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# Supporting Journalistic Trust Determinations: A Heuristic Analysis of News Trust Tools Through a Transparency Lens

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To combat declining trust in news in the United States, numerous tools have been created to increase transparency by providing contextual information around news content, but they have largely been developed without regard for usability. We examine 59 such tools to identify the type(s) of transparency (disclosure, participatory, or ambient) information each tool aims to provide. We then conduct a heuristic usability analysis of a subset of these transparency tools and identify common usability barriers.

## INTRODUCTION

While online news consumption in the United States is prevalent, trust in news is declining (Gottfried & Liedke, 2021; Pew Research Center, 2020), with 50% of Americans expressing misgivings about both journalists and the broader news media realm (Pew Research Center, 2020). Recently, increasing transparency around news information has been suggested as a means to promote trust in the news (Knight Foundation, 2018; Wenzel, A. & Nelson, J., 2020). Several tools have been developed to provide online news consumers with more details about the news they consume, but the usability of these tools has not been assessed. We address this gap by examining a set of online news transparency tools to assess their relative usability and answer the question: What transparency approaches do these tools use, and which usability heuristics are met - and which are violated - by tools aimed at empowering news consumers by increasing news transparency?

## RELATED WORK

Research indicates that transparency, engagement, and racial and ideological diversity in the newsroom are important factors in influencing trust in news (Knight Foundation, 2018; Wenzel & Nelson, 2020). In particular, 71% of Americans deem news publishers' commitment to transparency "very important" when making trust determinations (Knight Foundation, 2018). Tools designed to provide transparency around different aspects of the journalistic process have emerged recently, with some focused on sharing supporting documents, fact-checking claims in articles, and identifying potential misinformation on social media (Yang et al., 2022; Mor & Reich, 2018; Rodríguez-Pérez et al., 2021; Schifferes et al., 2014).

According to Karlsson (2020, 2010), there are three types of transparency that can be applied to news content. The first of these is *disclosure transparency*, which addresses how and why news is being made. The second is *participatory transparency* which invites non-journalists to engage in various parts of the news

production process (e.g., commenting or sending in images of events). The third is *ambient transparency*, which includes the display of information near news content to support news consumers in evaluating and forming new meanings around that content. For example, adding hyperlinks, journalists' personal opinions, or labels indicating whether a news story is considered opinion or news are all ways to provide ambient transparency.

While increasing news transparency on any of these dimensions is a promising approach to improving trust in online news, none of the available tools have been analyzed in terms of their transparency approach, nor their usability. This is precisely the gap we address with this work by categorizing these tools to contribute a better understanding of the tools available for online news consumers and their ability to enable usable transparency rituals for digital news consumption.

# METHODOLOGY

One key effort to index tools designed to improve news consumers' trust in online news is the RAND Fighting Disinformation Online Database ("Fighting disinformation online", n.d.). Compiled in 2019, this list has 82 tools that aim to fight misinformation and excludes tools that enable privacy as their main concern, commercially monitor media, were created by for-profit companies, and were developed internationally ("About our methodology," n.d.). RAND compiled this list robustly to help others fight misinformation. As a side effect of revealing relevant information, these tools also enable rituals of transparency. We used this database to identify our sample of tools to review for our two-part study. Then we conducted a heuristic evaluation of a random selection of four tools.

We began by analyzing the tools in the RAND database for the type of transparency enabled by each tool in the winter of 2021. Out of the 82 tools in the RAND database, 23 were no longer accessible. These tools were removed from our sample, leaving 59 tools for analysis.

After identifying our sample of 59 tools, we classified the tools based on Karlsson's (2020, 2010) transparency rituals. The tools were sorted into four categories: ambient transparency, disclosure transparency,

participatory transparency, and multi-level transparency (i.e., tools that enable a combination of two or more types of transparency). Twenty-six tools enabled disclosure transparency, ten enabled participatory transparency, and three enabled ambient transparency. Additionally, 20 tools employed multi-level transparency: 13 combined ambient and disclosure transparency, and seven tools combined participatory and disclosure transparency. None combined ambient and participatory transparency.

