Plasmatic Visualization: Visceral Attunement to Environmental Data

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ABSTRACT

In this pictorial, we introduce the conceptual framework of "plasmatic visualization," an interactive form of data visualization that incorporates the image of the observer to provoke critical reflection on how data, bodies, and environments are mutually constituted. Drawing on the concept of plasmaticness from cel animation theory, we extend environmental data visualization beyond stable, objective representations toward affective, mutable experiences. We present "Plasmatic Mirror," a design prototype using a real-time video camera co-located with an architectural-scale display to illustrate the principles of plasmatic visualization and engage participants in a reality-bending encounter with data on microplastics in the news. Through this work, we articulate three defining aesthetic qualities of plasmatic visualization—shifting from representational to visceral experience; from separate to entangled forms of visualization; and from exploring to attuning to environmental data—to support HCI designers in creating interactive data visualizations that prompt audiences to reflect on their relationship to environmental issues.

Authors Keywords
Interactive Art, Affective, Embodiment, Plasmaticness, Animation

CSS Concepts
• Human-centered computing → Visualization; Interaction design

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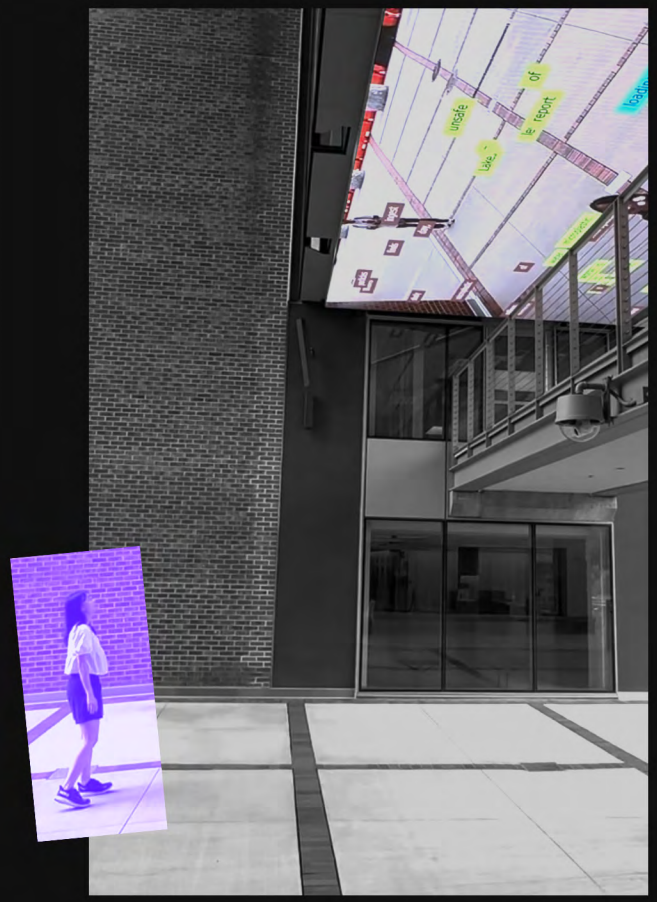


IMAGINE YOU ARE ON A WALK,

when you come face to face with a full-body image of yourself on an architectural-scale digital display mounted on the underside of a bridge between two buildings.

AT FIRST, THE IMAGE SHADOWS YOUR EVERY MOVE; IT IS A PERFECT MIRROR.

Then it begins to transform. A digital skeleton appears superimposed on your image, conveying the pose model that detects your moving body.

THE MIRROR IMAGE STARTS TO BREAK APART.

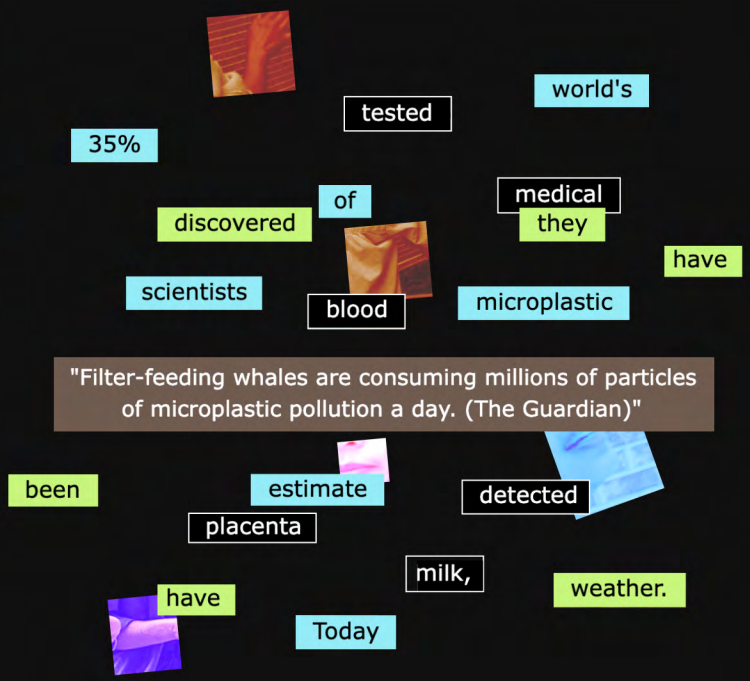
A square shard depicting your face freezes and separates from the background, floating as if it were in the air. This fragment shatters again and again into smaller pieces. Each time, the pieces become less recognizable until they are no more than bits of debris scattered around you.

AS YOU MOVE, THESE FRAGMENTS STICK TO YOUR MIRROR IMAGE.

They pile up and cover your reflection. Your image begins to resemble a trash island.

TEXT FROM NEWS EXCERPTS APPEARS, FEATURING VARIOUS STORIES ABOUT MICROPLASTICS.

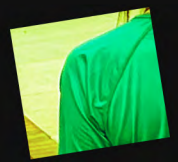
These text fragments also break down into smaller units. The text pieces stick to your image fragments. The words act like labels: "fibers," "particles," "products," "synthetic," "detected," "discovered." As you move side to side, this growing amalgam of image and text fragments follows you, growing bigger and more chaotic by the second.

