Perpetual Presence

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In a world inhabited by data, how might we become active citizens in the information age? Data is all around us, a stream of personal stories that permeates and backgrounds our digital societies. Situated at the intersection of visualization, art, design, and technology, data acts as boundary objects in between fields of practice. At this intersection, data citizens weave together the fabric of social and environmental phenomena—rich in complexity and expansive in historiography—by making bold, confronting, and narrative visual art. The 11th edition of the IEEE VIS Arts Program (VISAP) is a celebration of visible, instrumental, and critical visualizations brought to the public realm.

'Perpetual Presence' acknowledges that data has the transformative potential to influence cultural, economic, and political landscapes. If *presence* is a state of being, of becoming, and of responding to multiple viewpoints and realities, then *Perpetual Presence* is a new aesthetic in which data abundantly flourishes in 'compound narratives',[1] reflecting the many ways we interact with the world. But data is much more than human interactions. Artists who work with data understand it intrinsically and are able to 'rely on the familiar' of the everyday mundane in order to 'transform the strange' as novel ways of being.[2] By actively participating in making use of the data around us, artists become global data citizens. This leads to an array of innovative artworks embodying artistic knowledge, pertaining to new methods and techniques of visualization. From hardware technologies that measure and transpose signals to algorithms that manifest through bespoke software systems, the selection of artworks presented in this catalog challenges our perception of the world.

VISAP'23 curates deeply interdisciplinary and artistic interpretations of this year's theme: Perpetual Presence. At first glance, this exhibition seems to contextualize forces of perpetuity: constant permanence, natural global forces, and the human condition. Artworks are presented as invitations to join a state of being, contemplation, utopian hopes and dystopian warnings—imagining futures from being in the present. But natural phenomena change ever so subtly, evading our notice like starfish moving on the ocean bed. Closer inspections reveal that beneath these seemingly constant forces are in fact evolutionary and shifting signals: human bodies, emotions, memories, global climate, local ecosystems, intelligent machines, and the future of the Anthropocene, the 'uncanny recognition of human authorship of climate change'[3] which our society is slowly coming to term.

We all have multiple relationships with data. Being mindful of where, who, and how data captures our world is becoming a part of our digital literacy, global policy and digital ethics.[4] The relationship isn't always visible, even obvious, to the people who produce and capture data, but it is perpetually present. Take smartphone data for example, a ubiquitous device that regularly broadcasts its geographical location with hundreds of thousands of commute data, they are used as the foundation for future ecological crisis adaptation and planning.[5] At the same time, citizen scientists are tracking the sounds

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[1] Giorgia Lupi. 'The New Aesthetic of Data Narrative'. *New Challenges for Data Design*. Springer-Verlag: London, 2015.

[2] Ibid.

[3] Lawrence May. Confronting Ecological Monstrosity. *Media Culture* 24(5), 2021.

[4] Jer Thorp. *Living in Data*. New York: MCD, 2021.

[5] Deborah O'Connell, et al. "Resilience, Adaptation Pathways and Transformation Approach (RAPTA): a guide to designing, implementing and assessing interventions for sustainable futures", CSIRO: Acton, 2019.

of native frogs and other fauna with dedicated smartphone applications such as FrogID.[6] Data is rooted in the 'work of many hands' and profoundly 'underwaged and undervalued'.[7] Without the ongoing efforts of federal and state agencies, global companies, research specialists, enthusiasts and fans, technologies such as air quality monitoring and forecasting wouldn't exist. The invisible labor of many should be excavated and credited, as the practice of making labor visible is often the making of art itself. In that spirit, the nexus of art and data visualization is the site of ethnography, of reflective contemplation, making visible and questioning the status quo. These modes of inquiry drive more artists to be more introspective with data, and to make extraordinary objects towards this exhibition program, its sister exhibitions, and in global stages to intuit new meaning.

This year features artistic practices that manifest data not only as a tool or technology, but also as a socio-cultural force in our global communities and networks. Data is not simply informatics. Spending time with data reveals much deeper connections and understanding about our world and what it means to be human.[8] Global diversity, both cultural and linguistic, is manifest as data whose perpetual presence unites communities across borders and regardless of economic opportunity. The exhibiting artists work with conceptual and critical uses of data at the 'in-between' to express a multitude of experiences. Indeed, the experiences allow 'new and novel modes for envisioning ecological problems, solutions, and futures' and empower global citizens to see the 'very interconnectedness that defines the ecosystems'[9] in the Anthropocene through social commentary and ecological thought.[10] The selection also demonstrates that data are feminist, queer, ecocritical, viral and even interplanetary.

