

Hiding the Data: The Narrative Effects of Deferred Information in Contemporary Science Novels

In recent decades, representations of science in a variety of media have become increasingly popular. This includes a growing corpus of so-called science novels, which realistically depict a working life in science. The specific properties of the novel allow authors to take creative liberties when it comes to the arrangement of information. These arrangements, which often include intentional gaps – either temporary or permanent – notably affect how one reads the plot and the depicted characters. In this paper, I analyze two contemporary science novels which center fictional cases of research misconduct: Allegra Goodman's *Intuition* (2006) and Pernille Rørth's *Raw Data* (2016). I argue that in narratives revolving around research misconduct, missing information not only maintains suspense, but also delays judgement of character. This is due to the fact that readers need to negotiate between different versions of events depending on how much information is available. The selection of information, too, impacts the likeliness of alternative cause and effect explanations, which can shift blame from one character to another. Finally, one must consider how truthful the narrators are to the readers, and last but not least, to themselves.

1. Introduction

Since the 1980s, authors of popular fiction have turned to depicting the world of science. In order to captivate their audiences, scientists-turned-authors as well as known fiction writers frequently integrate financial struggles, resulting mental health concerns, and ethical dilemmas into their stories. The specter of research misconduct looms large in so-called “science novels” (Schaffeld 2016, 121) and often gives cause for investigation, allowing the reader to think along with the depicted characters. The main questions then become: has misconduct actually happened? And if so, who is to blame? By intentionally delaying the answers to these questions, authors create gaps which keep their audience engaged. Only at the end is key information revealed to the reader, so that “the audience can finally look back at a completed action and read it fully” (Roberts 2008, 137). I argue that in narratives centering around research misconduct, missing information not only maintains suspense, but also delays judgement of character. Two prominent examples for this dynamic include Allegra Goodman's *Intuition* (2010 [2006]) and Pernille Rørth's *Raw Data* (2016), which I present in this paper. In both cases, a focalized character has in fact committed research misconduct, but denies their actions until the end of the novel. Consequently, readers must negotiate two possible versions of events at the same time, as well as two interpretations of causal relations. This complicates their judgement of what has happened and who is to blame. On a narrative level, *Intuition* and *Raw Data* thus allow one to explore the effects of self-delusion and the intentional withholding of information, since knowledge of what has happened would be readily available to the reader, if only characters chose to share it. Situated in a contemporary U.S. American research context, *Intuition* and *Raw Data* introduce the reader to a world of science which has become increasingly competitive. Ultimately, I thus posit that deferred information (Kafalenos

1999, 34) provides time for readers to sympathize with scientist characters who commit misconduct as fellow human beings – with all their potential, and their limitations.

2. Stories of Science and Misconduct

In order to appreciate how the two novels presented in this paper operate, it is necessary to first gain an understanding of the genre of science novels, the scope of research misconduct, and the possible ways in which a narrative may either temporarily defer or permanently suppress information. As Roslynn D. Haynes (2014, 36) explains, the genre of science novels generally consists of a “volume of mainstream fiction, as distinct from science fiction, about working scientists” and their professional and personal lives. In my estimate, the working life in science “must constitute a significant part of the novel in order for it to be classified as a science novel” (Övermann 2025, 10). While the field of mathematics seems particularly popular in fiction, depicted disciplines typically count the natural sciences and at times extend to related areas such as technology and engineering. If the 1980s saw the inception of the science novel as it is discussed today, then the 1990s mark the time in which these new narratives were increasingly popularized by both fiction writers as well as former scientists, who themselves began to publish novels on “science, scientists, the scientific process, and scientific institutions” (Övermann 2025, 10). As a result, science has started “to achieve a more humane and realistic image” in recent decades, which Haynes (2016, 129) directly links to the “increased number of writers with training in the sciences and a commitment to present with greater accuracy and attention to detail the specific ideas and processes involved in scientific research.” Pernille Rørth, a molecular biologist by training whose debut novel is included in this paper, may certainly be counted as one member of this new demographic group, while experienced fiction writer and second author Allegra Goodman has drawn on external expertise to breathe life into the Philpott Institute and its research team.

