BRIDGING WEBS — Portfolio of Previous Work

Oderay Ponce de León Bello and Francisco-Shu Kitaura

Prepared for the Emergence Art+Science Fellowship application

Portfolio Rationale

This selection highlights previous research and creative projects most relevant to **BRIDGING WEBS**. It demonstrates how our respective practices—cinematic and curatorial approaches to landscape, memory, and spectrality (Ponce de León Bello) combined with scientific modelling, Bayesian inference, and cross-scale network analysis (Kitaura)—converge to translate highly complex data into accessible, public-facing audiovisual experiences.

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1. Oderay Ponce de León Bello — Selected Portfolio

Terranova — Producer

An award-winning hybrid film depicting Havana as a city of memory and future potentials. Its sensory, layered approach to urban transformation resonates with the BRIDGING WEBS methodology, treating scientific visualization as a perceptual landscape rather than an explanatory diagram.

Key Recognition: Ammodo Tiger Short Award (IFFR 2021); Best Ibero-American Film (Lima Alterna).

Abisal / Abyssal — Producer

A documentary short set in a Cuban ship-breaking yard, exploring the threshold between industrial materiality, labor, and spectral presence. This work demonstrates an ability to render complex concepts—ruin, depth, and the invisible—into a visceral audiovisual field.

Key Recognition: Golden Dove for Best Short Documentary (DOK Leipzig); Audience Award (Documenta Madrid).

Pabellón de los Melancólicos — Author & Curator

A hypermedia installation exploring the audiovisual archives of Rafael Ramirez. This project bridges installation art, archival imagination, and the spatialization of audiovisual material, directly informing the immersive requirements of BRIDGING WEBS.

Pabellón (38°00′02.9″ N · 23°44′16.1″ E) — Curator

A hypermedia exhibition for the Ethnohauntology Festival Vol. 1 (Athens). This work extends the research into coordinates, spectral traces, and territory—key components for how BRIDGING WEBS approaches scientific data as layered, situated matter.

Eskolatik: Maria Sabina. Mujer Espiritu — Co-curator

A curatorial programme at Tabakalera connecting film, gendered memory, and non-hegemonic knowledge. This experience underscores a capacity to construct public-facing frameworks around complex, interdisciplinary research.

Etno-hauntología — Co-author & Research-Creation

A speculative research text developing concepts such as "phantomglyph" and "auralwork." These frameworks provide the conceptual basis for treating the cytoskeleton as a living architecture of memory, tension, and emergence.

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2. Francisco-Shu Kitaura — Scientific Portfolio

This section provides the computational and analytical foundation for **BRIDGING WEBS**. My research focuses on the intersection of cosmological structure formation, Bayesian inference, and cross-scale network analysis—methodologies now being translated to interpret the structural complexity of the human brain.

Cosmic-Web Modelling & Emergence

My work explores how the "cosmic web"—a vast, anisotropic network of voids, sheets, filaments, and nodes—arises from primordial fluctuations. By modelling the evolution from initial isotropy to the complex, spontaneous structure we observe today, I provide the theoretical basis for **BRIDGING WEBS**. This research treats the universe as a dynamic architecture, directly informing the project's goal to visualize the passage from potentiality to structured reality.

Bayesian Inference & Computational Frameworks

I have led the development of advanced Bayesian inference frameworks (e.g., ARGO, ARES, HADES, BARCODE, BIRTH, and BRIDGE). These methods enable field-level reconstruction of the cosmic large-scale structure, allowing us to generate high-fidelity, fuzzy classifications of the cosmic web. For **BRIDGING WEBS**, these algorithms serve as an "audiovisual engine," animating the emergence of network structures and mapping the uncertainty fields inherent in complex data.

Cosmic-Brain & Cross-Scale Methodologies

Bridging astrophysics and neuroscience, my team at IACTEC applies cosmological statistics to neuroimaging data. This project treats the brain's connectome as a structure analogous to the cosmic web, utilizing higher-order clustering and anisotropic analysis to identify biomarkers in brain aging and neurodegeneration. This interdisciplinary transfer demonstrates an ability to adapt rigorous astrophysical methods to elucidate biological complexity.