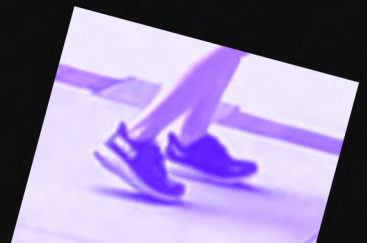


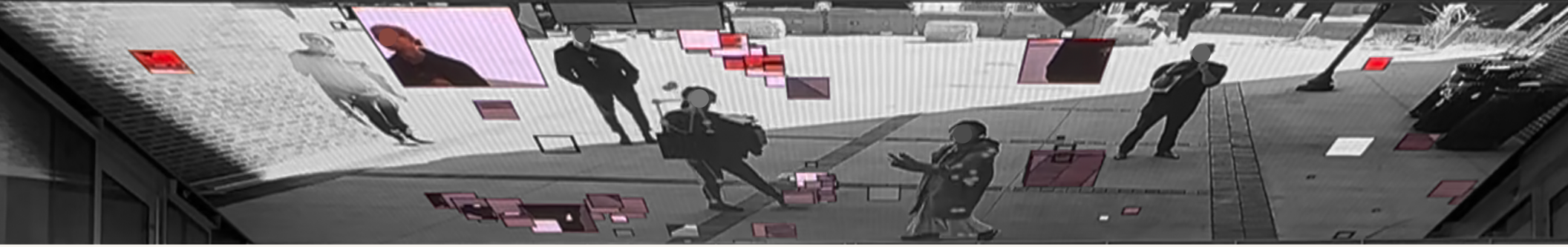
AS THE CHAOS SEEMS POISED TO OVERTAKE THE ENTIRE SCREEN, EVERYTHING GOES BLACK.

Then, in the center of the display, a definition of microplastics appears:

"Microplastic (n.) Extremely small pieces of plastic, manufactured as such (in the form of nurdles or microbeads) or resulting from the disposal and breakdown of plastic products and waste" [53].

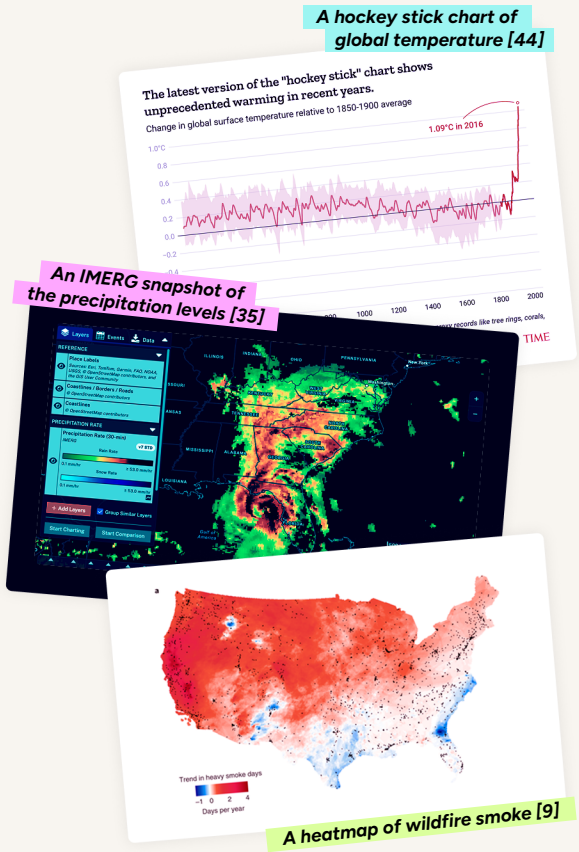






INTRODUCTION

As environmental concerns have grown globally, data visualizations have become central to how people understand them (for example, a hockey stick chart of global temperature [44], an IMERG snapshot of the precipitation levels [35], and a heatmap of wildfire smoke [9]). Traditionally, these visualizations have prioritized scientific objectivity by using satellite imagery, climate models, geographic information systems (GIS), or other representations such as graphs and charts [12]. However, this approach of visualizing data can make environmental problems feel distant and disconnected from personal and embodied experience. In this paper, we bring in the concept of "plasmaticness" from animation theory, which describes the ability of animated bodies to expand, contract, stretch, and transform while maintaining their core identity [15, 26], as a means of rethinking engagement with environmental data.



Recent research in HCI and design explores the importance of data visualization in shaping how audiences develop feelings about data, not just rational conclusions [14, 24, 45, 63]. We see this in projects that use visualization to raise awareness about social and environmental issues and support civic engagement [16]. Flawn and Soden, for example, use affective qualities of data to support grassroots climate organizing by eliciting shame and anger or solidarity and joy [18], demonstrating the *emotional power* of visualization [39]. Moving from the emotional power of what we see to the physical sensation of what we feel, Dobson explores how a body can experience data emotionally and physically through tangible, embodied encounters via *data visceralization* [13]. Our work builds on these embodied and affective approaches to data by demonstrating an experiential approach to visualization that borrows from animation theory.

Our main contribution to HCI is a conceptual framework: *plasmatic visualization*. This is an interactive form of data display that playfully incorporates the image of the observer, with the aim of provoking critical reflection on the way data, observers, and environments are mutually constituted.

In support of this conceptual innovation, we present the design process and prototypes for "Plasmatic Mirror," an interactive data experience that uses the urgent, but often intangible, case of microplastic pollution—ubiquitous in the environment and the human body [54]—to explore audiences' relationship to environmental issues. Our approach makes use of design as a process of inquiry and concept development, which is in line with research methods such as critical making [55] and reflective design [57].

Through our design work and observation, we articulate three defining aesthetic qualities of plasmatic visualization: shifting (1) from representational to visceral experience, (2) from separate to entangled forms of visual encoding, and (3) from exploring to attuning to environmental data. We contribute plasmatic visualization as a concept for HCI designers working with environmental data visualizations that can prompt audiences to critically reflect on their relationship to environmental pollution.

Plasmaticness from Animation Theory

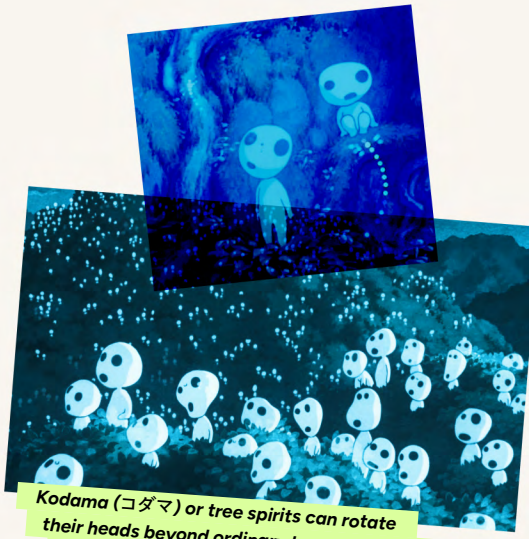
Plasmaticness as a concept originates from animation theory. Russian filmmaker Sergei Eisenstein coined the term "plasmatic" to refer to **the capacity of animated forms to change and adapt beyond normal biological and physical constraints, dynamically assuming any form** [15]. This concept was later adopted and expanded in animated films to engage with a variety of themes related to the embodiment of film characters. For instance, Ursula Heise writes that *plasmaticness* has enabled animation to become the principal aesthetic genre for environmental storytelling—in particular by challenging the way we understand the boundaries between human and nonhuman agency [26]. Matthew Solomon also discusses plasmaticness as a way to expand the capabilities of digital transformation in films [58]. We argue that the concept of plasmaticness can uniquely contribute to environmental data visualization because it reframes the form as an embodied, affective encounter, which can prompt participants to reflect on their own relationship to their surroundings.