Writers of science novels face a number of potential pitfalls and challenges. One of these challenges is to convey realistic scientific content, while yet maintaining a non-scientifically-trained reader’s interest. In order to strike a balance, authors often blend science elements with romance or crime, which may link to the specific offense of research misconduct (Övermann 2025, 247). As I have previously explained in *Female Scientists at Risk*, “[a]uthors of science-related fiction have not only taken up the question of what scientific results are used for, but also how these results are achieved in the first place” (Övermann 2025, 3; emphasis removed). Accordingly,

The specter of research misconduct looms large in light of scientists’ increasing pressure to perform (cf. Anderson et al., 456). As Melissa S. Anderson et al. put it, “[t]he scientific enterprise is characterized by competition for priority, influence, prestige, faculty positions, funding, publications, and students’ (438). This competitive climate may give rise to questionable research practices [QRPs] and prove detrimental to the quality of science as well as the well-being of scientists overall. (Övermann 2025, 3)

The National Science Foundation (NSF) of America defines misconduct as “a significant departure from accepted practices of the scientific community for maintaining the integrity of the research record. The misconduct must be committed intentionally, or knowingly, or in reckless disregard of accepted practices” (Zuckerman 2020, 952). Harriet Zuckerman problematizes this definition in observing how

[t]he emphasis on intention and knowing or reckless disregard has the effect of eliminating from consideration of misconduct self-deception as a source of culpability. Self-deception has a long history in science, involving, as it does, scientists' inability to subject their own ideas and research to skepticism as rigorous as they are obliged to subject the work of others. (952)

Taking into account Zuckerman's suggestion, one could reasonably argue that this is where considerations of narrative become interesting.

"[T]he three most common examples used to illustrate research misconduct," according to Ragnvald Kalleberg (2015, 313), "are fabrication of fictitious data, falsification of data and methods, and plagiarism." The NSF defines these as follows:

[Fabrication:] Making up data or results and recording or reporting them.

[Falsification:] Manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record.

[Plagiarism:] The appropriation of another person's ideas, processes, results or words without giving appropriate credit. (National Science Foundation 2025)

With regards to the upcoming analysis, it is worth further considering not only the definitions of misconduct, but also the motivations that certain persons – real or fictional – may have for engaging in such questionable research practices. In their work on "Nine pitfalls of research misconduct," C.K. Gunsalus and Aaron D. Robinson (2018, 298) describe nine factors that real-life scientists might cite as reasons for pursuing QRPs:

1. Temptation: 'Getting my name on this article would look really good on my CV.'
2. Rationalization: 'It's only a few data points, and those runs were flawed anyway.'
3. Ambition: 'The better the story we can tell, the better a journal we can go for.'
4. Group and authority pressure: 'The PI's instructions don't exactly match the protocol approved by the ethics review board, but she is the senior researcher.'
5. Entitlement: 'I've worked so hard on this, and I know this works, and I need to get this publication.'
6. Deception: 'I'm sure it would have turned out this way (if I had done it).'
7. Incrementalism: 'It's only a single data point I'm excluding, and just this once.'
8. Embarrassment: 'I don't want to look foolish for not knowing how to do this.'
9. Stupid systems: 'It counts more if we divide this manuscript into three submissions instead of just one.'

These catalysts, summarized by the researchers under the mnemonic 'TRAGEDIES,' make for captivating science novels. In addition, skilled authors may choose to hold their audience's attention longer in carefully arranging which information becomes available when.

When reading a novel, readers are privy to varying degrees of information at different times. As I have outlined elsewhere,

Information may be relayed on an intradiegetic or an extradiegetic level, being provided by characters and narrators alike. The amount of information that a reader has access to results from the selection of narrating instances, and in turn, what these instances (a) can know themselves and (b) choose to share. (Övermann 2025, 68f.)

In her work on the "Epistemological Effects of Deferred and Suppressed Information in Narrative," Emma Kafalenos (1999) remarks on the impact that missing information has on the reader. She meaningfully differentiates between information that is "temporarily deferred," and thus related to the reader at a later stage, versus information that is "permanently suppressed," and accordingly never recovered (34; Övermann 2025, 69). As Kafalenos (1999, 34) explains, when "the set of events one knows about is incomplete, [...], one's interpretation of a known event may differ from what it would be if deferred or suppressed information were available." This crucially alters a reader's interpretation of cause and effect and who is to blame.