Scientific Visualization & Public Communication

My research is inherently collaborative and public-facing. I have pioneered the sonification of cosmic fields and produced science-communication works, including books and documentary contributions (e.g., *Territorio Gravedad*). This commitment to outreach ensures that the complex data sets utilized in **BRIDGING WEBS** remain precise and technically rigorous while becoming emotionally legible to non-specialist audiences.

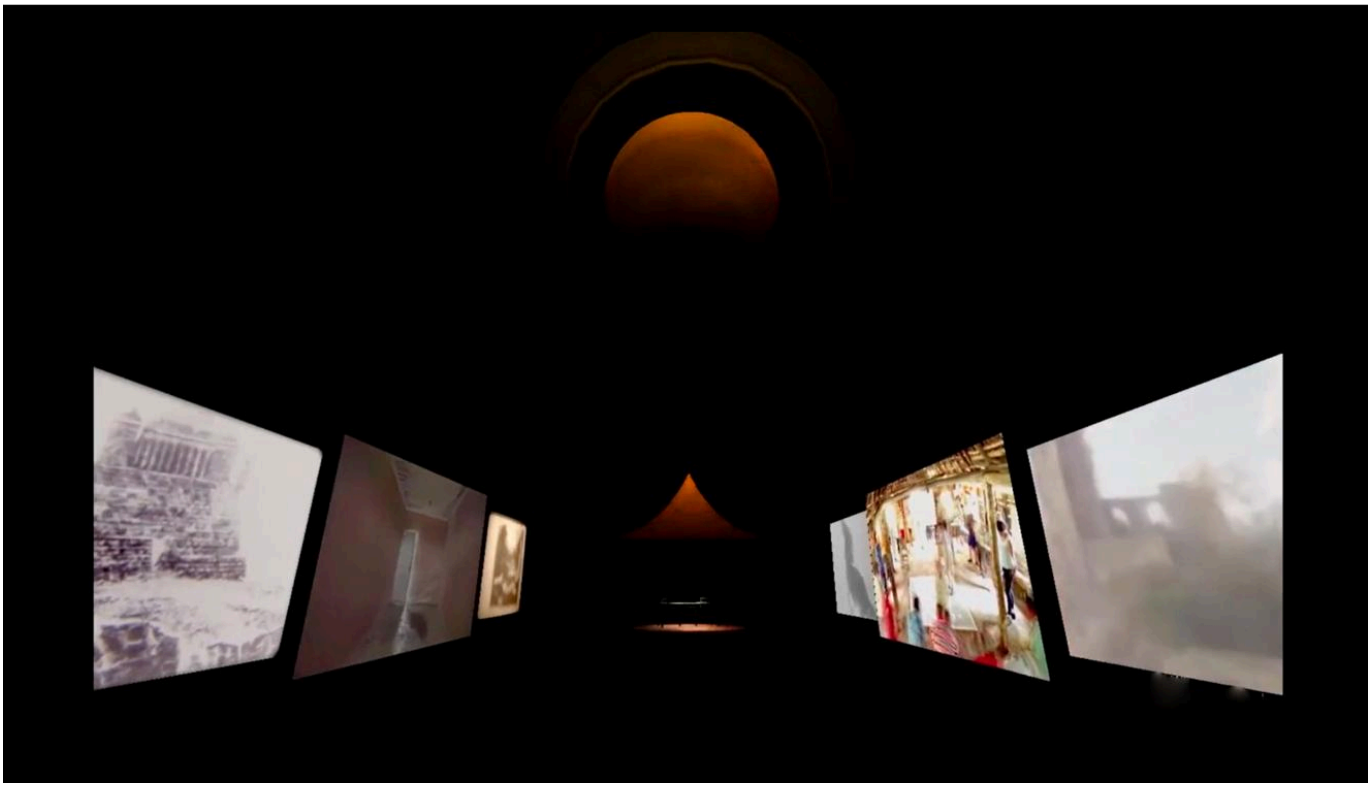
3. Joint Portfolio Relevance

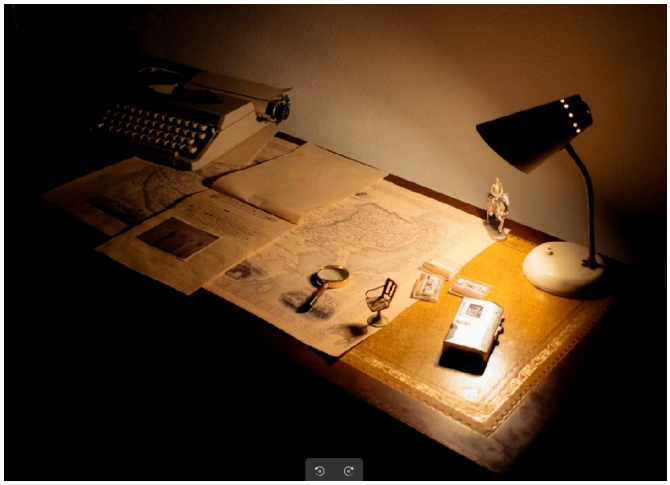
The collaboration between Oderay Ponce de León Bello and Francisco-Shu Kitaura creates a unique art-science feedback loop. Oderay's cinematic and curatorial practice transforms images into sensory, temporal fields, while my scientific practice provides the rigorous, emergent structures that underpin those fields. Together, we move beyond mere data visualization to create an immersive artwork where scientific rigor and poetic interpretation are inextricably linked, offering the public a new way to inhabit and understand complex systemic structures.

Selected Public Sources