A subset of the tools (n = 4) was randomly chosen for the heuristic analysis to avoid bias. The subset consists of two disclosure transparency tools and two participatory transparency tools. We chose not to examine ambient transparency tools because they were few in number and usually combined with another transparency form. To analyze this subset, the research team split into two groups. Each group evaluated two tools. Applying Nielsen's heuristic evaluation for interface design (Nielsen & Morlich, 1990), the teams identified which usability heuristics were violated and collected screenshots to provide image examples for every violation. The teams regrouped to discuss findings and reach a consensus on all heuristic violations identified.

#### RESULTS

The heuristic evaluation of the subset of tools revealed that all four tools violated many of Nielson's principles for interface design. The tools could violate any of the following ten usability heuristics (UH): Visibility of system status (UH1), Match between system and the real world (UH2), User control and freedom (UH3), Consistency and standards (UH4), Error prevention (UH5), Recognition rather than recall (UH6), Flexibility and efficiency of use (UH7), Aesthetic and minimalist design (UH8), Help users recognize, diagnose, and recover from errors (UH9), and Help and Documentation (UH10). Table 1 summarizes the violations observed in each tool. Detailed findings related to the selected disclosure transparency tools (ExifData and Newstrition) and participatory transparency tools (Public Editor and Trive Verify) are documented below.

ExifData. ExifData is a web-based tool that provides information about the source, timestamp, modification, and creation of an image. This tool can be used to authenticate images and prove their veracity. We found the tool violates 9 heuristics. The tool violated UH1 in that it did a poor job of indicating the processing status of the image. There were two violations of UH2 in the summary section of the tool (Figure 1). Under the compression tag, deflate/inflate does not present information in terms the average user can understand. Also, the time format used - while the standard for those with computer programming knowledge - is unfamiliar to the average user. UH3 was violated in that there were

Usability Heuristic	ExifData	Newstrition	Public Editor	Trive Verify
UH1 - Visibility of system status	1	3	3	0
UH2 - Match between system & real world	2	0	0	0
UH3 - User control and freedom	1	0	0	3
UH4 - Consistency and standards	2	0	0	0
UH5 - Error prevention	1	0	0	1
UH6 - Recognition rather than recall	0	0	2	0
UH7 - Flexibility and efficiency of use	1	3	2	1
UH8 - Aesthetic and minimalist design	2	1	0	1
UH9 - Help users recognize, diagnose, and recover from errors	2	0	0	2
UH10 - Help and documentation	1	1	2	3

Table 1. Results of the heuristic analysis on the four selected news trust tools displaying the number of times each violation occurred

no obvious mechanisms for undoing a photo upload. UH4 was violated in the page's confusing navigation, which used the same style of buttons used in the page headers. UH5 was violated in that there was no recourse to understand why an upload error occurred or how it could be fixed. With regard to UH8 violations, ads obscure the view of the tool and it does not succinctly indicate whether an image was tampered with. UH9 is violated twice since ExifData does not help the user recover from two types of image upload errors. Regarding the UH10 violation, there is no documentation to help users understand the tools' analysis of an image.

*Newstrition*. Newstrition is a tool that provides information about news sources and rates the



Figure 1. Display of inconsistent navigation buttons and headers

accuracy of individual news stories. The evaluation revealed the tool violates four heuristics. The tool

violates UH1 since it displays information for both users and professional fact-checkers in the same place on the webpage, meaning there is no way for users to differentiate between the two. It is uncertain if member reviews get vetted before being shared, causing the reliability of the displayed scores to decrease. Additionally, the tool provides general ratings for areas like trust, accuracy, and relevance (Figure 2). However, it does not further indicate which portions of the article are inaccurate or untrustworthy or explain how it earned these ratings.

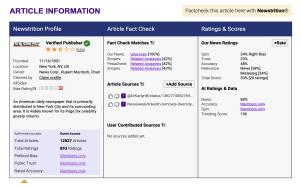


Figure 2. Newstrition article information section

Newstrition also features a "Fact Check Matches" section that allows users to use external fact-checking sites such as FactCheck.org and Politifact. This feature is vague and confusing: the score displayed by each site has no labeling or breakdown, making what they represent and contribute to the overall evaluation of the article unclear.