The concept of the plasmatic body in early animation has been portrayed in various cartoon characters whose body parts can transform to different shapes or mimic objects. Examples include Julius the Cat, a fictional anthropomorphic cat who appears in *Alice Comedies*, pulling off his tail and turning it into a stick [36], and Mickey Mouse, whose body stretches unnaturally when pulled [61]. Plasmaticness has also been used as a language to explore the relationship between humans and nonhuman nature. Plasmatic bodies—both human and nonhuman—can be used to illustrate either the fragility or adaptiveness of the natural world [26]. For instance, in Miyazaki's works [21]: No-Face (顔無し), the mysterious spirit in *Spirited Away* (千と千尋の神隠し), has the ability to expand and reshape his body, swelling as he consumes other nonhuman actors; Kodama (コダマ), or tree spirits in *Princess Mononoke* (もののけ姫), have bodies that move in uncanny, mechanical ways, as they rotate their heads beyond ordinary human limits, producing a disorienting sense of liveliness that is neither fully *natural* nor fully *human*. These animated qualities demonstrate how plasmaticness is used to dissolve established categories that define human and nonhuman bodies.

In Plasmatic Mirror, we experiment with several of these strategies in the portrayal of the participants' bodies in relation to data. For example, drawing from Eisenstein's definition of plasmaticness as the "rejection of once-and-forever allotted form," [15] our design breaks apart the participants' body image and lets bodily elements float and drift in multiple directions.

Julius the Cat plucks off his tail and turns it into a stick [public domain]

Mickey Mouse's stretchy body when getting pulled [public domain]



Kodama (コダマ) or tree spirits can rotate their heads beyond ordinary human limits [21] © 1997 Hayao Miyazaki/Studio Ghibli, ND

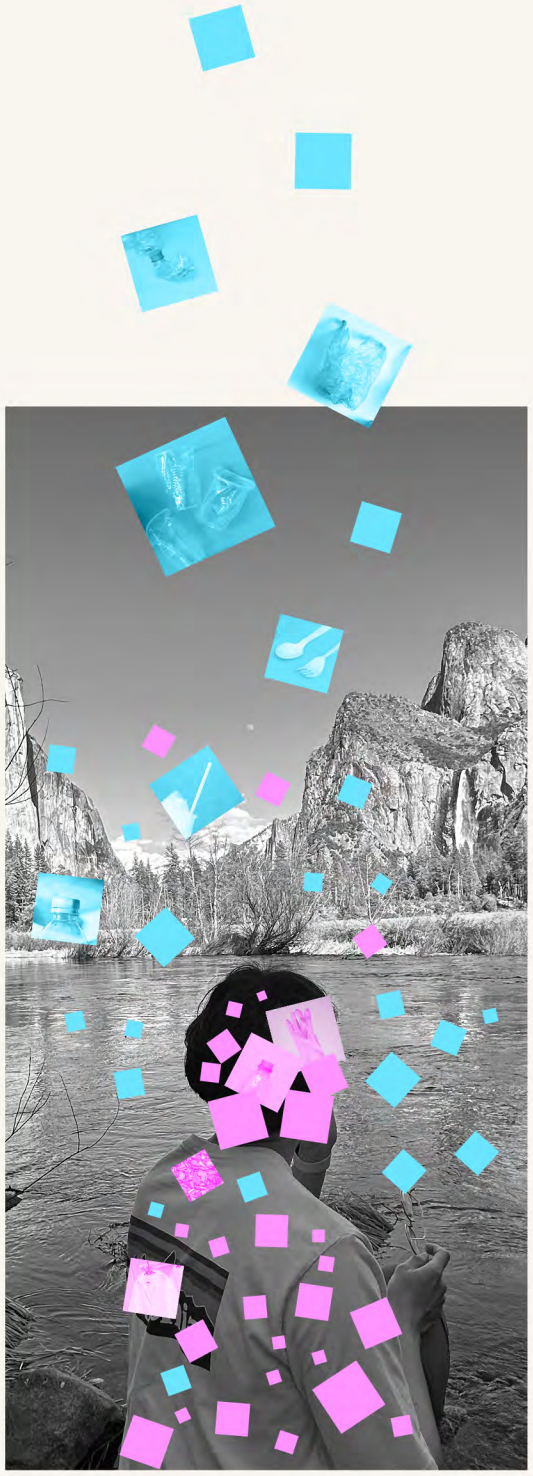
No-Face (顔無し) has the ability to expand and reshape the body [21] © 2001 Hayao Miyazaki/Studio Ghibli, NDDTM

Embodied Approaches to Environmental Data Visualization

Prior design projects in HCI have engaged environmental problems through embodied interaction with data to explore how environmental conditions are interpreted through bodily experience in addition to representation of data alone. For instance, HCI researchers use data physicalization [34, 62] to bring environmental data (e.g., water [46], climate [17,60], and in-home water pollution and mold [31]) into three-dimensional, material form, making them tangible, embodied, and *felt*.

Other tangible interaction projects explore wearing environmental data on *the body*, enabling reflections on environmental problems through embodied movement and gestures. For example, Biggs and Desjardins' "High Water Pants" embed sea level rise data into interactive garments to support the experience of "feeling climate change" [6]; Broscheit et al. design a wearable interface inspired by sentinel species that responds dynamically to air pollution data, raising awareness about the state of the air [8]. Also relevant to this work are tangible and art-based designs that overlay and blend environmental data with the body through video capture, projection, and reflective materials that support reflections and deepening understanding of body-environment relationships [33, 56].

Our work builds on these embodied interaction strategies by adding plasmatic visualization as a conceptual framework for exploring how environmental data can be experienced as a dynamic extension of the participant's own *sensing body*. Using microplastic data as an example in Plasmatic Mirror, we show how this approach can deepen felt and *visceral* connections to pressing ecological concerns.



Entangled Body-Environment Relations in More-than-Human Design

In the context of HCI, the notion of plasmaticness is well aligned with ideas from posthuman and more-than-human design. The idea of bodies as entangled with the environment has been widely explored in these spaces, including in design explorations with animal [5, 22, 29, 30, 66], microbes [3, 10, 11, 27, 37, 65], fungi [20, 42], plants [7, 25, 32, 52, 64], and waste [4, 43, 48].

