live stream their writing practice.

## 7.4 Playback as a Reading Aid

We witnessed that some readers from Study II found writing replays to be a useful tool for helping people to read, due to the incremental mode of presentation. This benefit is similar to the effects of using animation to provide only the information necessary at a given moment to reduce information overload and help students sustain their attention [3, 22, 25]. The developers of a chat fiction app called *Hooked*, which is similar to writing playback in a way that the story unfold gradually and dynamically, found that most of their target audience of teenagers failed to finish ordinary 1000-word excerpts, though they read through stories of the same length written as text message conversations [19]. In this regard, writing playback has the potential to create a new type of reading aid, augmented by the author's live thought process and expressivity.

However, finding the perfect presentation rate for each individual may not even be possible, given the dynamic pacing that a writer may employ depending on their style. We believe that we can computationally pace playback for reading comprehension and normalize the variability of intervals without losing the dynamic aspect of the writing process.

## 7.5 Mining Keystroke Data for an Intelligent and Collaborative Writing Environments

Keystroke data collected in a writing replay can be used to assess not only the style of a given writing practice, but to discern which stage of the process the writer is currently in. Researchers have used keystroke data for various purposes, from modeling human performance [6] to recognizing users' cognitive loads and emotional states [10, 42, 45, 49] to identifying individuals with biometrics [26, 38]. Keystroke data, in conjunction with the content of writing, can provide rich information about the state of a draft of writing.

We can infer from our interviews (A.2 –(6)) with participating writers that the most desirable design and features of a writing environment vary depending on the stage of writing. Some writers stated that they used pen and paper during the ideation stage and then switched to a computerized writing environment with minimal functionality to reduce distractions before transferring the text to a more advanced word processor for final publication or further collaboration. Analyzing keystrokes can be useful to create adaptive writing environments which provide different functions depending on the stage of the process. For example, writing environments could be minimal in early stages of the drafting process and provide formatting functions at a later stage.

Lastly, this temporal writing data may be useful in a collaborative setup: a change log that is available for replay can be useful for collaborators to understand the original content, know what stage the document is in, and have better change awareness [47]. Showing the replay of someone may be beneficial for learning context

but may not be practical because of the time investment required to watch it and confusion which it generates. Therefore, analyzing and representing the rich data that emerges from writing replays could be a new research topic in the context of collaborative writing. This kind of writing activity visualization has been used in collaborative writing setups [23, 50]. We further the ideas of Summarizing the history of writing replay or indicating the writer's state. We believe there exists a design space for an intelligent awareness cues in collaborative writing for suggesting cues to understand the collaborators writing states and facilitate coordination among writers. Based on these ideas, we plan to develop an intelligent writing environment in future work.

## 8 LIMITATIONS

The findings in this study are limited in following ways. The study was situated within timed impromptu writing and the texts we asked writers to produce were short and composed solely in the context of the study, not necessarily reflecting their writing practice. We do not know the range of time scale in which readers would remain engaged with. In reality, articles and creative writing pieces are typically written in multiple sittings over a lengthy period of time. Therefore we believe that the findings from the study and the application of writing replays will be limited to writing which happens in shorter time span.

In addition, because we only studied the effects of writing replays using four texts, we do not know how different styles of writing process (from different authors) would affect the findings of the study. Therefore, rather than being able to identify the effect of watching replays in general, our result is limited to the potential benefits and challenges of revealing the real-time writing process to readers and does not uncover the relationship between various factors in writing and engagement level.

Some of the limitations come from the choices we made in the study design. In Study I, the recruited writers were asked to write and asked to reflect on their practice before seeing another writer's process. This procedure of writing immediately before reviewing other people's replays might have amplified the effect of empathy and self reflection. Lastly, participants from Study II may have varying background in writing, which may co-variate the replay condition. We did not include other factors, including their writing background, in our analysis.

## 9 CONCLUSION

In this work, we explored the effects of watching writing replays from both readers' and writers' perspectives. We found that writers generally enjoyed watching writing replays, as they seemed to pay more attention to the process than readers in general. They noted that they were able to connect with the author of a replay when watching it, and that watching replays facilitated self-reflection. On the other hand, from readers' perspectives, some replays—but not all—may enhance the level of their engagement without hurting comprehensibility, depending on the style of the writing in question. Both groups proposed various applications for watching writing replays that would lead to more engaging and effective reading experiences.