1. Terranova (IFFR): https://iffr.com/en/iffr/2021/films/terranova
2. Abyssal (DOK Leipzig): https://www.dok-leipzig.de/en/film/abyssal
3. Eskolatik (Tabakalera): https://www.tabakalera.eus/en/eskolatik-maria-sabina-mujer-espiritu/
4. Etno-hauntología (Publication): https://revistas.usfq.edu.ec/index.php/posts/article/view/3119/4308
5. Cosmic Signal / CosmoLSS: https://research.iac.es/proyecto/cosmolss/pages/en/presentation.php
6. CosmicBrain (IAC Outreach): https://www.iac.es/en/outreach/news/studying-universe-neuroimaging-cosmology-technique-allows-us-listen-structure-human-brain
7. Territorio Gravedad (RTVE): https://www.rtve.es/television/20230508/territorio-gravedad-universo-tus-ojos-serie-documental-relatividad-gravedad-cosmos-rtve-play/2443926.shtml
8. Cambridge Talk (Cosmic Web & Brain): https://www.youtube.com/watch?v=Kj6PqjHZ_9A&t=1451s

Stills captured from the hypermedia installation *Pabellón de los Melancólicos*, an artistic collaboration between Rafael Ramírez and Oderay Ponce de León Bello.

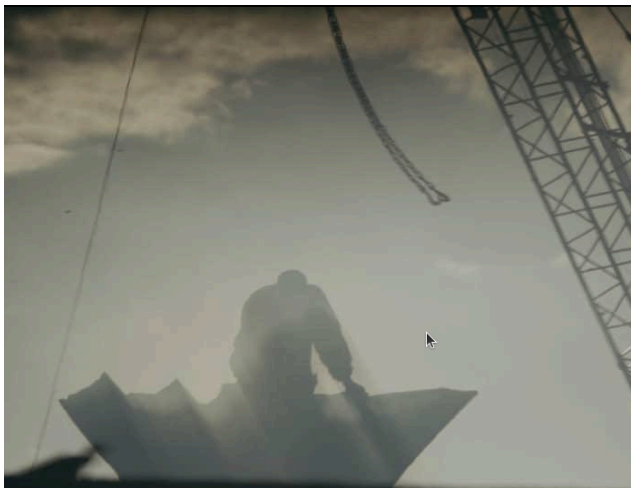






Cinematic frames from the award-winning documentary *Abisal*, featuring executive production by Oderay Ponce de León Bello.