As I argue in this paper, missing information fulfills two functions in narratives centering around research misconduct: maintaining suspense and delaying judgement of character. The focalizing character in question might wish to present their story and their choices in a better light and therefore choose to withhold information. Prominent examples of this dynamic include both *Intuition* and *Raw Data*. In both cases, a focalized character has committed research misconduct, but denies their actions until the very end of the novel. As a result, readers need to negotiate two possible versions of events at the same time, or rather, two interpretations of causal relations, which complicates judgement of what has happened and who is to blame. In these cases, the combination of ongoing uncertainty and missing information *is* the narrative set-up, even as information would be readily available, if narrators or characters chose to share it with the reader.

3. The Science of *Intuition*

Before I present my first case study, I shall first provide some basic information. To this purpose, I like to borrow Elizabeth Lowry's (2009) overview of Allegra Goodman's novel as an introduction: "*Intuition* is set in a small, underfunded Boston research institute in the mid-1980s, where a ramshackle team of postdoctoral fellows, overseen by their directors, Sandy Glass and Marion Mendelssohn, have been trying unsuccessfully to formulate a cure for cancer." By the time the action begins, the failure to cure cancer has caused significant pressure to at least partially succeed, which I see as a catalyst for the subsequent events depicted in *Intuition*. A unique feature of the novel is its flexible focalization of characters, scientist or otherwise, who are associated with the Philpott Institute, which the Mendelssohn-Glass Laboratory is situated in. Despite the large array of potential informants, however, key knowledge is only confided to the readers at the end.

The novel begins, *in medias res*, with the two lab heads confronting one of their postdocs, Cliff, about his fruitless and insubordinate pursuit of his line of research (Goodman 2010, 4–7). Although Cliff insolently believes that "I deserve my own project" (6), his lab heads respond: "Look, this is a team, [...] and you need to pull your weight, not drag everyone else down with your personal flights of fancy" (6f.). Fortunately for Cliff, his supervisors' attitude changes when Marion and another postdoc unexpectedly detect merit in Cliff's experiments (25–28). New experiments are ordered, and the narrative carefully circumnavigates what Cliff may or may not have done to get such exciting results, only describing his elated feelings at this new turn of events. While the novel ultimately reveals that Cliff has indeed indulged his "flights of fancy" (7) rather than following the strictures of scientific research, neither his supervisors nor the reader are inclined to suspect this at this early stage.

In the wake of this discovery, Cliff is allowed to work long hours unsupervised (45). He injects his mice without his partner present and keeps most of the records in his own lab book, which is tacitly accepted (51). One may here note that the lab book itself also tells a narrative, which becomes grounds for the following scientific story. The same is true for the scientific records in *Raw Data*, which are skilfully translated into a publication and a grant proposal by the principal investigators of each novel. Yet although Cliff's virus shows effect (58), the Mendelssohn-Glass lab first needs to reproduce his results to support their paper and new grant proposal. This task is assigned to Robin, Cliff's then-girlfriend, which proves to be a fatal blow to their relationship.

Subsequently, the reader learns that Robin's experiments with Cliff's virus are not working (118). Since information about Cliff's misconduct is missing, Robin cannot fathom why he gets results where she gets none. Although the experienced postdoc is generally confident in her own skill as a scientist (119), Cliff's outstanding success in opposition to her perceived failure does trouble her. She confesses to Marion's husband Jacob that "Cliff's results are so good – so clear – but I can't get the experiments right. I don't know what's wrong with me" (144). In response, Jacob theorizes that perhaps there is nothing wrong with Robin, but with Cliff's data. He implies that "[t]he results seem almost too good to be true" (144; Övermann 2025, 124). Following this suggestion, Robin recalls that she has seen Cliff bend lab protocol, which is a crucial piece of previously suppressed information: "That was odd. She'd thought so at the time. [...] Why would he bend the protocol like that? She closed her eyes and tried to reconstruct what had happened next, but she could not" (152). Here, Robin's inability to clearly recall events consequently leaves readers suspended.

