Fragile Perspectives: A Multi-Sensory and Multi-Media Installation Reflecting on News Landscapes

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ABSTRACT
What do news landscapes look and sound like? And how can we transform them into tangible objects to see clusters of over-reporting, or to hear the missing voices in under-reported topics? A new artwork called Fragile Perspectives was developed to explore how news coverage clusters for different themes. Using a very large news information set generated to explore creative angles and voices in news, new tangible objects of news landscapes were produced by clustering 1000s of individual news articles into 300 dimensions, then reducing these dimensions to 3-dimensional maps. These 3-dimensional maps were then manufactured as glass objects produced using the glassblowing techniques similar to those perfected on the Venetian island of Murano, then digitally scanned to excite virtual strings to produce the sound using a data sonification method based on physical modelling sound synthesis. These glass objects and the generated sound were combined to produce the Fragile Perspectives artwork.

CCS CONCEPTS
• Applied computing; • Arts and humanities; • Media arts;

KEYWORDS
News, journalism, information landscape, 3D visualization, glass sculptures, data sonification

ACM Reference Format:

1 OUR MOTIVATION
A new art-tech collaboration involving the authors explored how to depict large information landscapes about news topics in more engaging and informative forms. Most people consume news in ways that filter out most of the published articles and the diversity of opinions published, and remain unaware of the wider news landscape, even about relatively simple topics. In response, the Fragile Perspectives artwork sought to expose members of the public to wider news landscapes, to explore how issues such as over- and under-reporting of news, lack of diversity of opinions, news production interests and external limitations all shape wider news landscapes. This artwork was built on top of JECT.AI, a commercial product for use in newsrooms.

2 GENERATING THE NEWS LANDSCAPES IN JECT.AI

JECT.AI was a research-based digital product designed to augment the abilities of journalists by automating the discovery of new content, angles and voices for articles being written. To deliver this creative intelligence, it integrated natural language processing, multi-language creative search, and interactive creativity guidance to discover information in published news stories and support journalists to form new associations with this information during creative thinking [3]. It was also designed to contribute to journalist engagement in professional-level creative work, i.e., work that generated income and provided them with a living [2]. It was implemented to be used by journalists with different client applications, including as sidebar plug-ins to text editors such as Google Docs, Wordpress and Adobe InCopy, and to the CUE content publishing platform [5] used in newspapers such as Die Welt and the New York Times. An example of JECT.AI’s interactive guidance to journalists is depicted in Figure 1. In response to an entered topic (e.g., “COP26 Climate”), JECT.AI’s algorithms automatically generate guidance to augment journalist creative thinking about the topic.

Underpinning JECT.AI’s creative intelligence was a unique asset – a large and complex semantic model of published news and scientific work, which is called the creative news index, which the tool generated automatically. The index contained semantic information about over 23million news stories written in 8 languages and 175,000 scientific articles and papers published between 2017 and 2022. It was this creative news index that provided the means to explore wider news landscapes.

However, JECT.AI’s capabilities did not provide journalists with exposure to one entire news landscape – the coverage of a topic over time in different countries. Abstract concepts like information clusters, patterns of biased information, or news coverage of issues like climate change or COVID-19 in different languages are difficult to detect and represent, especially in light of the volume of news information available. Systematic biases in news reporting
can take many forms, e.g., under-reported news topics, imbalances in how topics are reported by newspaper group or geographical area, and how specific topic narratives are reinforced by different titles belonging to the same publishers who seek to nurture certain beliefs based on one-sided points-of-view and bias the presentation of counternarratives. The authors’ experiences acquired when designing JECT.AI revealed the difficulties of understanding news landscapes without new forms of feedback.

3 THE FRAGILE PERSPECTIVES ARTWORK

The response was a new collaboration to produce an artwork called Fragile Perspectives, which was intended to stimulate new insights about news landscapes. Fragile Perspectives refers to the fragility of opinion that each of us forms based on the pieces of information that we put together to support our beliefs, that we agree or disagree with, and that appear different when looked at from other perspectives. Using available news information landscapes generated in the JECT.AI’s creative news index, new objects and soundscapes could mediate abstract concepts and complex data as tangible and sound objects. These objects have the potential to reveal the impact of unrecognized clusters of information, biases, and spaces for more diverse interpretation. Using these outputs, the Fragile Perspectives artwork sought to raise awareness about the quality of the information we consume everyday by exposing the landscapes of news information clusters and the importance of original journalism to inform opinions, decision-making, and support transparent democratic processes. The artwork developed new representations of these news landscapes in glass and sound.