An important posthuman theory central to these works is the concept of transcorporeality, put forth by Stacy Alaimo, that reframes environmental conditions as embodied, where boundaries between "self" and "world" are porous and interconnected [1]. Alaimo illustrates how environmental issues, often perceived as problems "out there," are in fact embodied and deeply personal [1].

Within this line of work, more-than-human researchers have also centered affective engagement as a mode of attuning to more-than-human entanglements. For instance, Biggs et al. introduce the idea of "abjection" to describe the simultaneous repulsion and fascination experienced when confronting *otherness* [5]. Similarly, Nicenboim et al. describe the use of "discomfort" as a mode of decentering through design, suggesting that discomfort arises because decentering is not just about looking outward toward nature but also "turning in" to confront frictions, question the self, and examine human privilege through a more-than-human lens [50].

These deeply felt responses to the more-than-human world connect to our engagement with the visceral in Plasmatic Mirror, where we represent bodily morphing and fragmentation through environmental data to evoke an affective response. By using mutable and unstable representations of the body, the work builds on more-than-human scholarship in HCI to explore the co-constitution of bodies, environments, and data.

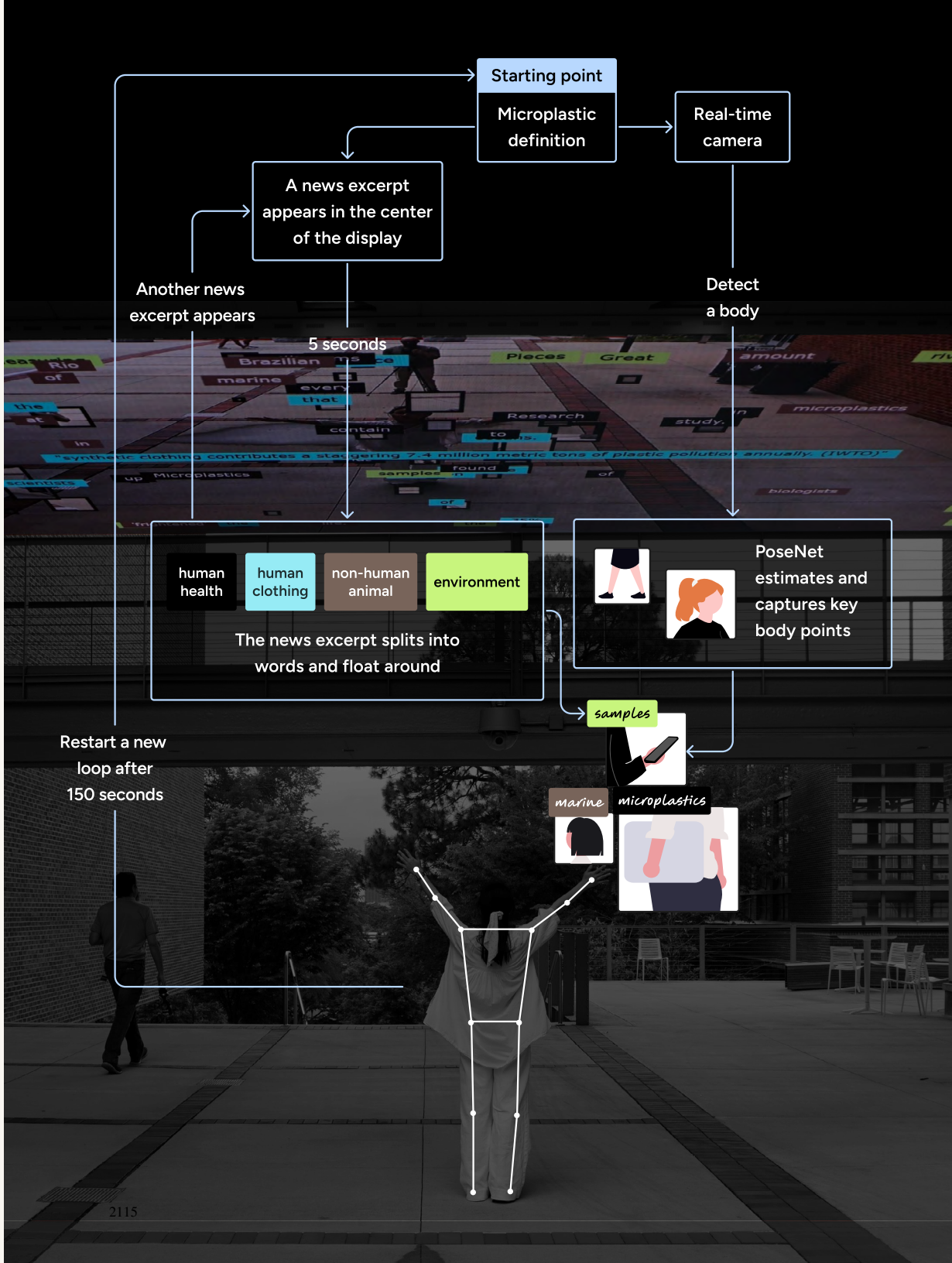
DESIGNING PLASMATIC MIRROR

We conceptualize Plasmatic Mirror as an interactive data display that engages with the emotional dimensions of environmental data. Throughout the design process, we asked:

"How can visceral experiences of data move people to think critically about their embodied relationship with public environmental issues?"

