⧉ Journal of Visualization and Interaction

Reviews for 2024-heinicker-visualizing-round1

Review #1

Completed: 05-08-2024 03:49

Recommendation: Revisions Required

Conflict Declaration

I declare that I have no known conflicts of interest with the authors.

Review

This paper argues that has the "epistemic potential to constantly adapt to changing socio-technical conditions and to dynamically align its direction of enquiry," but that this potential is "largely ignored by the visualization discourse." The paper identifies two dominant visualization discourses (which the author calls "data exceptionalism" and "affirmative visualization") and presents a critique of them. The author then suggests that we should think more about how and why visualizations are created, rather than what can be read from them.

This paper has potential to contribute to the field of visualization by identifying, analyzing, and critiquing dominant discourses, and suggesting alternative approaches. However, in its current state, the writing hinders the clarity of the argument. For this paper to make a clearer contribution, I believe it needs to:

- offer clear, upfront definitions of the concepts it introduces (data exceptionalism and affirmative visualization)
- provide substantiated examples of assertions the paper makes about how these concepts appear in discourse (preferably by incorporating more active voice in the writing so we know -who- is making claims about e.g. data's exceptionalism)
- show the reader how interpreting these assertions through the lens of the paper's concepts advances understanding (why do we need a new concept to clarify these observations and critiques about data)
- (bonus) help the reader understand alternatives to the dominant discourse

In the "requested changes" section of the review, I have included more detailed feedback that I hope will help the paper better reach its audience.

Openness

This is a theory contribution, which means that one important way in which another researcher would build on this contribution would be to adopt the concepts it introduces (e.g. affirmative data, data exceptionalism) and use them analytically.

For this to be easier for other researchers to do, the writing would need to make their definitions and proper usage clearer. To do this, my suggestions would be to have clear definitions, and clarify how the assertions in the paper are a product of this particular analytical frame. The goal of these changes would be so that readers can learn from how the author deploys these concepts, well enough to do it themselves.

Classification

Commentary

Classification

Theory

Recommendation

Major Revisions

Revisions Requested

Overall feedback:

- This paper makes a lot of assertions about a dominant way of thinking about data. These assertions would be much stronger if substantiated with examples and citations.
- Generally, I felt that sentence-level writing moved between ideas very quickly, in a way that is difficult to follow because often a new idea is introduced before the previous idea felt fully resolved. Consider slowing the writing down, having clear thesis statements / topic sentences at the start of each paragraph, and guiding the reader through the argument with more signposting.

Detailed comments:

Introduction

- It would help to offer a definition of "cultural technique" for the reader, since it is a core idea to this paper. It's not enough to cite out to another paper without at least paraphrasing a definition, because readers want to understand this paper's use of "cultural technique" in the context of the author's particular argument.
- In paragraph two, there are a lot of assertions about what is promised by visualization, and how it falls short of those promises. It may help if there are more citations here. It may also be clearer if it is rewritten in active voice: *who* is promising "overview and solution expertise"? Did anyone actually expect visualizations to "solve the challenges of both the pandemic and climate change"? Without more contextual detail to support

these assertions, it currently feels like the paper is arguing against a position that it's not clear anyone holds.

- Paragraph three: There is a lot of dense technical jargon here that may make it difficult for a reader to follow the argument. It would help to slow down the writing and make the point in more sentences, and think about how to link the sentences together. Ffor example, "the ontological description" is very suddenly dropped in. What does this refer to? Does this refer to the need to understand the nature of data visualization? Whatever it is, might it be clearer to say that rather than relying on jargon?

Section 2.1: - Paragraph three: this is the first occurrence of the phrase "cultural model," but it's treated as if the reader should both already know what they are and that it should be very clear why they are relevant to data. If the previous two paragraphs of this section are describing a cultural model, I would like it to be clearer that this is the culmination of that line of argument, and not a new idea. - In what was is "the concept of data itself remarkably empty"? This is a strong assertion where an example would help the reader understand the argument. - "the concept of data exceptionalism can be found as a claim to a state of exception" Is it possible to define this without it sounding circular? - "Data oblivion" is introduced, never defined, and then never mentioned again. If this concept is not important to the argument, it may be better not to introduce an additional term. - "Potential counter-positions to data exceptionalism could consist of expanding the concept of data (as a fundamental structure of modern society), returning to existing data concepts (intentionality) or even abandoning the concept of data itself (post-data)." This is really interesting, and goes by extremely quickly. I would love for the writing to slow down here and walk the reader through what these alternatives are, and how they would work. Naming the alternatives to the object of critique seems like it should be an important part of a critical contribution about "visualizing otherwise", and it would be helpful to expand this point here. - "The aim is not to conceptualise data as passive material, but to understand it as an actively projected motif." What does this mean, and how would one do it? This seems like another point that goes by quickly but could easily be its own paragraph.