4 HOW FRAGILE PERSPECTIVES WAS CREATED

The inputs to the process of creating the Fragile Perspectives artwork were five news information sets. Each set was generated automatically by the JECT.AI product using a separate input topic (censorship, climate crisis, pandemic, populism and future). Combined, these five sets were composed of up to 8,716,010,711 individual terms extracted from 2,193,742 published news articles. Each of these terms provided a different dimension by which to describe the published news. E.g., articles published about the COVID-19 pandemic included dimensions such as vaccines, quarantine and death-rates. A total of 300 dimensions were identified.

A new automated algorithm was then implemented to reduce these 300 dimensions of news content to 3 primary dimensions, which in turn were used to produce 2D and 3D digital visualizations of each of the news landscapes. The natural language terms describing each article were transformed into numerical semantic equivalents using an established word embedding algorithm. Word embeddings are a type of numerical representation of natural language terms that computed terms with similar meanings to have similar numerical representations. Each term was represented by a numerical vector, often with 10s or 100s of dimensions. This algorithm was applied to compute a coordinate for each article in a
multidimensional semantic numerical space. Articles that were semantically more similar were placed closer to each other, to enable the formation of multiple clusters in each the five news information sets.

Each of these news information sets was then visualized as a 2D image using UMAP, an automated dimension reduction technique for visualizing similarities in large datasets [4]. These five 2D visualisations were produced by searching for low dimensional projections of the data with the closest possible equivalent fuzzy topological structure. Figure 2 shows the resulting UMAP 2D projections of the multidimensional news spaces for each of the five information sets.

Each 2D projection was then extruded into an equivalent 3D map in which higher density clusters depicted in white formed peaks and lower density areas in black formed troughs, see Figure 3.

Each of these 3D maps was then manipulated digitally to form the shape of a cylinder, and physically printed using a 3D printer to provide moulds for the glassblowing process, see Figure 4. Each individual glass and metal object was formed through a collaboration with experienced art glass blowers and metal workers. The glass material reflected the exhibition venue in Venice. Glass has been manufactured in the city for over 1500 years, and the island of Murano has been as its centre for glassmaking since the 14th century. Each of the resulting glass objects stood on a metal stand produced for that object.

The last step produced one sonification for each of the five 3D news landscape maps. The production of each sonification used a technique reported in [1]. A bespoke algorithm implemented in SuperCollider using the OpenCV library scanned each of the news landscapes in turn to transform its topology into audible sound waves that excited a virtual string, which in turn generated the final sound.
5 THE RESULTING FRAGILE PERSPECTIVES INSTALLATION

The resulting Fragile Perspectives installation consisted of five glass objects that represented the five news landscapes produced from the JECT.AI product’s generated creative index of published news about populism, censorship, pandemic, climate crisis and future. One of these glass objects is depicted in close-up in Figure 5. Each piece of glass was mounted on a metal stand intended to remind the audience of the aesthetics of telescopes – an invention first applied to astronomy in Venice by Gallileo in 1609.

In turn, each metal stand held a loudspeaker in its base, and the generated sound for each news information space was played through the corresponding loud speaker. Collectively, these five news sets play together as if the strings of a 5-stringed instrument. Furthermore, experiencing the tension of the glass pieces on vibrating metal makes the audience aware of the fragility of
Figure 6: The glass objects mounted on individual metal stands that held loudspeakers in their bases, leaving space for the audience to walk between them

Figure 7: Spotlights placed to highlight the glass objects

the perspectives that are generated by the news consumed. Each glass object-speaker pair was placed on a separate plinth to allow audience members to walk between them, view the details of each glass object and experience the related soundscape produced by the loudspeakers, see Figure 6.

In addition, spotlights on each of the sculptures highlighted the glass objects and amplified the distortions created by the peaks and troughs built into each object, see Figure 7.

More information about and a video showcasing the Fragile Perspectives artwork is available online at: http://rayzhekov.com/projects/fragile-perspectives/.

6 FRAGILE PERSPECTIVES - FIRST CONCLUSIONS

The Fragile Perspectives artwork sought to make the scale and complexity of news landscapes approachable at three levels. First, the set up of the five glass objects created a landscape of different perspectives on news to walk through and explore. Second, the soundscape added a further layer of understanding by addressing a second sense – sound – in the form of rhythms that reveal the parts of the five news landscapes that are more or less excited. Third, through the individual glass objects, the news landscapes became tangible objects that give a direct visual reference to what these large and complex landscapes may look like. Scaling or reducing complex concepts is a valuable practice, both in art and in science, to provide a better understanding of things or mechanisms that are otherwise too small or too big to imagine. Through these three layers of experience, members of the public are able to explore the five news landscapes and themes such as the underreporting of news, lack of diversity of opinions and news production interests.

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REFERENCES