The evaluation also uncovered UH7 violations in the "Rate This Article" section which lets users share their opinions on the article. This section only allows the use of specific metrics while also leaving out references to fact-checking websites displayed in other areas of the website which limits feedback and causes an incomplete score since all facets of feedback are not considered. Other feedback prompts are visually awkward and do not benefit the user. For example, the tool includes a thumbs up or down mechanism for rating verifications provided by external fact-checking websites. The article headlines and fact-check website logos do not correctly appear on the page. There also is no way to see how many users upvoted or downvoted each source. This section's only readily visible aspects are hyperlinks that are often too long to display fully. Overall, there was no way for individual users to customize the tool for their specific needs. Everyone interacts with the same static page and some of the features, such as viewing scores from external fact-checking sites, are for paying members only.

The final two heuristics violated were UH8 and UH10 since the main design of the Newstrition site is cluttered and has an outdated aesthetic (Figure 3) and the "How To" sections provide very brief and unintuitive

instructions on using the tool.



Figure 3. An overview of the Newstrition home page

Public Editor. Public Editor is a rating system that employs crowd-sourced credibility tactics to score articles based on mistakes, cited sources, apparent bias, and other relevant information. The evaluation revealed the tool violates four heuristics.

UH1 was violated because the calculations involved to reach the overall score for each article are unclear. The system does a poor job of consistently identifying where specific points get deducted in the article and the scores are often calculated incorrectly. Public Editor occasionally has issues with how the overall score is displayed. In some instances, a large question mark may appear next to the article's score (Figure 4). Because it is so large, it obscures the rating. The question mark indicates some evidence in the article still needs to be fact-checked. The question mark makes the main score look provisional at its current size, although the other aspects of this grade are calculated and only one component is missing.



Figure 4. Public Editor uses the question mark beside the article's overall score to indicate when an article still needs to be fact-checked

Public Editor violated UH6 since the mechanism to toggle between the two article views (Article Elements and Classic View) is obscure and the toggle action between the two views is confusing. In the Classic View, there are more usability issues. In this mode, portions of the text are underlined using different colors. The color codes for misinformation types are arbitrary, and there is no legend for users to refer to for more information anywhere on this screen. Hovering over the underlined text only provides vague descriptions. For users to learn the meaning of each color, Public Editor forces them to switch back to Article Elements mode. They must hover over the corresponding color on the pie chart to clarify which color denotes what category of misinformation.

The final two heuristics violated were UH7 and UH10 since Public Editor's interface is immutable and

lacking in information about how an article is reviewed. There is no option to customize the interface, alter the scoring information, or choose the types of articles a user wants the tool to verify, and there is no way to identify the type of article under review. Also, the tool lacks an intuitive guide that communicates how articles get reviewed. The provided help section is sparse. The help section only summarizes the tool's utilities (Figure 5).

"Public Editor's Credibility Hallmark allows you to quickly understand an article's Credibility Score (from 0-100). Hover over the Credibility Hallmark to learn how many points were deducted from the article's total Credibility Score for each mistake. If you click the outer ring of the Credibility Hallmark, you will automatically scroll to the erroneous passage within the article.... If a question mark -? - appears in the center of the Credibility Hallmark, the accuracy of the article's credibility score cannot be determined until claims within the article are fact-checked."

Figure 5. Users can find the Public Editor help section after clicking on the question mark icon

Trive Verify. Trive Verify is a tool that fact-checks information through fact-checking and blockchain indexing. With this tool, a user can submit 'Trives', or fact-checking requests, to researchers and verifiers. A heuristic evaluation of this tool revealed 11 heuristic violations. There were three clear UH3 violations on the submission page (Figure 6). These violations include an exclusion of a mechanism that saves submission progress, an option to undo the upload of an image, and a process that allows the user to undo the submission of a Trive request. In all of these cases, the user lacks the freedom to undo or save their progress.