Section 2.2: - "In this respect, the idea of a"data representation", i.e. that data visualisations represent data in a certain way, is a clear indication of an affirmative visualisation model." How? Why? This seems important, so it would be great to explain. - In 2.2.1, the Tufte example is very helpful because it's one of the few times the paper currently attributes a discursive position to a clear subject. But is Tufte representative of the dominant view of thinking about visualization, given that it's been 26 years since the book? Similarly, the paper is arguing that Tufte's view is exclusionary because it does not admit other models of visualization. But is that surprising, given that he was writing a book intended to pre-scriptively teach people his own way to think about visualization? I think it would help to address these potential critiques. - In 2.2.2, there is a critique of Dear Data that aligns it with data surveillance and quantified self, and the idea that data must capture and mediate all human relationships. I think this is a valid critique. However, it could also be argued (and has been by the authors of that project) that Dear Data is also an attempt to be intentional about what is represented in data. For instance, it argues that data should not only be the realm of the impersonal or the commercial, but should be used to capture the minutiae of everyday life. This seems like the opposite of idealisation arising out of trivialization,

because it involves reflexivity about the use of data — about "what and who is left out." It would help to clarify idealisation by strengthening it against this counterargument, and also explaining what it is without a dependency on trivialisation. - 2.2.2 "In Lupi's"data humanism" subsequently propagated for the project, data is not only placed in front of a humanism in the word order." Does this really have deeper significance beyond being an artifact of English grammar? If so, it needs more explanation. - "It is a conscious decision on the part of the visualisation author to follow this tradition and represent its values." This seems a bit too harsh, if we're arguing that affirmative visualization is a dominant discourse. Isn't part of the power of discursive dominance its invisibility, because things that are dominant are accepted as normal unless further examined? I also think it's hard to reconcile this statement with the idea of trivialisation, which is about making unconscious decisions and leaving power unexamined.

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Review #2

Completed: 05-08-2024 19:14

Recommendation: Resubmit for Review

Conflict Declaration

I declare that I have no known conflicts of interest with the authors.

Review

This paper is a conceptually welcome addition to the burgeoning literature in critical visualization studies. The paper's challenge of positivistic approaches, combined with its arguments in favor of strong cultural critique, is an important intervention in the current state of visualization research. I commend the author's deeply theoretical engagement with the intellectual foundations of visualization, and I am excited to see more work – from the author or otherwise – that brings literature from media studies, the history of science, and science and technology studies into a field that can often be dominated by intellectual concerns of "efficient legibility." Perceptual studies are relatively popular in visualization research, often focusing on questions of efficiency in reading and interpreting graphs, and the shadow of giants like Edward Tufte still have an indelible impact on the most popular genres of visualization research. This paper, to the best of my understanding, tries to unsettle those foundations.

My main concerns with the paper have to do with written clarity, the conceptual structure of the paper, and the depth of analysis, all of which dilute the power of the argument. Oftentimes, there are sentences that are so complex in structure and concept that they become incredibly difficult to parse. Indeed, there are many exciting concepts that the paper introduces – data exceptionalism being the main one, along with supporting concepts like data affinity and critique – but the paper often mentions them for a paragraph and then moves on, or elaborates upon them in passive voice. There are also definitional gaps in the paper, where it is sometimes unclear how the headings relate to the rest of the section (e.g., in 2.2, what does "affirmations" really mean in this context? The paper starts to get at this definition in the second paragraph of 2.2 – "the affirmative model [is] a multi-layered phenomenon with a long history of tradition and various forms in contemporary practice" – but it stops short of explaining what the layers are, what kind of phenomenon it is, or its longer history. I appreciate that there is limited space in any paper, but there are other instances where the definitional gaps make it difficult to understand the stakes of the paper (e.g., exclusion, trivialization, idealization). These gaps make the argument vague, making the point of the paper difficult to grasp.