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## A APPENDIX

### A.1 Prompts for Professional Writers

- Fiction Prompt 1: Please write a short fiction piece of about 400 words in which a character uncovers an object from their past that alters the course of their day.
- Non fiction prompt 1: Please write a nonfiction piece of about 400 words in which you teach the reader how to do something which you consider yourself good at.
- Non fiction prompt 2: Please write a nonfiction piece of about 400 words in which you describe a transitional moment in your life.

### A.2 Interview Questions for Writers

- (1) What type of writing do you normally do?
- (2) How often do you write?
- (3) How often and how do you publish?
- (4) How would you describe your writing process normally?  
Could you categorize these writing processes into modes (editing, generating, resequencing, etc..)?
- (5) What do you think about while you are writing (if anything)?  
What are you aware of?
- (6) What interfaces / applications do you normally use for writing? (e.g., pen, paper, Google Docs, Word) Why do you use these applications?  
**(Reading static text of their own)**
- (7) Reading this passage again, what do you think of it?
- (8) What was your process like in writing this passage?  
**(Reading writing replay of their own)**
- (9) Did you find watching this playback more or less engaging than static reading? Why or why not?

- (10) What were you thinking about when you were watching this?
- (11) What, if anything, was unexpected in watching this playback? Did you learn anything from these unexpected moments? (if they learned something)
- (12) Does anything you've learned about your writing process make you want to try to adjust or try anything new in your writing process?
- (13) Would you be ever intimidated writing if you knew a livewriting playback of the process would be distributed widely? If so, why?
- (14) How would this change how you approach the writing process?
- (15) Can you imagine some version of this feature into your writing or revision process?
- (16) What playback settings did you find yourself using? Did you find yourself skipping ahead? Why?
- (17) Do you have any other thoughts about watching your own playback?  
**(Watching writing replay written by others)**
- (18) How would you characterize this writer's playback?
- (19) Did you find watching this playback engaging? Why?
- (20) How does this person's writing process appear similar to your own?
- (21) How does this person's writing process appear different than your own?
- (22) What, if anything, did you learn from watching this person's playback?
- (23) Did you find watching this playback more or less engaging than writing your own playback?
- (24) How would you characterize your sense of connection, if any, with the author after watching this playback?
- (25) In what situation do you think watching a live writing playback be useful for you?
- (26) In what situation do you think having someone else watch your livewriting playback would be useful?
- (27) What playback settings did you find yourself using? Did you find yourself skipping ahead? Why?
- (28) Do you have any other thoughts about the experience of watching this person's playback?

### A.3 Writing replays

Live Writing playback of T1~T4 will be presented in the following url.

[https://livewriting.github.io/cc2022\\_writingreplay.html](https://livewriting.github.io/cc2022_writingreplay.html)

### A.4 Static Text

**A.4.1 T1: How to Review a Work of Art (essay).** A lot of people outside the art world consider art writing a useful way to communicate a work of art or particular show to a group of readers who may or may not have a chance to see the art in person. I once considered myself such a person, who casually browsed the museum reviews in New York or Berlin or Paris. But once I started writing about art—that is, attending museums and galleries nearby with a pen in hand—I came to understand there's a hidden language in art writing that must be experienced to be understood. Words come to

mind: contrast, saturation, juxtapose, ethereal, craft, technique. But these are words for the page and are distinct from the language I discovered when I first began writing about art.

First, you must find your gallery. Small galleries are good, because the owner is usually around, sitting behind a cluttered desk with an old lazy dog at his feet. Or the owner is next door, having a cup of coffee, and will be back to open the gallery soon. Stand around outside for a minute talking on the phone, pacing in front of the door. If you do this with sunglasses on and a notebook propped open on your hip, all the better. Make sure the owner of the gallery—or better yet: the artist—sees you doing this. This is part of your performance, and it will come in handy later in the process. Hang up the phone and close the notebook. Tuck it away in your bag. A good art reviewer does not walk through the gallery doors with an open notebook, as this is too transparent. Smile at the owner/artist/anyone else who may be in the gallery and walk around. Look at every object. Every painting has value. Every sculpture should be considered from all sides possible. Every piece of music heard. Furrow your brow.