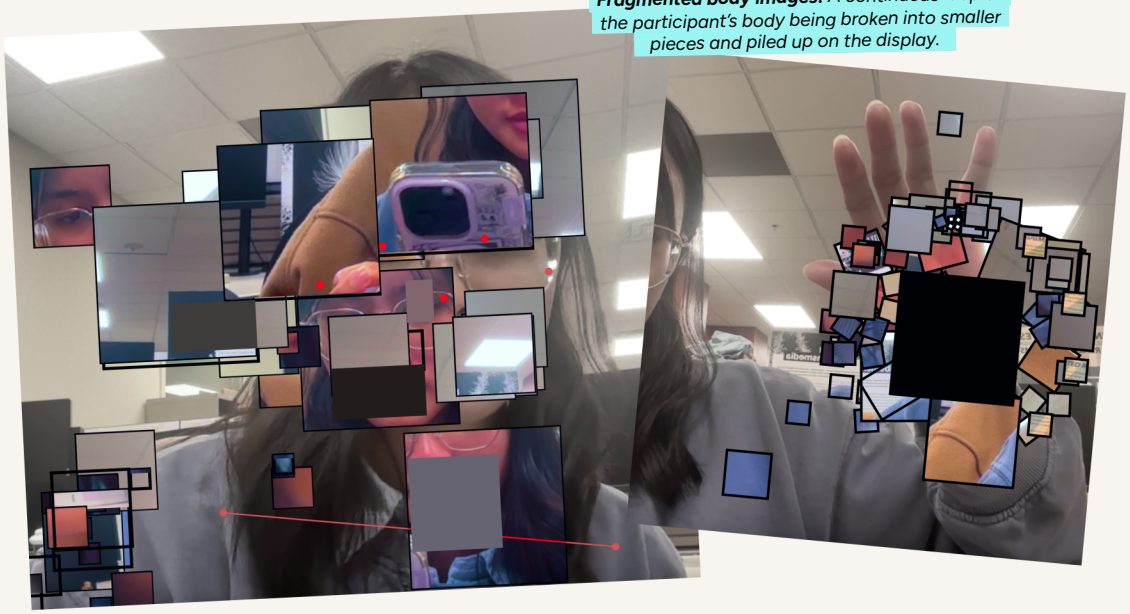
We developed this project using p5.JS, a JavaScript library, to program a fifty-foot-long exterior display that spans over a pedestrian walkway. The installation appears to function as a mirror, an effect achieved through a camera positioned beneath the bridge structure. When someone enters the detection area, PoseNet, a pose detection algorithm, captures their movement and body positioning. A portion of the video image separates from the live feed, creating a floating fragment that might display a frozen image of the individual's face or body. Upon detecting a person, the illusion of the mirrored surface begins to break apart, portraying the person's image as a plasmatic visualization by changing the form of their body. This fragmentation happens every 15 seconds after the initial detection. The program runs for two minutes and thirty seconds until it resets, and subsequently starts detecting new bodies.

Our design process was iterative, starting from ideation sketches and developing into higher fidelity prototypes to test on the bridge display. In this section, we reflect on three key design decisions for the prototypes that were tested within our research team, as well as with our broader research group, and at a departmental event, before conducting a public evaluation with the larger campus community. Throughout the design process, we kept track of the prototypes through photo and video documentation. Our research team—including faculty members and students in digital media and biological sciences—met regularly to collaboratively design and reflect on each prototype. This iterative process allowed us to evaluate the system through both group discussion and field observations. In doing so, we used design as a process of inquiry and concept development.

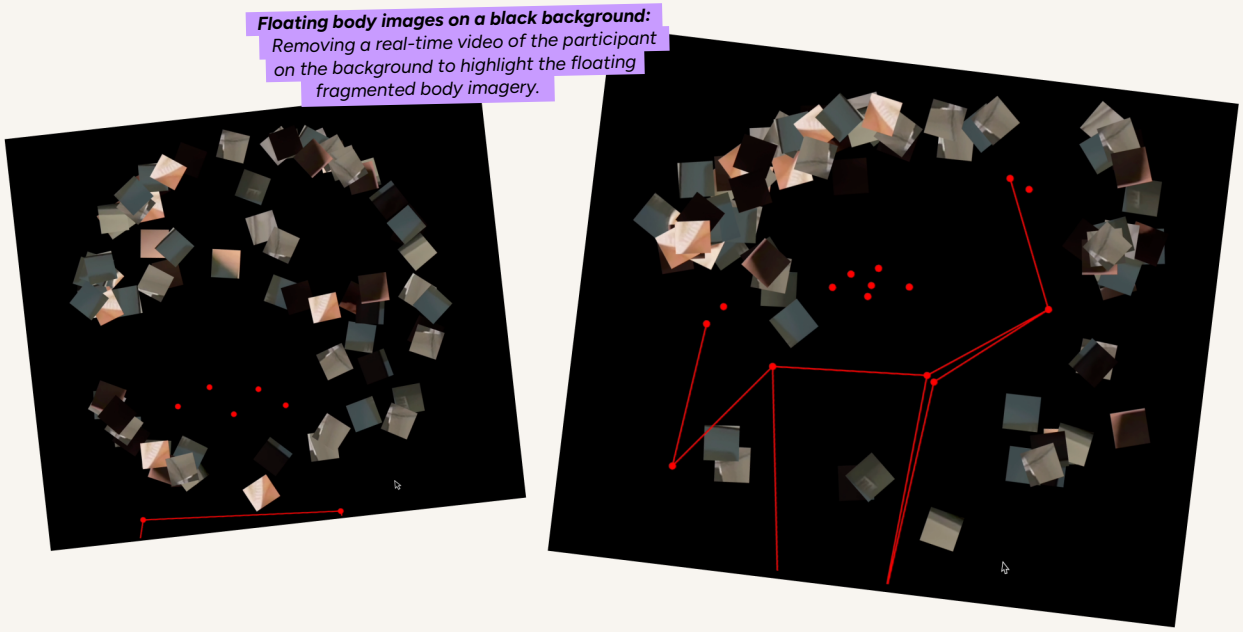


Body Detection and Movement. We developed prototypes to investigate ways of presenting body data and connecting it to the problem of plastic pollution. Inspired by the form of microplastics—which are tiny, nearly invisible, and ubiquitous—we designed systems that capture participants' images and break them apart into smaller units. Fragmentation came to serve as our visual strategy for plasmatic visualization, mirroring the linear and sharp-edged nature of microplastics, and illustrating their transformative presence through the fragmented body. We also added interactions based on movement, allowing viewers to *grab* or *push away* these captured fragments. The goal was to create a physical sense of connection, making the concept of microscopic pollution feel like a tangible part of the participants' own bodies.

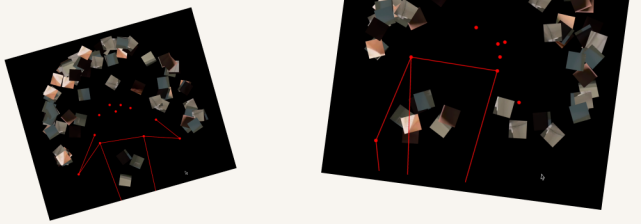
During the evaluation of our initial iterations, we observed that while the participants were curious and engaged with the floating debris of their fragmented bodies, they struggled to connect the visual experience to the specific concept of microplastics. This informed our next iteration to include clearer narratives by incorporating excerpts from microplastics news. By using familiar headlines and terminology, we connected the abstract visuals to real-world context about microplastics.