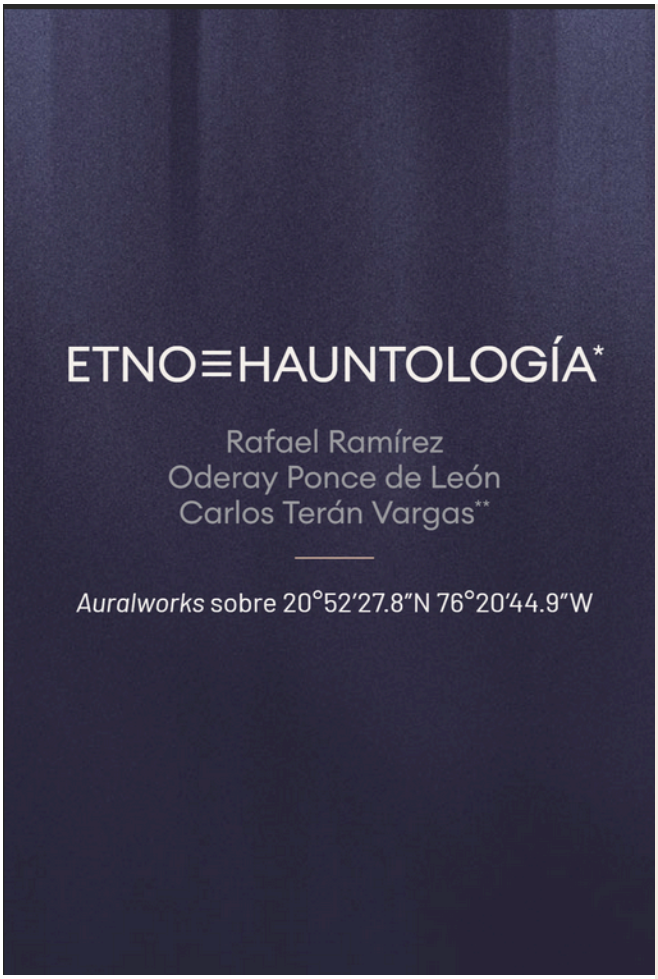
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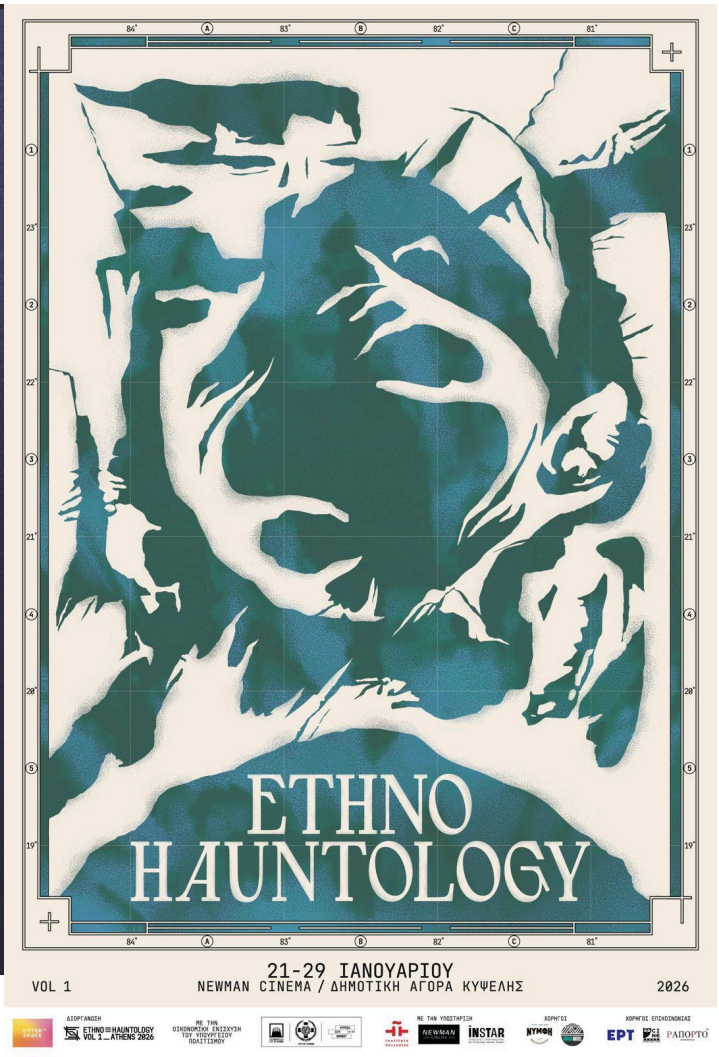