Our bodies are brilliantly complex, and so are the visualization works featured in this catalog. *Bitter Data,* and *Body Cosmos* are two instances of emotional and nerve response juxtaposited across time and individuals. *Bitter Data* renders eleven years of distress posts with bitter tea, one cup per year, and invites people to taste the public distress that year measured by the level of bitterness. The pictorial shows photographic reactions, the expressions varying from person to person: disgust, indifference, curiosity, anguish, surprise, disbelief, and introspective. This work beautifully captures a wide array of responses through a tea-tasting event.

Body Cosmos is an invitation to transport participants into their own bodies on a signal ride. Quite literally, it delivers an immersive virtual reality experience tour of the nerve system, pulsing and flashing as the electroencephalogram (EEG) sensors detect electrical brain signals in real time. As the name suggests, viewing Body Cosmos gives the sensation of zooming out into the vast universe and an appreciation of the microscopic from a macroscopic vantage point.

Delving into the realm of the infinitesimally small, *Parasitic Signals* stands as a testament to the fusion of science and artistic ingenuity at the atomic level of visualization. It seeks to decode the intricate choreography of the SARS-CoV-2 virus and human molecules, transforming the nano-scale into an interactive symphony—a data-driven ballet. Atomic force microscopy probes become the brush, delicately painting the dance of interactions between spike proteins and human cellular entities.

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[6] Jodi JL Rowley, et al. FrogID: Citizen scientists provide validated biodiversity data on frogs of Australia. *Herpetological Conservation and Biology* 14(1): 155-170, 2019.

[7] Catherine D'Ignazio and Lauren F. Klein. *Data Feminism*. MIT Press, 2020.

[8] Giorgia Lupi. 'The New Aesthetic of Data Narrative'. *New Challenges for Data Design*. London: Springer-Verlag, 2015.

[9] Lawrence May. Confronting Ecological Monstrosity. *Media Culture* 24(5), 2021.

[10] Timothy Morton. *The Ecological Thought*. Cambridge: Harvard University Press, 2010.

At the larger end of the scale, *Solar System* is an audio-visual performance that translates the sidereal period data of the planets in our solar system into a captivating symphony and a visual journey. This artwork renders the ever-present but unseen solar system perceptible to human senses. The distinctive data patterns of each planet come to life through auditory and visual cues, allowing the audience to tangibly perceive the aesthetic marvels of the cosmos—an interconnected realm that extends far beyond our Earth. The project mirrors the perpetual presence by acknowledging how data from the universe has continuously revealed unseen worlds, influencing humanity through various forms of expression. *Solar System* and *Parasitic Signals* are masterfully transforming raw data into an artistic rendition, illustrating the timeless presence of the cosmos that envelops and endures around us.

Waiting for the Wave in Metaverse and *Eco-Mending* are standing reminders of being present. *Waiting for the Wave* confronts us with the still-standing sculpture. Our brain inevitably wonders how ocean waves could be frozen in perpetual motion. Casting the perfect wave serves as a wonderful memory that only lasts a split moment. What awaits us 'in the then' is characterized as chaotic and flexible for which we meet with a sense of hope. From the future standpoint, *Eco-Mending* takes us on a retrospective journey back 'to the now' through sculptural aesthetics to examine the effects of climate change and the ozone gap. It uses physical and spatial metaphors to show the enormous Anthropocene issue at the human scale. These two artworks are brilliant sculptural works that surface ecocritical questions, asking us to reflect as we stand 'in the now'.

But ecocritical questions are for the now. Our world has been damaged by so much artificial abuse from human production, yet the topic of climate change remains abstract. Making sense of this issue at the human scale is the artwork *Mixtures of Human Experience*, accompanied by its pictorial *Associative Forms for Encoding Multivariate Climate Data*. Leveraging visual metaphors of ocean currents and human waste, it depicts our nature going through irrevocable change. By mobilizing and drawing attention to the scale and magnitude of the climate crisis, this series of four artworks dispels the ecological monstrosity, and instead urges us to reflect on how we might all create positive change.