Fragmented body images: *A continuous loop of the participant's body being broken into smaller pieces and piled up on the display.*



Floating body images on a black background: *Removing a real-time video of the participant on the background to highlight the floating fragmented body imagery.*



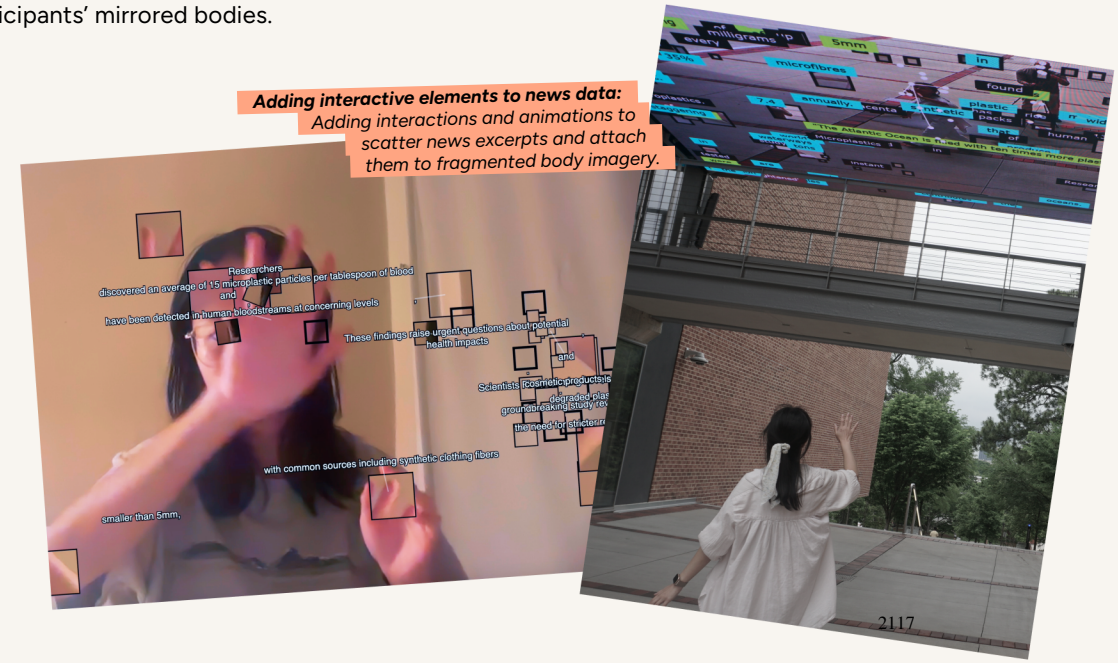
Microplastics News as Data. To present data on microplastics, we retrieved excerpts from news articles related to microplastics around the world. Despite the existence of multiple highly accurate methods, current microplastic detection techniques are limited by high costs, slow processing times, and labor-intensive prep work [23]. Furthermore, in their current state, these techniques cannot continuously monitor microplastic levels in real time. These factors, combined with the elusive nature of microplastic pollution, make high-resolution data (both spatial and temporal) practically non-existent. Since many people primarily encounter information about microplastics through news media [28], we used news data instead of sensor or observational data as our primary source material.

We created a microplastics news dataset using the ProQuest News and Newspaper databases. Relevant articles were retrieved through a keyword search for "microplastics." Based on our inclusion and exclusion criteria, articles in the final dataset (1) were written in English and (2) focused on microplastics as primary subjects. After screening, we included 109 articles from global news sources, published between 2017 and 2025. In this iteration, we explored different visualizations of news excerpts to display alongside the participants' mirrored bodies.

An example of news cover about microplastic [54]

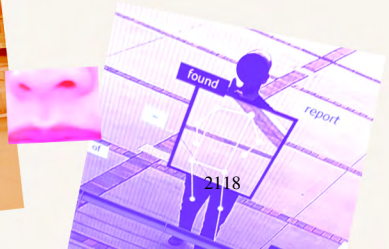
Microplastic News Data in the Background: *Using news data as background and experiments with fragmented body imagery to mimic microplastics.*

Adding interactive elements to news data: *Adding interactions and animations to scatter news excerpts and attach them to fragmented body imagery.*



Interacting with Data. To foster connection and reflection through bodily engagement with news data, we designed interactions that allowed the participants to playfully engage with the visual narratives. As we randomly selected news excerpts from our dataset to display, we split the excerpts apart, first word by word, then letter by letter, letting them float through the scene like airborne microplastics.

In the final version, excerpts were grouped into four categories, including microplastics news related to (1) human health, (2) human clothing, (3) non-human animals, and (4) the environment. After one excerpt broke apart, a new excerpt was randomly selected to appear on the display. We assigned different colors and behaviors to each news category, making the human- and clothing-related news stick to the participants' images while the animal- and environment-related news float around the edge of the display, indicating different levels of impact and connection between participants and each news story.



OBSERVATION AND REFLECTION ON PLASMATIC MIRROR

To observe how passersby interact with the system, we conducted four public observations on the final iteration of the project. Our observation and interview methodology was approved by our university's ethics review board. Each observation lasted between one and three hours, totaling approximately 10 hours. During these sessions, we observed and engaged in informal conversations with approximately 30 participants about their experiences and reflections on interacting with the project. Our questions focused on passersby's interactions with the installation, thoughts about microplastics, and feelings toward the issue. Following each observation session, authors A1 and A4 created field notes to capture key observations, including what drew participants' attention, their affective responses and reflections on both microplastics news data and their body images, their personal connection (or disconnection) to the data, and their physical engagement with the project.

Affective Responses to Data. Our observations show that the participants interacted with microplastics visualization through a push-pull of attraction and discomfort, as they encountered their bodies transformed into plasmatic data. When asked, "How do you feel seeing and interacting with the data?" participants expressed a range of responses. One participant described it as "brilliant and creepy," explaining that, "it's a fun way to make something frightening and damaging understandable." Other participants offered varied reactions. While many used positive descriptors such as "fun," "interesting," and "cool," others found the experience more unsettling, describing it as "uncanny," "ominous," and "grotesque." There was also a mix of emotions, as one participant stated: "This is grotesque garbage, but the aesthetics are fun." Another participant also described how the body fragments in plasmatic visualization made microplastics feel newly intimate: "If you realize how we're interacting physically with the microplastics, then it's very intimate [...] it's all around me. I don't even realize it. It's clustering."

As words and images accumulated over their mirrored body, a participant mentioned how the experience made them feel overwhelmed and noted that their "boundaries are being crossed." These reactions, while not generalizable to any plasmatic visualization, demonstrated how our conceptual framework can be used to design new interactive experiences that support embodied, emotional, and critical engagement with data.

