

***MEDIALAB***

RESEARCH LINES 2022-2023

## RESEARCH LINES

Medialab's programming for 2022-2023 will orbit around 8 transversal lines of research that will mark the themes of interest for the center over the next two years.

### **NUEVAS DINÁMICAS**

**Nuevas Dinámicas** (New Dynamics) uses the tools of computational social science to ask how we can better organize social, governmental and institutional structures.

The trends of new technologies bring us an increasingly automated and decentralized future: Blockchain, smart contracts, DAOs or Artificial Intelligence offer new governance mechanisms never before imagined. These new technologies have opened a different paradigm and, thanks to them, we can glimpse ideas that break with the current order: from giving voice and legal representation to non-human entities to building more agile, transparent and fair democratic systems.

What role do these technologies play in proposing new legal, economic, political or ecological models?

This line of research will explore the potential of new technologies to build fairer and more resilient governance structures that guarantee inclusion, accessibility and equity for different social strata.

Medialab claims the role of new technological media to foster the self-composition of our social ecosystems, as well as to propose new management models applicable to communities, cities, companies and even entire nations.

### **MEDIOS SINTIENTES**

Microscopes did not create bacteria, but it is as if they did. After their invention we could never conceive of the world in the same way again.

The thematic line **Medios Sintientes** (Sentient Media) is like a telescope, it focuses on making the invisible visible. Such visibility has substantial information for conceiving the world differently in matters such as health, energy and our relationship with the environment. Covid has shown us that those societies capable of monitoring themselves and generating correct transmission and tracking models have been the best at combating the spread of the virus. Even the very concept of Climate Change would not exist without the sensitive organ - made up of a myriad of sensors - that during the last decades we have deployed around the planet to measure with extreme granularity the consequences of alterations in weather patterns.

What new readings of the world will sensor technology deploy over the coming decades?

The aim of this line of research is to promote the creation of new computational and sensory platforms capable of deploying alternative understandings of the world, overcoming human perceptual limitations and producing new abstractions to understand the complexity of our hyperconnected reality.

The projects linked to this theme will address the invention, construction and deployment of new sensory and visualization technologies, promoting research both in physical environments -for example, the design and engineering of sensors, hardware, or new mechanisms for health or ecological monitoring-, and in digital environments -simulations, geomaps, interactive models, remote sensing, or automation of processes-, encouraging their application in a multiplicity of fields ranging from the microscopic to the planetary scale.

### **ECOSISTEMAS HÍBRIDOS**

Cities occupy only 0.3% of the earth's surface, yet the landscapes that make the phenomenon of the city possible cover nearly 70% of the surface of the planet. Today more than ever we must be aware of the multiscale and polytemporality with which urban ecosystems operate. We need to transcend the physical delimitation of what we call "city", to intertwine it with a multiplicity of diverse ecologies. We believe that not only the city is a city, but everything that fuels it.

The ***Ecosistemas Híbridos*** (Hybrid Ecosystems) research line approaches urban design from a radical rethinking of the inherited epistemological assumptions about the natural and the synthetic. We want to redefine the term "city", providing it with an important nuance that includes in its definition the set of operational landscapes on which the city depends: the energy production systems that sustain it, the geological and extractivist practices that materialize its buildings, or the logistic mechanisms that supply and feed it. Cities could not exist without them. We need to stop looking at them as something alien to the urban.

Today the city is, for better or worse, an event of planetary dimension and scope. That is why to design the city of the future we must go beyond the design of the layout of streets or buildings. We must incorporate the design of the flows (energy, material or economic) in which the city participates and, in the context of the climate crisis, propose alternative models that are not pathological for the planet's adequate metabolisms.

Ecosistemas Híbridos operates at the intersection of infrastructural design, the incorporation of new energy models, radical urbanism, or materials science to improve the relationship between natural and man-made environments, making them operate as a single hybrid system towards adequate environmental performance.

### **SEMIÓTICAS INTELIGENTES**

What is communication? Lately we talk a lot about interspecies communication, but not so much about inter-entity communication. Every second, all around us, millions of unspoken "conversations" occur between living and non-living systems alike. We need to understand that language, as a semiotic science, is intertwined with other processes of information transmission to which we are often oblivious.

The ***Semiólicas Inteligentes*** (Intelligent Semiotics) thematic line explores the future of communication systems between different intelligent agents, with special emphasis on the semiotics between the environment and human and non-human systems. It will seek strategies both to humanize non-human language, making it more affective and accessible, and to dehumanize our understanding of language, defining new dynamics and processes. How can we better communicate with ecosystems? What role does artificial intelligence have in the future of communication? What new models of communication can we establish between organic and non-organic systems?

Topics such as humanoid robotics, facial recognition, medical telemetry, deep fake, artificial intelligence, etc., are of central interest, but so are emerging technologies such as 5G, projects like Neuralink or the Internet of Things (IoT) that foretell a future in which our bodies, devices, and infrastructures will be more connected than ever.