Following her sudden recollection, Robin realizes that Cliff has cheated (158). She continues her search for evidence until she finds proof in Cliff's discarded draft notes in the dissection room. There, Robin discovers that Cliff has skipped ten mice in his publication, which – in line with the misconduct definitions provided by the NSF – indicates falsification (179). Robin then becomes a whistle-blower and confides her findings to her lab head Marion (183–184). Yet Robin is not a believable accuser due to her past romantic relationship with Cliff and her own struggles in the lab, which make jealousy a likely motive. Thus, as I have discussed in detail elsewhere, a lab-internal, and in Alan Palmer's terms *intermental* (counter)narrative begins, which presents Robin as mentally unstable (Palmer 2010, 83; Övermann 2025, 130). As a result, the reader needs to negotiate two different versions of events at the same time, since only one of the two postdocs – Cliff or Robin – can be telling the truth.

At the lab's private seminar, Robin speaks well of her concerns, but Cliff speaks better (Goodman 2010, 200–203). Since Robin cannot make her voice be heard, she contacts the Office of Research Information Services (ORIS), who subsequently investigate the lab (225). During this investigation, Cliff can feel his tides turning, the year of success which he bought with his falsification slowly slipping away. Cliff's experiments start to go wrong (304), and when other labs fail to reproduce his research, his lab head finally realizes that Cliff is to blame. "He lied," (316) Marion concludes, and chooses to confront her postdoc in prompting: "I want to know what happened" (320). In their conversation, Cliff accidentally admits to publishing "[e]very single scrap of relevant data" (321), meaning that he has excluded information which he deemed irrelevant. To himself and the reader, he thinks:

She wanted a confession, but he had nothing to confess. After all, he could not confess to Marion what he would not confess to himself. What he told himself about his work was not exactly what he had done. What he had done, not exactly what it should have been. Still, Cliff's own perceptions of his actions were coherent, internally consistent. (321)

These thoughts adequately illustrate the importance of an internal narrative, the undisputed power of wishful thinking, and, in Zuckerman's (2020, 952) terms, "self-deception as a source of culpability."

In sum, I therefore find that *Intuition* brilliantly illustrates the importance of information in relation to the allocation of blame, since its characters – and the reader – can only make sense of current events once they know that Cliff has cheated. Yet, at the end, the appeal finds no public evidence of fraud (328), since Cliff's intent cannot be proven. As an unreliable focalizer and

constant dreamer, Cliff sees “glorious possibilities at every turn” (329), and is free to continue his career in science elsewhere.

4. A Question of *Raw Data*

The second case study I present in this paper, which concerns Pernille Rørth’s science novel *Raw Data*, is similar to *Intuition* in so far that it too centers a case of research misconduct. As with Goodman’s novel, Rørth’s work revolves around the resolution of the incident, here situated in the fictional lab of Tom Palmer. Focalization largely alternates between Tom and two female postdocs in his lab, Karen and Chloe. The narrative set up is such that chapter 1 takes place in the present, while the following chapters describe events eight years earlier, so that they are effectively recounted in hindsight. At the end of the first chapter, a dark turn in the past is hinted at to secure the reader’s interest. Subsequently, the first quarter of the novel establishes the dynamic between Karen and Chloe, the latter being recently successful, the other struggling with her experiments and growing increasingly envious.

The competitive world of science and the fickle nature of scientific inquiry are amply characterized in the novel, both via dialogue and past examples of being scooped – meaning that other labs have previously beaten Tom Palmer’s team to publication. When Karen feels a surge of hopelessness and wonders why success seems so easy for Chloe, she starts doubting her colleague’s work and looks around Chloe’s lab bench. Shortly afterwards, Karen gleans information from a lab technician which indicates that Chloe must have falsified the last of her successful experiments. As for *Intuition*’s Cliff, the mice do not add up – but whereas Cliff had too many, Chloe had too few to possibly make her experiment work.

Similar to Robin, Karen decides to become a whistle-blower following this discovery. Like Marion, Tom as a lab head is initially reluctant to believe that misconduct has actually happened, and instead considers jealousy as a possible motive and alternative explanation, which the reader then also has to consider (Rørth 2016, 67). This competing narrative is corroborated by Chloe, who firmly denies any wrongdoing on her part, instead questioning who has informed Tom and their possible motivations. Like Cliff, Chloe communicates that her accuser must be either envious or mentally unstable (82). She claims to have had additional mice to make up for the discrepancies between the publication and her experiment. Thus, Tom Palmer and others at his institute decide to investigate Chloe’s original notes, the titular “raw data” (79).