Physical Reorientation with Data. Participants also attuned themselves to microplastic data and body images on the display by exploring and reorienting their bodies in response to the fragmented visualizations. As they were drawn to different elements in Plasmatic Mirror, some participants followed floating news excerpts, some focused on the PoseNet stick figure attached to their body, while others treated the display as a mirror, watching their real-time images on the screen. We observed that the participants continually reoriented themselves in relation to the installation, testing how it responded and probing its sensing capabilities. For example, one participant questioned what the camera was doing while capturing their body: "Can it see my plastics? Is it analyzing me?" Seeing their body images cut and fragmented, some participants mentioned that it made them feel "curious," "surprised," or "scared." Several had an impulse to reorient themselves in space by moving their body or looking at how the body images were moving to restore their recognition. Others pushed and shoved the data/body fragments away to make room for their bodies on the screen, reconfiguring the visualization. One participant deliberately changed her movements when the camera captured her image and used her physical body to reconnect the fragmented parts displayed on screen. We also observed a group of participants lining up in a row and attempting to grab floating words, communicating with each other about their strategies and sometimes instructing others to coordinate their movements. Together, these moments suggested that embodiment and plasmaticness not only enhance engagement but also reframe the visualization, producing a more personal interpretation of and reorientation in relation to the data.

DISCUSSION

Through our design and observation, we define *plasmatic visualization* as an aesthetic category of data visualization with specific formal and discursive qualities. It challenges existing categories, including data, bodies, and the environment in order to raise questions about how they are mutually constituted. This aesthetic shift changes the question of visualization from one about **external representation** (i.e. what do the data show?) to one about **embodied attunement** (i.e. what is my relationship to the data?).

We outline here three unique qualities of Plasmatic Mirror in engaging with environmental problems through data visualizations: its capacity to evoke visceral experience, visualize entangled bodies with data, and invite attunement as a mode of interaction.

From Representational to Visceral Experience

In Plasmatic Mirror, environmental data moves beyond the representational depiction of environmental conditions to produce a visceral, intensely affective experience for participants. Our findings demonstrate that plasmatic visualization elicits repulsive, grotesque, and creepy feelings, which emerge through multiple forms of interaction with the visualization: unexpectedly seeing one's body on public display; seeing the body fragment and break apart; and seeing the body juxtaposed with, penetrated by, or contorted by alarming news about microplastics. Together, these interactions lead participants to unexpectedly confront images of their own bodies in unusual forms.

By representing the body in a recognizable yet unexpected form, the project captured attention through a "gimmick" that Ngai [49] describes as "repulsive if also strangely attractive, with a layer of charm we find ourselves forced to grudgingly acknowledge" [49, p.53]. This visceral response highlights how re-representing the body can simultaneously attract and unsettle.

Even as participants found the fragmented body imagery visually repulsive, they still felt compelled to interact with it. While the participants carry intimate knowledge of their own body, our project explores what it would take for them to attune or coordinate between their internal sense of self and a distorted external image of their body. Our propensity to attune to mirror images of ourselves—even distorted ones—has long been explored by phenomenologists, such as Merleau-Ponty [47].

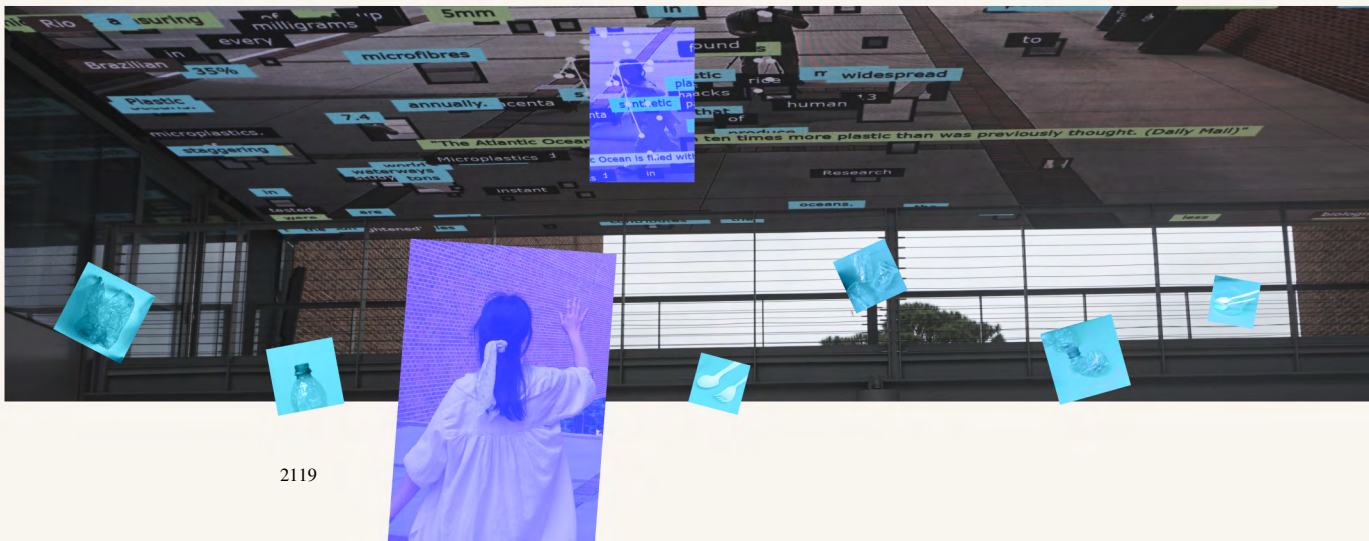
Plasmatic visualization invites participants to feel the environment affectively through data in a visceral way, not simply comprehend it cognitively. As such, it offers a mode of design that responds to Light et al.'s call to engage with discomfort and be "attentive, different and critical" [41, p.6]. This also builds on work that engages with affective responses such as abjection [5] and discomfort [50] as a way to reflect environmental and more-than-human relations [19, 51, 59] as well as HCI projects that engage with affect through data visualization [16, 18, 38, 40].

For the HCI designer, Plasmatic Mirror demonstrates how visualization can evoke visceral reactions—to make otherwise abstract environmental problems felt in addition to known. By visualizing bodies in distorted or uncommon forms while maintaining playfulness, plasmatic visualizations move the interaction from a comfortable distance into a visceral experience.

From Separate to Entangled Forms of Visual Encoding

Drawing on animation theory's notion of plasmaticness, Plasmatic Mirror renders the body as unstable and continuously transforming. Through video capture, environmental data is not presented as a separate visual form; it seeps into, morphs, and fragments bodily imagery, creating a scene in which the participants' bodies and microplastic data become entangled. As live images of participants' bodies are overlaid with drifting texts about microplastic pollution, the visualization emphasizes how bodily presence and environmental data co-produce what can be seen and felt, reflecting Barad's concept of intra-action, in which individuals do not exist as separate entities but are co-constituted and entangled in their intra-active becoming [2].