Let me use one paragraph at the bottom of page 2 (column 1) to illustrate my point about clarity, particularly as it relates to the main topic of the paper: data exceptionalism. The paragraph begins: "To summarize, data exceptionalism can be defined as an intentional reduction of the concept of data. This momentous simplification is primarily based on two momentous equations." Who is being intentionally reductionist? What aspect of data is the paper discussing? What is the simplification, and what is momentous about it? Additionally, what is an equation in this context? (I suspect this last question may be a problem of word choice.) The paragraph continues to argue in a fragment that "data always occurs in numerical-technical form, which negates all other forms of data." There is a vast literature in qualitative research that definitely considers data derived from qualitative work – e.g., ethnography, cultural critique, etc – "real" data (and I think Offenhuber's point in "Data by Proxy" is not that numerical data is the *only* form of data, but that there are many types of trace data that can be symbolically encoded). I agree (or rather, I assume that this is what the author means) that techno-deterministic narratives about data have become more pronounced with the rise of computational technology. However, I am not entirely certain what it means for "data society" to be "characterized [not] by the increasing quantity of data, but rather by the cultural projection of data exceptionalism." Again, who is doing the cultural projection, and what culture is it?

In the course of revision, I think this paper would benefit from grounding each of the concepts in specific examples. The language is extremely theoretical, but it is sometimes difficult to concretely understand what they mean in the context of specific types of visualization research. There is a longer history of data and visualization that I think could strengthen the paper, e.g., Daniel Rosenberg's "Data before the Fact," which charts the intellectual history of the concept of "data" (and its transformation into visual knowledge), alongside additional work on feminist perspectives of visualization (especially given the author's invocation of data *chauvinism*, p.2) from Lauren Klein and Catherine D'Ignazio's *Data Feminism.* I suggest these papers not simply as additions to the bibliography, but as references to strengthen the practical and historical discussions associated with the paper's theoretical contributions.

"Data" is a deeply contested concept throughout the history of science, and visualizations are themselves scientific and artistic artifacts that have been subject to multiple types of interpretation – from those who would consider themselves "members of the visualization research community" and beyond.

Overall, I think this paper would benefit from a deeply significant revision – in its structure and in detailing its conceptual contributions – by simplifying the sentences and being more concrete with specific examples. As it is, the theory (and the paper's language) can be difficult to understand and contextualize without reference to practice or examples.

Openness

I have no concerns about openness or transparency in this paper. This is primarily a theory and commentary paper that does not rely on replicability. However, the paper would benefit from specific examples or case studies to bolster its theoretical contributions.

Classification

Commentary

Classification

Theory

Recommendation

Major Revisions

Revisions Requested

1. Delete / revise instances of passive voice throughout the paper.

One major thing that dilutes the rhetorical power of the arguments throughout the paper is the use of passive voice. Two examples: "It must also be admitted that data visualizations were unable to solve the challenges…" (1), "It is now taken for granted that data is visualized" (3), "Data is visualized because a certain insight is hoped to be gained from it" (4). Who is admitting to what? Who is taking things for granted? What kinds of insight? Who is hoping to gain that insight? The actors of these different sentences could all be different, especially since the visualization research community itself is not homogenous. The lack of clear subjects (or antecedents) makes the paper difficult to understand.

2. Ground the conceptual contributions in specific examples or case studies.

Please give concrete examples of data exceptionalism and its associated concepts. There should be at least one sentence per concept that succinctly summarizes it; being able to illustrate it by example would be a second condition for each of the concepts. Please define the concepts like exclusion, idealization, etc. at the top of each section.

3. Explain the implications of why cultural critique is important in visualization research.

How does this change the way that visualization researchers across the field conduct research? What are the consequences of concepts like data exceptionalism, and how do these concepts enable new forms of research? What are those different avenues?

4. Create succinct definitions without passive voice of each concept before linking them together.

Similar to point 1, I think the paper would benefit from additional work on creating small definitions of each concept before elaborating more broadly (the theoretical discussion right now often becomes *so* broad as to be inscrutable).

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Review #3

Completed: 23-08-2024 13:59

Recommendation: Revisions Required

Conflict Declaration

I declare that I have no known conflicts of interest with the authors.

Review

This paper discusses the practice of creating data visualisations from a Media Theory perspective, as my background is in Information Visualisation, I don't make claims to be able to review from a Media Theory point of view. However, as a data visualisation practitioner I do fall into the target audience for this paper and so hope this review will be useful to both the editors and author. I previously reviewed the submission for this talk to be included at Info+.