This line of research will promote multidisciplinary approach practices that integrate Human-Centred Design (HCD) with psychology, aesthetics and advanced computing, to create technologies capable of mediating between diverse semiotic systems. The goal is to facilitate communication between diverse intelligent entities - be they animals, machines or entire ecosystems - enabling better collaboration between them.

## **MICRO-MACRO-TECTÓNICAS**

Sometimes huge transformations start from very, very small things.

Think for a moment of the relationship between the combustion engine and climate change, between global logistics and a cargo ship stuck in the Suez Canal, or between poor sanitary management of a food market and a catastrophic pandemic. We live in a world of scalar interdependence, where the molecular is planetary and large-scale changes are the consequence of micro-scale decisions - deliberate or accidental.

How would the world change if engines were not powered by fossil fuels, or if our eating habits were based on other types of diets?

The ***Micro-Macro-Tectónicas*** (Micro-Macro-Tectonics) thematic line aims to investigate technologies capable of artificializing mechanical and biological systems to produce beneficial systemic changes on a large scale. We are living at the beginning of a fascinating stage, where the development of emerging disciplines - such as bioengineering, robotics, nanotechnology, or genetic engineering - will produce futures in which technological and

human progress are not only compatible with an adequate maintenance of ecosystems, but in which all will necessarily be interdependent.

Did you know that there is a modified algae (*Asparagopsis Taxiformes*) that, if introduced into the diet of our livestock, could reduce their methane production by 99%? Or that it is possible to design trees capable of absorbing up to 60% more CO<sub>2</sub>?

This line of research will promote the development of transdisciplinary projects that, among other topics, work on the generation of new materials, energy production systems, molecular engineering, carbon capture mechanisms, biofabrication or geoengineering; all those that make use of micro-scale strategies or technologies, but with macro-scale transforming capacity.

## **HERRAMIENTAS DISRUPTIVAS**

Our ability to use and create tools is a substantial part of what makes us human. This characteristic has taken us from being small communities of hunter/gatherers to a hyper-connected planetary civilization capable of exploring the far reaches of the universe.

We often think of politics as laying the groundwork for societal transformation, providing the soil upon which new technological systems can emerge. However, the reverse is equally true. Technological changes often precede subsequent political and social changes.

When did we democratically decide to have platforms like Facebook or Google?

We design our tools and they design us in return. No one ever voted for the iPhone, yet this device has changed our societies more profoundly than any democratically passed law.

These contemporary tools, as well as the emerging digital ecosystems they support - Tik Tok, Instagram, Whatsapp, Tinder or Google Maps - form a technological infrastructure that is at the same time political, economical, cultural and ecological. Interfaces whose implementation radically change the protocols of social interaction and the ways we have of relating to our environment.

What new interfaces, devices or systems will appear in the coming years? How can we design them so that the structural changes they produce lead us to a better future?

The ***Herramientas Disruptivas*** (Disruptive Tools) line of research will focus on the design, development, and implementation of a wide range of new media tools and applications with the potential to transform society. We want not only to explore new physical and digital interfaces, but also to analyze the implications they may have for social, political and economic dynamics, as well as for traditional forms of artistic expression and dissemination such as music, film, literature and the visual arts.

## **CIBERNÉTICAS TANGIBLES**

We live in the metaverse: a multiplicity of cyber environments where diverse agents (human and non-human) interact socially and economically through a digital ecosystem.

During the last decades we have witnessed the unstoppable growth of countless virtual worlds: gaming, social networks, teleworking or online commerce. Far from being mere substitutes for the "real world", the metaverse constitutes a media interface capable of integrating and intertwining physical and virtual dynamics in an increasingly interdependent ecosystem of worlds erroneously considered as opposites.

Whether we attend a virtual conference or explore a hyper-realistic MMO, we must understand that rather than inhabiting a real or an online world, we inhabit a bridge between the two; whose political, economic and social structures are indebted to the technologies with which we design them.

What is the future of the metaverse beyond Minecraft communities or obsolete Facebook accounts? In what ways will cyberspace influence the way we inhabit our physical reality?

The ***Cibernéticas Tangibles*** (Tangible Cybernetics) research line will drive projects that inhabit the bridge between our physical and virtual worlds, as well as their ability to build dual ecosystems in which issues such as identity, privacy, portability, or ownership can be rethought.

We want to change the outdated conception of cyberspace as an "unreal world". We want to foster a new vision that conceives it as a place capable of influencing the "real world", capable of designing the societies of the future.

## **HORIZONTE DE SUCESOS**

The event horizon is the outermost layer of a black hole. The one that does not let us see beyond it, that we cannot pass through.

There are things that we know-that we know (Known Knowns), things that we know-that we do not know (Known Unknowns), things that we do not know-that we know (Unkown Knowns) and finally there are things that we do not know-that we do not know (Unkown Unknowns).

Medialab should have a space dedicated to the latter.

The ***Horizonte de Sucesos*** (Event Horizon) thematic line will host all those investigations that, due to their strange, alien, or precursor nature, do not find their place in any of the other thematic lines. It should promote projects that explore the unknown-unknown, the unclassifiable, those things for which we do not even have a name yet, helping us to detect unexplored paths and the risks they may entail.