When you are approached by the owner or the artist or other authority figure who happens to be hanging around the gallery, introduce yourself. Be nice. Tell them who you are, but not what you're doing in the gallery. Don't make it seem like you're there to buy a piece of art—you don't have that kind of money—but also don't tell them about the review you are writing. In the best case scenario, you will be on assignment for your local paper. You have a deadline to meet and a thousand words to crank out about what's hot and fresh in the scene. Don't say this. The gallery owner is a friendly if sometimes pushy individual, but will kindly step out of your way if you express the desire to simply enjoy the art in the room. Let them go back to their desk before you resume your assessment.

When they sit down in the chair, whip out your notebook and scribble furiously. This will shock the owner, but they will quickly realize it is more embarrassing to leap out of their chair and return to you than it is to sit and quietly pretend like nothing happened. Write as fast as you can about the art. Write about the size: this bronze lion is the size of a fist. Write about the color: its mane is painted purple. Write about the placement in space: it is perched on a pedestal, yet the painting behind the piece acts as a kind of implied backdrop. Write about the relationship: the small bronze lion with a rich purple mane seems to emerge from the destroyed landscape painted in luxurious oils that compose "Wasteland." Do this for each piece in the show, but spend the most time on the thesis piece. A thesis piece is the work of art in any show that behaves like a summation and synthesis of all the ideas in the gallery. This is your nut graf. Watch the owner sweat.

When you are finished, close the notebook and spend a few minutes enjoying the art without thinking about anything. Don't think about history. Don't think about subtext. Don't think about the sculptor you slept with in college who kept a book of Bernini under his bed. Thank the gallery owner and leave. Once home, sit on the couch you found on the curb with your laptop open on your lap and

type all your notes as you have them written down. Soon, during this process, your own masterpiece will emerge.

*A.4.2 T2: Horse Riding (essay).* The first thing to know about trail riding is that the occasion is important. If you work at a touristy trail barn like I have, there are three main types of rides: dates, "Grandma had a horse as a kid and is taking us out for a treat," and "The person I'm dating also has kids, and this is a good opportunity to get us all together."

If it is the first one, see entry for "Macho Guy."

If it is the second one, prepare for Grandma to not remember how many muscle groups are involved in horseback riding. She will need some extra help, and she will be salty about it. Prepare for her to be frustrated with the children, who will definitely whine and who will definitely start screaming when a horse inevitably shits.

If it is the third occasion, prepare for the children to awkwardly call Mom's new boyfriend by his first name. The children of both families will be weirdly competitive with each other and will refuse to use each other's names, perhaps because they have forgotten and at this point it's too late to ask.

There are several kinds of people who go on trail rides besides grandmothers, whining children, and parents just trying their best. Stick around a trail barn for a few days, and you will find people like...

#### Person Who Is Extremely Vocal and Theatrical About Their Fears

You must put them on the chilliest horse you've got, one that won't mind it when they start screaming, and who won't try to pull any punches, because this person is going to be useless. They will not try at all—their passions lie in screaming and perhaps taking selfies. You must put them right behind you in line because they have no interest in controlling the horse, and, contrary to instinct, you want that ticking time bomb close to you. These people, oddly enough, are the most entertaining and hilarious people. Their friends and family members will rag on them and they will take it in stride. You will hear some top-notch ribbing and gain appreciation for it as an art form.

#### Macho Guy

Macho Guys come in two subspecies: "terrified but will never admit it" and "lacks a healthy amount of terror considering that there, you know, there's some danger involved in this whole horseback riding thing." Both species can be treated the same. You must put them on a gelding who walks at a reasonable speed and tell them, "This is [horse name here]. This right here is the boss horse. You gotta watch out for him, because he's the boss." This will bring them reassurance and affirmation. If they are on a date or their partner is present, they will begin to give advice to them, and this advice will usually be wrong. It is very important that you never correct them, because if they are happy at the end of a ride, they will make a big show of slowly pulling out their billfold and peeling off a twenty.

If you read this guide and come away with anything, remember this one fact: they can smell fear. Once, before a trail ride, a woman with Crossfit arms and a push-up bra walked right up to me, put her finger in my face, and bellowed, "If I fall off this horse, I'm going to cut you."