Publicity poster for the cinematic work *Terranova*, featuring production by Oderay Ponce de León Bello.

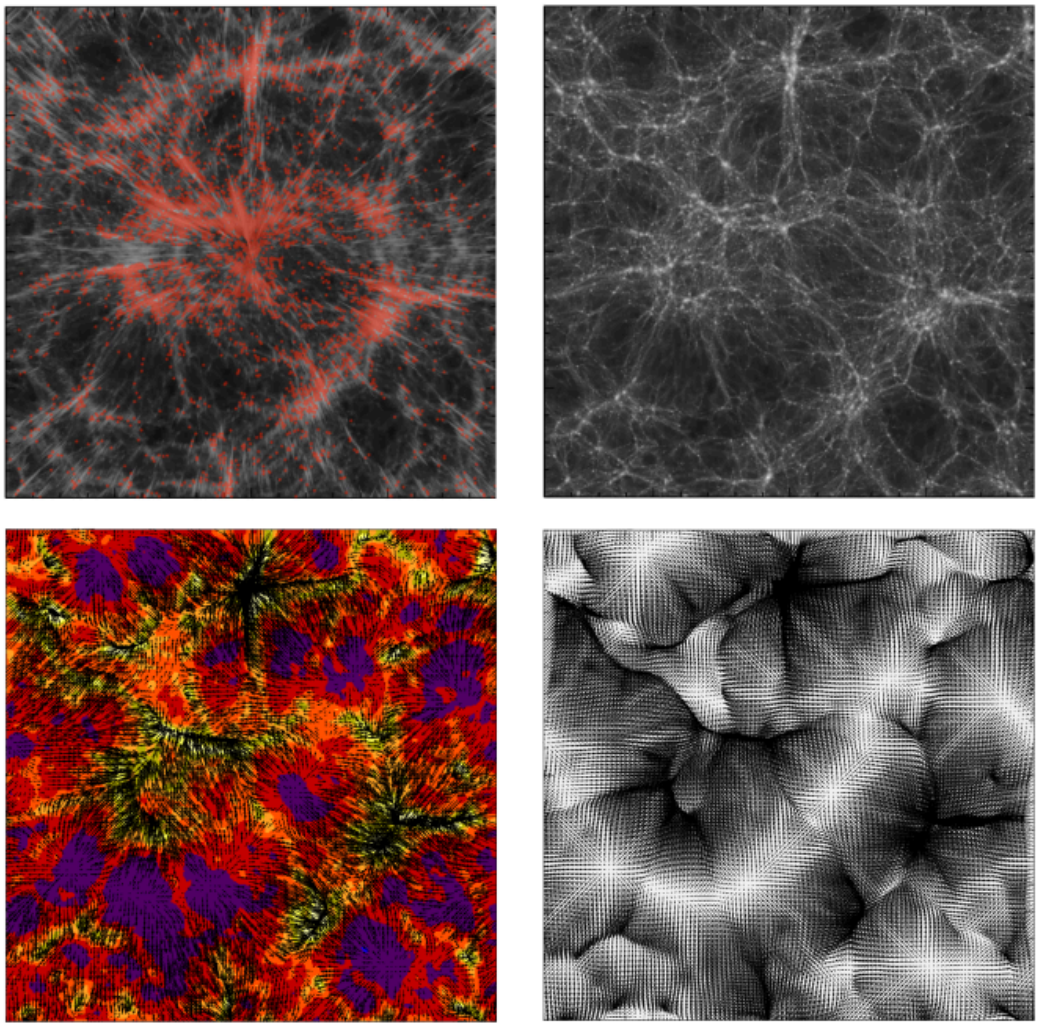


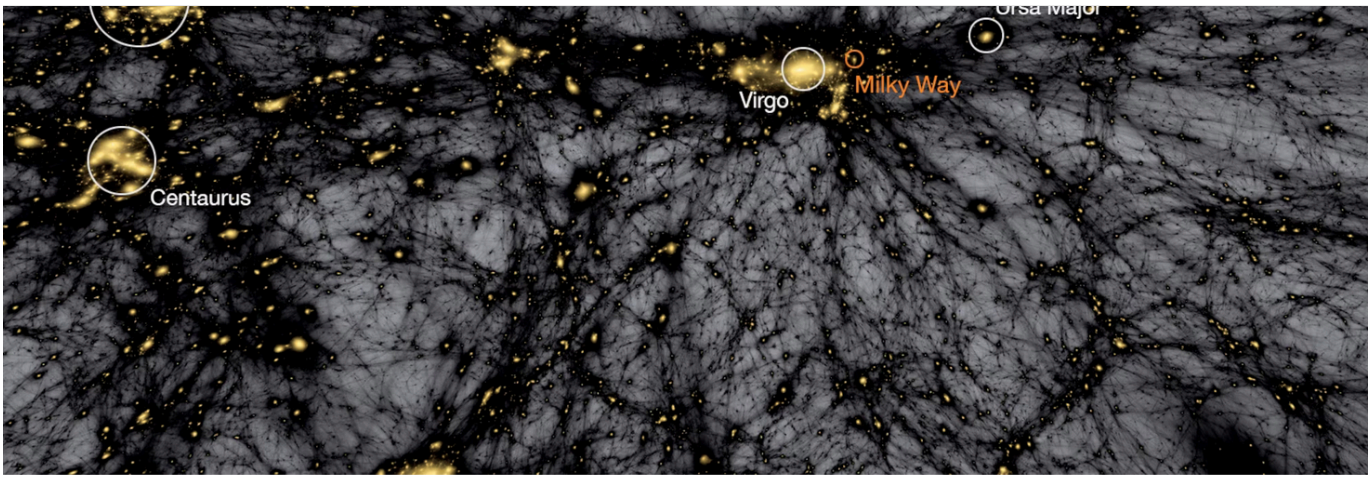
Visual Essay on ETNO HAUNTOLOGY





Images produced by Francisco-Shu Kitaura related to his cosmological work (part of this work was used for an article in National Geographic in 2015 https://www.nationalgeographic.com/magazine/article/dark-matter-dark-energy-hidden-cosmos):





THE INVISIBLE SCAFFOLDING OF SPACE We can't see dark matter, but its gravity sculpts what we do see from our vantage point inside the Milky Way galaxy. This supercomputer simulation, which looks at our cosmic neighborhood from the outside, is a realistic, data-driven reconstruction of the web of dark matter that guided galaxies to their present positions. Where huge dark tendrils cross, bright galaxies cluster; the Virgo cluster alone includes thousands.

SIMULATION AND RECONSTRUCTION: STEFFEN HESS AND FRANCISCO-SHU KITAURA, LEIBNIZ INSTITUTE FOR ASTROPHYSICS POTSDAM. VISUALIZATION: TOM ABEL AND RALF KAEHLER