When Chloe recounts current events in the lab to her boyfriend, she positions herself as the victim of the situation (84). When the raw data cannot be found, Chloe asserts that whoever has accused her must have made her documentation disappear. This unreliable narration on Chloe’s part intentionally leaves readers in the dark – although one may here note that her side of the story is not as credible or plausible when reading the novel for a second time. As with *Intuition*, the investigation of misconduct and the uncertainty of what has in fact happened, as well as the shifting distribution of blame, make up a significant part of the novel. Considering motive, it is most likely that Chloe is in the wrong (95), and yet: “However improbable it seems, maybe she [Chloe] is telling the truth” (95). Accordingly, both interpretations are being kept alive, like

Schrödinger's cat, by the narrative. Consequently, lab mates as well as readers have to “keep an open mind, both personally and scientifically” (97), until they know what happened.

After a repeat experiment seems to prove Chloe wrong, Tom retracts the related *Nature* paper and talks to his postdoc privately, challenging the counter story she has presented up to that point (148–152). He demands:

‘Chloe, give me some respect here. OK? Let’s be honest. No more stories. I do not believe in mythical extra mice leaving no trace, or in slides being stolen. I don’t believe it now and I didn’t then. The someone-out-to-get-you story can’t keep covering everything. There is too much missing from that one experiment. [...] The data in Figure 7F were fabricated.’ (150)

In line with definitions of misconduct provided by the NSF, Tom’s assessment indicates that Chloe has made up data which does not otherwise exist. Accordingly, her lab head extrapolates that “I think I understand what happened. You were so sure of how that last experiment would turn out. You had all the other evidence and it was all so convincing that you felt you did not need to do the final experiment” (150). If one considers the motivations for misconduct as listed by Gunsalus and Robinson, then temptation, rationalization, ambition, entitlement, deception, and incrementalism all come into play – the latter being formulated by Tom Palmer above. After outlining the intense pressure that she believed herself to be under, Chloe admits: “[a]nd yes, I was sure the experiment was superfluous, anyway” (152). In their conversation, the postdoc significantly links her choice to fabricate an experiment to a lack of information. When Tom points out that their competitors “were not that close,” Chloe responds “[w]ell, I didn’t know that, did I?” (152), before reiterating: “I was just completely sure I knew what the result would be” (153).

Immediately following Chloe’s confession, the reader learns, via a prolepsis in the narrative, that the fabricated experiment actually does work, if done properly and with a slightly different set-up than Chloe had outlined in her protocol (156). Here again, information and causal relations prove crucial, and painfully ironic, to Tom Palmer as a lab head and his postdocs. Yet, hindsight ultimately comes too late for the lab, as Tom clarifies when Karen asks if this new insight changes anything. “You cannot retract a retraction. You cannot go backwards in time. What is done is done,” (161) he tells his postdoc, finally advising Karen to let Chloe and her story go.

5. Conclusions

Flexible focalization results in many voices speaking up in *Intuition* and *Raw Data*. The key to these novels is that readers do not know which of the characters is lying or withholding information, so that one always has to consider two sides of the story. This effect works best when reading the novel for the first time (in a long time). Readers and other characters are asked to go back and forth between different interpretations of what has happened, which shift blame to one party or the other. Only at the very end is all information revealed via confession, so that the narrative can be concluded and final judgement may be passed. This indicates that information has been deferred via unreliable narration for the majority of both novels. In the case of *Intuition*, Cliff’s self-delusion adds another layer to his deception, whereas Chloe is aware of what she has done and consciously decides to lie. Both Cliff and Chloe construct a counter-narrative to avert blame from themselves, which maintains narrative suspense. In effect, readers need to engage Schrödinger’s misconduct.

In future research, one could explore the question of how far surrounding characters shape the prevalent narrative via intermental narration, which importantly includes the notion of what others *want* to believe (Palmer 2010, 102; Övermann 2025, 130). Over the course of the two novels, readers are given ample opportunity to sympathize with Cliff and Chloe. Both characters ultimately “land on their feet” – the same formulation being used by Goodman (333) and Rørth (179), who thus provide their readers with a sentence that feels just in correlation to the characters’ crimes.

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