This commentary paper discusses the phenomenon of 'affirmative visualisation'; a model which describes the act of data collection, processing, and visualisation as being driven by societal values more than critical inquiry. Coming from an industry background it would be hard to argue that that is never the case! I am not certain the problem described is as ubiquitous as claimed, but the discussion is warranted and well elucidated in the paper. Certainly, the core tenet that practitioners and researchers should address not just how they visualise data but why is a good conversation to encourage. I expect that there are both cases where this does not happen, and cases where it does happen but is not made visible at the end of the process. The paper presents an interesting outside perspective from the InfoVis community and with some modifications to make the arguments presented clearer

and more approachable for an Info Vis audience this paper could promote some interesting topics of discussion within the community.

Openness

Not relevant, commentary paper.

Classification

Commentary

Classification

Theory

Recommendation

Minor Revisions

Revisions Requested

1. A lack of definitions for some specialised terminology. These can be surmised from context but require effort, as someone with an Info Vis background this made it more challenging to parse some of the arguments. Terms that stood out to me included 'cultural technique' (section 1 first paragraph), 'cultural models' (section 2.1 second paragraph), possibly 'data hybrid' (section 2.1, third paragraph).

2. Section 2.1 could be restructured to make the argument clearer. It introduces three components which the author proposes to define the data exceptionalism model. The argument for the first of these components, 'data narratives', is introduced before these three components are mentioned, it might be clearer to introduce the three components before delving into what each exactly is. The second, 'data affinity', I found clearly defined. The third, 'data criticism' has a definition I struggled to parse, specifically the sentence: "The last aspect of data criticism shows that even in discourses that deal critically with data phenomena, the concept of data exceptionalism can be found as a claim to a state of exception." could be rewritten as the sentence is quite verbose.

3. This point sits a little close to opinion so could be disregarded but I found using Tufte's rules to avoid disinformation in visualisation as an example of exclusion a bit surprising. The point as I understand it is that visualisation guidance can be prescriptive in terms of what mapping choices result in 'truthful' visual representations and doesn't consider the fact that data collection was not done in a vacuum and has therefor introduced bias even before a vis is created (and that as a result most vises would implicitly carry forward those biases). That is a valid argument, but Tufte's guidance specifically calls out documenting the data and showing context which feel like methods you might use to counter or at least illuminate the biases present in the data? It would be nice

to see some clarification about what the community could do to communicate that visualisations are not neutral if that is not sufficient.

4. I would like to see some more discussion of alternative models to visualisation design which contradict the 'affirmative' approach. References 38 and 39 seem particularly relevant and I would have liked to see them discussed in a little more detail in the conclusion: what would normalising a culture of criticism practically entail? What are the next steps for the community to address this phenomenon? Especially given that this paper comes from a different discipline what lessons could we learn from that area?

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Metareview

Completed: 2024-10-24 11:56

Recommendation: Major Revision

Conflict Declaration

I declare that I have no known conflicts of interest with the authors.

Review

Top level summary: The paper has the potential to make a theoretical contribution to data visualization studies by critiquing its 2 prevailing, dominant discourses, "data exceptionalism" and "affirmative visualization."

All of our reviewers recognize the paper's conceptual value and its potential to contribute meaningfully to both visualization practice and scholarship.

However, revisions are needed to improve the quality of the paper, particularly through clearer definitions, a more organized structure, concrete examples, a stronger consideration of counterarguments, and more deliberation of existing critical literature within the visualization research community. These changes would make the paper's important theoretical insights more accessible to both broader audiences and more specific ones, such as the visualization research community and critical visualization subcommunity (who will likely be this paper's core readership).

I would stress up front to read each of the reviews submitted, for their own merit and details. I'll attempt to provide a synthesis of their feedback (and my own) here:

Slightly more detailed meta-review: A recurring concern across all reviews is the lack of clear definitions for key terms, which makes it difficult for readers (particularly those outside of media theory or critical studies) to fully engage with the argument. Reviewer 1 (R1) and Reviewer 2 (R2) both highlight this issue, noting that terms like "cultural technique" and "data hybrid" require clearer, upfront explanations. Reviewer 3 (R3) similarly emphasizes the need for succinct and accessible definitions, especially given the paper's theoretical nature. The lack of these definitions not only creates barriers to understanding but also weakens the broader argument by leaving key concepts underdeveloped. That being said, any piece that is bridging language, concepts, and methods from one area (such as media theory) into another (such as vis), will need to wrestle with this challenge. You will want to help your visualization readers not only believe you, but understand the core concepts as well.

Additionally, all reviewers point to the paper's structure and writing style as areas for improvement. R1 and R2 find that the argument in Section 2.1 is difficult to follow, partly due to confusing organization and the rapid introduction of new ideas without sufficient explanation. R2 and R3 both suggest that the writing could benefit from clearer topic sentences and a more linear progression of ideas, with R2 specifically recommending a slower pace to allow the reader to digest complex points. R3 adds that the frequent use of passive voice and complex sentence structures makes the paper unnecessarily opaque, further complicating the reader's ability to grasp the paper's contributions.