We can learn much from literary history to make change, and capture what was changed in history as data. *Monster in a Snow Globe* manifests biographical data as a sculptural physicalization, connecting literary abstractions with a tactile and tangible form. This monster of 'sheer informational and productional complexity' is transformed and contained in an acrylic block akin to a snow globe, a familiar and fun-sized object that would not deter visitors from curious inspections. In *The Vast Territory* (*El Vasto Territorio*) four iterative novel drafts are visualized as fungus networks in the soil. This artwork leverages machine learning to create an innovative expression of human literature.

Machine Learning and Artificial Intelligence are staple tools of artistic collaboration. *Reinterpreted Spaces* is a printmaking project where generative adversarial networks and digital photography collide in three-dimensional space. *Latent Prism* is a stack of acrylic prints of artificially generated photographs using photographs and has over 36-meter-long credits printed on a receipt roll. Through participating and collaborating with artificial intelligence image generation tools, these two artworks pose open questions of artificial reality and surfacing invisible labor, and the invisible data fabric around us.

We often think of data as something that is post-realized, captured and stored on a spreadsheet. *The Heart* is a counter example of using living data in the wild: a city-block-sized building itself. Its artificial intelligence network uses sensors that monitor air quality and human occupancy around the building, as well as light and temperature to drive the 10-meter-tall artwork. Situated at 700 Swanston Street in

Melbourne, the work communicates to its residents how the building is feeling through responsive light design.

However, data is not always concrete, obvious, or has a physical form. The next two works, *Plastic Landscape* and *Posts with No Response* stretch data and mold them onto landscapes of our world. *Plastic Landscape* presents to us an ephemeral frozen landscape that is beautiful at a distance and distressing at close proximities. Wielding surrealism and inspired by Ilwalobongbyeong (a folding screen) behind the king's throne of the Joseon Dynasty, the work brings decayed microplastics into the audience's reality. *Posts with No Response* turn our attention from the environment to human emotions represented by physicalized islands. The islands, composed of over 22,000 tweets gathered between 2016 and 2019, form a crescent contour of emotional ripples. Even in times of loneliness and in the ongoing environmental slow destruction, these works remind us that our worlds are not so different.

Infinite Colours and *Spotlight* portray the amalgamation of intersectional identities and the ongoing struggle for visibility, acceptance and freedom of expression. *Infinite Colours* draws from a rich archive of 2,499 queer independent games, each contributing a unique hue, form, and melody to the canvas. This generative display, unfolding over 8 hours, symbolizes the infinitely complex LGBTQIA+ lived experiences and the kaleidoscope of creativity within this vibrant community. It eloquently underscores that queer history is an integral part of the human story—a narrative of resilience, activism, and profound expressions.

In stark contrast, *Spotlight* reveals the invisible power of the internet and its abuse by global governments. *Spotlight* presents its evidence as a concise book. As the pages are exposed to ultraviolet light, the visualizations come alive with textual insights and new details, ingeniously crafted with glow-in-the-dark paint. The act of shedding light intertwines conceptual darkness as a metaphor for giving data citizens the ability to overcome the struggle for being silenced during such shutdowns when freedom of independent speech is most needed. The absence of this integral modern pillar is explored, narrating a tale of societal disruption and the necessity to safeguard the essence of an interconnected world.

Exploring the multiple modes of presence that data has with being and becoming, in turn this diverse collection of artworks examines life itself. After all, data traces many lifetimes. Data visualization art has the power to create two-way relations between subject and object of knowledge.[11] New data aesthetics, coming from advancements in visualization design play an important role in understanding complex ecological phenomena. By confronting 'viscerally accessible encounters with the horror of an abject aberrant near future (so near that it is, in fact, already the present)'[12], we take on new perspectives for a hopeful ecological future, and become intimate with our bodies and emotions.

This exhibition is hosted on the lands and Country for which stories have been cultivated for more than 65,000 years. Peer reviewed by a committee of international art practitioners and experts, we are delighted to present this year's selection at the Library on the Dock Gallery, Naarm-Melbourne, Australia.

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[11] Catherine D'Ignazio and Lauren F. Klein. "Feminist Data Visualization". The 1st Workshop on Visualization for the Digital Humanities (VIS4DH), 2016.
[12] Lawrence May. Confronting Ecological Monstrosity. *Media Culture* 24(5), 2021.

We invite your mind to wander in the Perpetual Presence of new data aesthetics through the exhibition and catalog as an active data citizen of the information age.

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