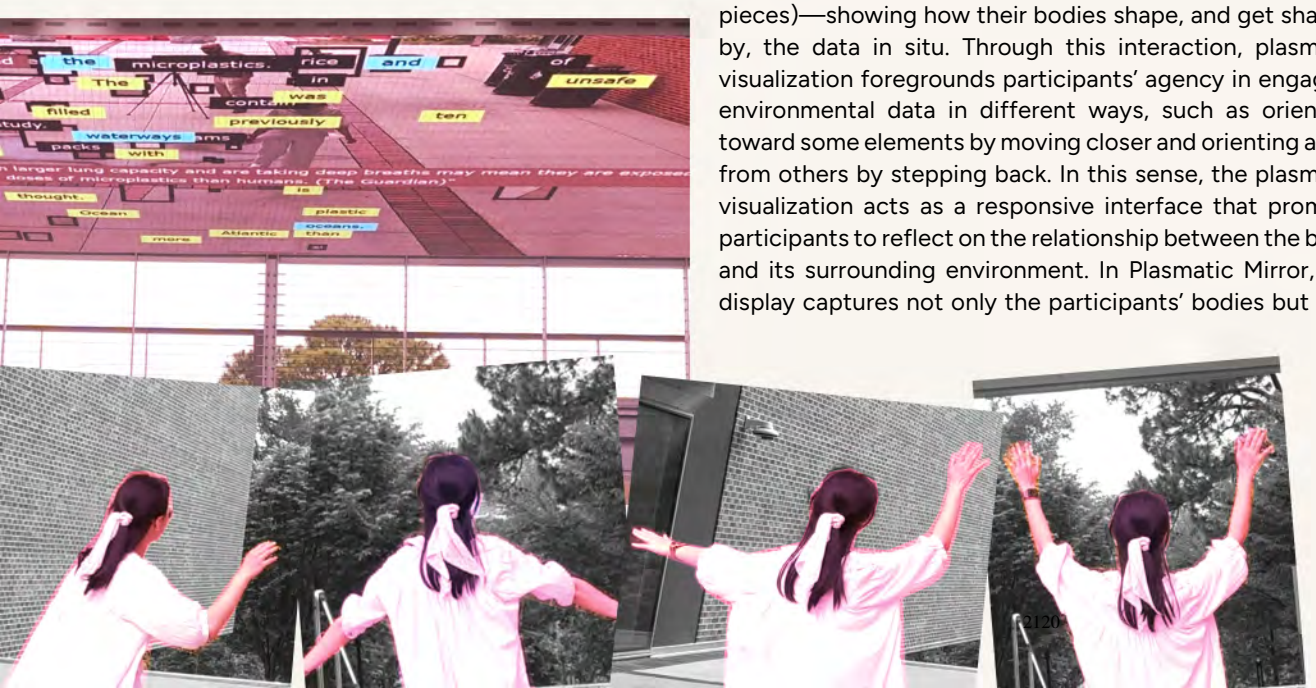
In this entangled encounter of Plasmatic Mirror, the body is no longer positioned as that of an external observer interpreting data objectively from a distance. Instead, the body becomes a site where environmental conditions are enacted and felt, drawn directly into the visualization and made a part of it. As participants watch their image break apart and recombine with drifting



textual debris, the visual encoding encourages them to reflect on human and nonhuman agencies as co-constitutive.

By adapting plasmaticness as an aesthetic strategy for environmental data visualization, Plasmatic Mirror reframes visualization from depicting static "states" of the environment toward showing processes, flows, and transformations across body and environment. By visualizing body and environment as transcorporeal, our design builds on more-than-human projects in HCI that reflect on the relational co-constitution of bodies and environments through designing with data [6, 8, 33, 56]. In this way, we offer plasmatic visualization as a conceptual framework for designing with environmental data—one that frames data as an active part of the way environments are experienced and understood through the body.

We invite HCI designers to take up plasmaticness in environmental data visualization practices that engage participants in experiencing their bodies as permeable and co-constituted with data about the environment they inhabit.



From Exploring to Attuning to Environmental Data

Finally, Plasmatic Mirror invites participants to *attune* themselves to environmental data by discovering new orientations and negotiating their bodily relations to the environment and the data. This attunement is achieved through several key design qualities: the interactive, moving elements that prompt participants to adjust their bodily movements in relation to the visualization; the scale of the visualization that captures participants' bodies in their immediate surroundings, allowing them to engage with both digital and physical space at once; and the fragmentation of the body, which disrupts the perception of the *usual* body and encourages participants to avoid, restore, or reconfigure their sense of bodily coherence.

Plasmatic Mirror re-situates *data* as something that acts on—and is acted through—embodied presence. When the new recognition of the body is created, e.g., being distorted and broken apart, it encourages participants to physically reorient themselves to reconcile their fragmented images with their lived bodily experience. As participants move their bodies within the space, their gestures push, shift, and disperse the data visualization (i.e. clusters of fragmented pieces)—showing how their bodies shape, and get shaped by, the data in situ. Through this interaction, plasmatic visualization foregrounds participants' agency in engaging environmental data in different ways, such as orienting toward some elements by moving closer and orienting away from others by stepping back. In this sense, the plasmatic visualization acts as a responsive interface that prompts participants to reflect on the relationship between the body and its surrounding environment. In Plasmatic Mirror, the display captures not only the participants' bodies but also fragments of the physical site, e.g., bricks on the walls of the building, concrete on the ground, parts of the sky, construction fences, and trash cans in the background. As a result, participants are not only interacting with data on the display, but also engaging with the environment where they are physically located, as it is mirrored into the visualization in real time.

Plasmatic visualization as a mode of attunement facilitates active engagement with environmental issues while prompting reflection on the body in relation to those issues. It shifts how people make sense of data: from exploring to sensing, moving, and reorienting in relation to the data.

For HCI designers, this suggests an approach for designing environmental data experiences that deepen reflection through situated and bodily attunement, allowing participants to feel how crisis is encountered or mediated through their own bodies.

CONCLUSION

This pictorial contributes the conceptual framework for *plasmatic visualization* to the HCI community, using an exploratory design process and reflection on our interactive prototype, Plasmatic Mirror. We adapt the concept of plasmaticness from cel animation theory to provoke critical reflection on environmental data through visceral experiences with textual news sources. The plasmatic visualization framework can be characterized by three fundamental shifts from the norms of conventional data visualization: (1) from representational to visceral experience, (2) from separate to entangled forms of visual encoding, and (3) from exploring to attuning to data. Through plasmatic visualization, we hope to make engagement with environmental data more entangled and embodied, with the goal of moving audiences to think critically about the normative boundaries that separate data, observers, and their contexts.

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