The reviewers also express a shared desire for more concrete examples to support the paper's theoretical claims. Both R2 and R3 call for examples that would help illustrate the abstract concepts of "data exceptionalism" and "affirmative visualization." These examples would not only help clarify the argument but also ground the paper's contributions in practical, recognizable scenarios from the field of data visualization. R1 similarly suggests expanding the discussion of alternative models to "affirmative visualization," which could be supported by examples that show how these alternative approaches might function in practice.

Another point of contention is the use of the Tufte example in the discussion of exclusion. R1 questions whether this is the best illustration for the argument and suggests that more clarification is needed. To speak plainly, Tufte is not regarded as an intellectual pillar in many visualization research circles (and has been a source of contention for at least 2 decades now). It is good to have a specific subject to critique, but Tufte is an already-heavily critiqued subject within existing visualization research literature. While I am not stressing that the critique of Tufte should be novel, it should at least reference more existing work on the limits of Tufte and even the dangers of his prescriptive approach and narrow perspective. It would also benefit to explore other subjects and examples in existing literature as well. This concern ties into a broader issue highlighted by R2 and R3: the paper should better address potential counterarguments and alternative perspectives, strengthening its critical engagement with existing work in our field. This paper may alienate some of the more critically-minded theorists and contributors who are already part of the visualization community by not referencing their existing work, critiques, and theoretical approaches.

Revisions Requested

In general, the revisions requested are major. I, like all reviewers, believe that this work can find a strong core argument that could have a tangible impact on our field of practice. However, significant work will need to be done to shift this paper from a more general, abstract piece of theory into a theoretical piece that has teeth; grounded, concrete, and clear about its ideas and implications when applied.

For an exemplary piece to study in terms of both format and content, consider carefully reading Akbaba's "Entanglements for Visualization" (2024) [1]. Consider how feminist terminology is introduced and then expanded on in this paper. Consider also how the authors worked to form and synthesize feminist critical theory into existing visualization practice in a way that enables new work and perspectives to arise. This will hopefully be a useful piece to consider when making revisions, as this piece will also need to do significant bridge-building for its audience.

Definitions of Key Terms (R1, R2, R3):

- Define specialized terminology (especially that is new to a visualization readership but can be referenced from elsewhere) more clearly at the start of the paper, including "cultural technique," "data hybrid," and "cultural models" and others.

- Provide succinct working definitions of "data exceptionalism" and "affirmative visualization" early on.

Clarity in Structure and Argumentation (R1, R2, R3):

- Restructure Section 2.1 for clearer argument flow, especially in introducing the three components of data exceptionalism before diving into detailed explanations.

- Simplify sentence structure and avoid technical jargon, particularly in critical sections like the introduction and 2.2, where concepts are introduced quickly.

- Revise passive voice throughout the paper to enhance clarity and provide specific subjects for claims (e.g., who is promising certain outcomes in visualizations).

Provide Examples and Substantiating Claims (R2, R3):

- Substantiate the claims made about data exceptionalism and affirmative visualization with specific examples or case studies. Consider incorporating real-world visualization projects to illustrate points.

- Slow down the argument in sections where key alternatives or critiques are introduced (e.g., critique of Tufte, Dear Data). Explain why these examples fit or need to be revised.

Address Gaps in the Argument (R1, R2, R3):

- Expand on alternative models of visualization that could counter the affirmative approach. Discuss the practical implications of adopting these models for the InfoVis community.

- Provide more guidance on how the critique of "affirmative visualization" leads to new ways of thinking and designing visualizations. Address steps the community can take in response to the paper's critique.

Improve Conceptual Linkage and Relevance (R3):

- Link the concepts together in a way that makes the argument clear and easy to follow, avoiding theoretical overgeneralization without sufficient explanation.

- Connect the main message and argument of the paper more clearly and concretely to specific examples, prior work in critical visualization, and/or case studies.

- Make clear how this work shifts the outcomes of research and practice in visualization. Explain the implications of new concepts (like data exceptionalism) and how these can be applied to future work and critique.

References [1] D. Akbaba, L. Klein and M. Meyer, "Entanglements for Visualization: Changing Research Outcomes through Feminist Theory," in IEEE Transactions on Visualization and Computer Graphics, doi: 10.1109/TVCG.2024.3456171.

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