You must stay calm in these situations. You will smile and say, "You won't fall off."

"I. Will. Cut. You," she will say.

"Nah, it'll be great. I've got just the horse for you. This is Walter. He's one of my favorites."

You will show no fear even when, twenty minutes later, she tells you she loves you, then tells you she has the power to read minds, tells you she is certified in reiki and could give the horses a massage, maybe, if your boss lets her. She will extend her stay at the resort just to go on more rides with you, and she will sign her daughter up for summer camp, and she will tag along every single day. But, most importantly, she will tip well.

**A.4.3 T3: *Rising from the bed (fiction).*** The man woke like every other day of his life. At seven am, he rolled out of bed, making sure to silence the alarm so as not to wake up his girlfriend. He trudged to the bathroom and let his eyes adjust to the bright lights as he brushed his teeth. He allowed himself to stare at his reflection during the two minute duration that his electric toothbrush took. The wrinkles under his eyes had grown, despite the extra hour of sleep he added to his night schedule. He was getting older and his face was starting to show it. He could count on one hand the things he felt lucky to have and that troubled him. At his age, he should have more to be proud of, more to hold in hands and claim, mine. He looked over his shoulder at his girlfriend sleeping and asked himself for the hundredth time this month if he loved her. He still wasn't sure. They'd been dating for a little over a year and he hadn't wanted to rush into anything, despite his age. If he was being honest with himself, he didn't care much about how he felt about her or other things lately. He'd gotten to the point in his life when everything seemed to plateau. Making his way to his closet, he got dressed and fixed the pocket of his pants. When he heard the crinkle of paper, he assumed it to be an old receipt but looked for a brief moment anyway. As he unfurled the note, he felt the color drain from his face. He hadn't seen this note in seven years, two weeks, and three days (if he wanted to be exact). He read it over and over again, letting his mouth whisper the words he had tried hard to forget. Stuffing it back into his pocket, he walked silently down the stairs and into the kitchen. He had forgotten what the loop of the "g" in her name had looked like, forgotten how it matched her wide smile when he cracked a joke. Pouring cereal into a bowl, he thought about the jokes he'd work on in his cubicle at work in the hopes of impressing her when they both went to the cafeteria salad bar. Wednesdays had always been his least favorite days until they had run into each other waiting for the cherry tomatoes to be refilled. He began eating the cereal dry, not bothering to fill the bowl with milk. As the dry cereal crunched in his mouth, he

pictured her with her head thrown back laughing, the sun in her blonde hair. She was hard to forget. He pulled the note from his pants and reread the message once more before dumping the rest of the cereal down the garbage disposal.

**A.4.4 T4: *Jewel Case (fiction).*** The jewel case first bites her when she crawls under her bed to clean. Her arms sweep the ground like she is making a trash snow angel out of wrappers and worn pairs of socks and dust bunnies, sweeping them into a more manageable area. This is what she used to do as a child, and it's an indulgence she continues. The messy kid grew into a messy adult. An ex-boyfriend once said that she leaves a trail of breadcrumbs wherever she goes: hair ties, lipstick-stained coffee cups, receipts. She expected all of those things to be under the bed, but she did not expect to be bitten by a jewel case. As she swings her arm out, she feels a stinging and a breaking of skin as the case snaps at her.

"Fuck!" she says and puts her hand to her mouth. The jewel case has bitten her in the fleshy part between pointer finger and thumb. She sucks the blood and feels with her tongue the paper-thin flap of skin that has sliced loose.

A few feet in front of her, in the dim light of under-the-bed, the jewel case flexes the sharp plastic of its cover, its hinge squeaking with menace. She knows which CD this is by the Sharpie scrawled on the cover—she knows whose handwriting.

When she returns with a broom to flush it out, her cat, Lionel, sits atop his cat tree and watches with passive amusement, even when she pulls the broom away from the bed with the case clamped on to the bristles like a crab. She holds it close to get a better look, and it rattles, the CD clattering against its casing. She sees a speck of her blood in the paper lining of the case, blurring out one of the track listings. The tracks are written in careful, sparking gel pen.

The jewel case is broken, and a small shard of plastic hangs down like a tooth. It snaps at her. She deposits the case into the trash and ties up the bag. She wonders what other objects in her apartment will bite at her—surely there's a lot here that holds a grudge.