There was one clear UH5 violation - the user could easily submit the same Trive request twice. UH7 was violated on the interface because it did not include the incredibly common drag and drop feature. This unavailability is not made clear either, so a user dragging and dropping an image onto this page results in the population of that image on another tab. UH8 is violated twice on this interface since the ubiquitous orange and black design throughout the website makes it difficult to focus on the functionality of the website. There was one clear UH5 violation - the user could easily submit the same Trive request twice. There was one clear UH5 violation - the user could easily submit the same Trive request twice. UH7 was violated on the interface because it did not include the incredibly common drag and drop feature. This unavailability is not made clear either, so a user dragging and dropping an image onto this page results in the population of that image on another tab. UH8 is violated twice on this interface since the ubiquitous orange and black design throughout the website makes it difficult to focus on the functionality of the website. The second UH8 violation is the image on the Trive submission page. This image seems to describe the Trive process, but it serves no function and

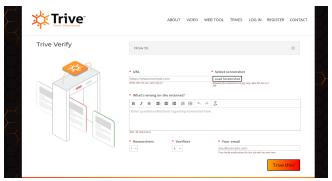


Figure 6. Trive requests submission page

takes up about ¼ of the screen. There is only one violation in terms of UH9, and it occurs on the submission of a Trive. The submission button will not allow the user to click it if there are no inputs to the form. But if there is an issue with the image, it will still allow the user to click, which is an inconsistent way to help the user recover from their mistake. The final heuristic violations are UH10 violations. One clear issue with documentation is that some of the 'help' is delivered through an image. This form of assistance is not searchable, nor is it accessible to users with disabilities. The second unconventional way that help is provided through the Trive site is through a video. There is an instructional video that shows the users how to utilize the tool, but this is not a searchable mechanism that provides adequate trouble-shooting information. Additionally, the documentation that is in print offers no insight into how to operate the Trive feature or what to do in case of errors.

## **DISCUSSION AND LIMITATIONS**

Existing transparency tools provide several transparency-enabling features, focusing on one type of transparency (e.g, disclosure, participatory, ambient) or combining multiple types (i.e., multi-level transparency). Yet, our heuristic analysis of a random subset of these tools shows that each tool analyzed violates multiple heuristics outlined by Nielsen.

In particular, all four tools violated the flexibility and efficiency of use and the help and documentation heuristics. For example, the tools offer limited customization. Additionally, the help documentation of all four tools is extremely limited. While one of the tools provided a tutorial on the website, this tutorial was directed toward contributors, not users. The lack of documentation hinders the tools' ease of use. Additionally, the aesthetic and design of the tools were lacking. Newstrition's design is cluttered and confusing, and Trive Verify and ExifData include page elements that cover the page and inhibit functionality. Public Editors displayed a more user-friendly minimalist design, but the usability was hindered by its lack of documentation. These usability issues create barriers to the effectiveness of these tools.

An interesting finding unrelated to the types of

enabled transparency was the number of unavailable tools on the RAND list. The inaccessibility of over 20% of tools on the initial list could be indicative of other widespread usability issues. While tools can be deprecated for reasons like a lack of funding or supporting staff, several other reasons related to a site's usability could also be to blame. Reasons such as a lack of maintenance to the site, inattention to user concerns, or a lack of attention to any of the usability heuristics, in general, could all contribute to the deprecation of these sites. Further research should investigate whether or not these tools are no longer accessible for any of these usability-related issues.

These findings should be considered in light of two limitations. First, we only examined the tools identified in the RAND database. While the database identifies disinformation tools that all provide transparency features, it was not developed to specifically identify transparency-enhancing tools. It is likely there are other transparency tools that should be included in future work. However, the RAND list was developed with a robust methodology ("About our methodology", n.d.); the list is comprehensive and free of potential conflicts of interests that could arise from lists compiled by groups developing or profiting from such tools ("Alumni impact fund donors", n.d; "How We Are Funded", n.d.). Thus, it provides a useful starting place for identifying available transparency-enhancing tools. Second, since we limited our heuristic analysis to four tools, the usability issues identified may not reflect the whole range of issues for transparency tools.

To conclude, we categorized news tools on dimensions of transparency practices and analyzed the usability of a subset of tools enabling disclosure and participatory transparency. We found these existing tools suffer from obvious usability flaws. While it is promising that users can access tools designed to help them engage in transparency rituals, users will not be able to effectively utilize these tools if these usability issues remain. Fortunately, many of these heuristic violations are easily remedied (e.g., adding help documentation, notifying users of system errors). In the future, we plan to conduct an independent aggregation and analysis of additional tools, resulting in a broader picture of the usability of tools for news transparency and a better understanding of how to improve the user experience for these tools.

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