But when it's later, and it's darker, she stands on tiptoe to bring down the ancient CD player from its place in her closet shelf. She fishes through the box of gardening supplies an old roommate left behind, and she dons a pair of coarse gloves.

Standing in her kitchen, she carefully unties the bag and handles the case. She tries to pry open its jaws to pluck out the CD like a tooth with pliers, but it fights her, flipping and shaking. Lionel hides. The case will not allow her to pull its glittering treasure. She fights the case more and more until the liner notes are ripped and the plastic case is full of fissures and the top third of the CD has snapped off, the Sharpied words disconnected. There is a scattering of plastic on the ground, sharp enough that when she leaves to throw herself on her bed, a piece cuts her foot.

## A.5 Reading Comprehension Questions

### A.5.1 questions for T1.

- Based on the passage, what object is needed for art reviews?
  - (1) Magnifying glass
  - (2) Pencil
  - (3) Camera
  - (4) Notebook
  - (5) Grid Paper
- Which of the following does the author advise is a feature of artwork worthy of a reviewer taking note?
  - (1) Color
  - (2) Artist's Name
  - (3) Placement in Space
  - (4) Both 1 and 3
  - (5) Both 1 and 2
- What does the author advise we should do before leaving the gallery?
  - (1) Thank the gallery owner
  - (2) Hide our notebook
  - (3) Use the bathroom
  - (4) Get a cup of coffee
  - (5) Take a piece of free candy
- How should an art reviewer behave towards a gallery owner when they first meet?
  - (1) They should introduce themselves and be kind
  - (2) They should ignore the gallery owner
  - (3) They should give a false reason for why they are there
  - (4) They should announce themselves as an art reviewer
  - (5) Both (1) and (4)

#### A.5.2 questions for T2.

- According to the article, which of the following events sometimes involves horseback riding?
  - (1) Birthday parties
  - (2) Dates
  - (3) Rodeos
  - (4) War reenactments
  - (5) All of the above
- According to the article, which of the following tip well?
  - (1) Macho guys
  - (2) Grandmothers
  - (3) Parents
  - (4) Rodeos
  - (5) Magicians
- According to the article, what is the best part about having a "Person Who is Extremely Vocal and Theatrical About their Fears" on a horseback riding trip?
  - (1) Their family will make fun of them
  - (2) They tip well
  - (3) It's funny to watch them scream
  - (4) Everyone else on the trip acts less afraid to compensate
  - (5) None of the above
- According to the article, what is the best way to keep a macho guy happy?
  - (1) Tell him that he looks hot
  - (2) Tell him he's the best rider you've seen in awhile
  - (3) Tell his date that she is a "lucky gal"
  - (4) Let him lead the ride
  - (5) Tell him his horse is the "boss" horse

#### A.5.3 questions for T3.

- What isn't the protagonist sure about?
  - (1) What brand of toothpaste to use
  - (2) If he loves his girlfriend
  - (3) If he bought enough cereal
  - (4) If he called his mother that week
  - (5) When the last time he saw the note was
- How does the protagonist know the woman in the note?
  - (1) They went to school together
  - (2) They met at a party
  - (3) They are friends of friends
  - (4) They worked together
  - (5) They were in prison together
- What color is the woman in the note's hair?
  - (1) Blonde
  - (2) Brown
  - (3) Green
  - (4) Red
  - (5) Black
- Based on the passage, how old is the protagonist, likely?
  - (1) Younger than 20
  - (2) In his 20s
  - (3) 30 or older

#### A.5.4 questions for T4.

- How does the protagonist discover the jewel case?
  - (1) It falls from the sky
  - (2) It bites her
  - (3) She finds it on the sidewalk
  - (4) She sees it in a store
  - (5) She uncovers it while digging in the sand
- What is on the jewel case?
  - (1) Sharp words
  - (2) Album cover
  - (3) Track listing
  - (4) Polaroid
  - (5) Nothing
- Which word best describes the protagonist's room?
  - (1) Colorful
  - (2) Dangerous
  - (3) Organic
  - (4) Mysterious
  - (5) Messy
- What type of animal is the protagonist's pet?
  - (1) Mouse
  - (2) Hamster
  - (3) Dog
  - (4) Cat
  - (5) Fish