RADICAL AIR. NOBODY OWNS THE AIR

We are living beings who inhabit the bottom of an ocean of air[1]. An air that should make life possible, however, its composition has been radically transformed by humans through the indiscriminate use of fossil fuels. A recent study revealed that in order to breathe clean air we would have to go all the way to the Southern Ocean. Such is the magnitude of the human footprint on the air. The air that fills our lungs is colonised by human activity dependent on fossil fuels. It is air that burns. It is air that kills. If we continue our business-as-usual economics and policies, the problem of air pollution and its impact on human and non-human health will continue to be devastating: There are seven million preventable deaths in the world per year according to the World Health Organisation[2], of which: 400,000 in Europe; 30,000 in Spain[3]; 1,697 in Madrid[4]; and 279 in Bilbao[5]. All these are avoidable deaths, every year.

The COVID-19 pandemic has shown us what happens when we make health an absolute priority. We have seen how radical changes in city life, especially reduced traffic, have an instant positive impact on the quality of the environment, especially air quality. Many of these changes are merely a "dress rehearsal" on how to share public spaces during this pandemic and in a post-coronavirus future. We contend that this public space is not limited to the one we walk in. It is also the one that we breathe, a collective breath of interconnected humans and non-humans. That is why it is so important to view many of the measures taken during COVID-19 as a test run for the transition from temporary to permanent. We now know that this change must be maintained over time, because as soon as cities resumed their activity, pollution levels spiked to pre-COVID levels.

There is now a global awareness that we cannot breathe, in the most literal and metaphorical sense. The individual scream is now a collective socio-political and ecological scream. "We cannot breathe" is the phrase that most radically defines the state of global vulnerability and urgency in which we live. No one has the right to pollute the air. Air belongs to no one in particular, because it belongs to everyone, human and non-human. And as the Universal Declaration of Human Rights (article 25) and the Spanish Constitution (article 43) dictate, health is a human right. In this sense, philosopher Achille Mbembe demanded the universal right to breathe in 2020:

«*Before this virus, humanity was already threatened with asphyxiation. If there is to be war, it cannot be so much against a specific virus as against everything that condemns most of humanity to stop breathing prematurely, everything that fundamentally attacks the respiratory tract, everything that, in the long reign of capitalism, has constricted whole segments of the world's population, entire races, to laboured gasping for air and a life of oppression. Overcoming this constriction would mean that we conceive of breathing beyond its purely biological aspect, and instead as that which we have in common, that which, by definition, escapes all calculation. By this I mean the universal right to breathe.*"[6]

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[1] Evangelista Torricelli: "We live submerged at the bottom of an ocean of the element air, which by unquestioned experiments is known to have weight," 1644.

[2] Available at: https://www.who.int/news/item/25-03-2014-7-million-premature-deaths-annually-linked-to-air-pollution

[3] Available at: https://www.ecologistasenaccion.org/202687/

[4] Available at: https://isglobalranking.org/es/city/madrid-area-metropolitana/madrid/#air

[5] Available at: https://isglobalranking.org/es/city/bilbao-area-metropolitana/#air

[6] Available at: https://critinq.wordpress.com/2020/04/13/the-universal-right-to-breathe/

It is therefore urgent and necessary to claim the right to breathe clean air and to propose measures to achieve this. The *Air/Aria/Aire* project for Catalonia's participation in the Venice Biennale 2021 was born from this desire. It emphasises the role of architects in the drawing of new city maps and, with them, new ways of thinking about the city, in order to change the model of the city that up to now has prioritised a certain type of economy over health.[7]

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[7]Available at: https://www.llull.cat/monografics/air/catala/index.cfm

RADICAL AIR. REDESIGNING AIR: THE *AIR/ARIA/AIRE* PROJECT

The *Air/Aria/Aire* project proposes a cultural transformation that claims the design of air as part of the urban planning to which we must aspire in an interdisciplinary, open, and participatory way. It is a radical offensive that puts health and life at the centre of decision-making with the urban research of the 300,000 Km/s team to redesign the air in cities. Likewise, it is a sensorial proposal embodied in an immersive installation in the exhibition hall which shows the materiality of air pollution along with a soundtrack, an unpublished aria composed and performed by Maria Arnal and John Talabot who sing "the air belongs to no one".

Health as a top priority. Urban development in cubic metres.
Institutions such as the WHO[8] are calling for architects and urban planners to be an active, essential part of the solution to the permanent crisis caused by air pollution. Air pollution is a pandemic that can be eradicated. A healthy city is measured by the quality of its public spaces, among other things. The radical change consists of not only measuring it in square metres but understanding that the quality of the public space is also the quality of the cubic metres of air that enable humans and non-humans as a group to breathe.

Social and spatial injustice.
The city of Barcelona is the case study for the project. The choice is not coincidental. The city has been in breach of the European air quality directive for more than ten years. Current measures to improve air quality in cities like Barcelona, such as the creation of a Low Emission Zone with traffic restrictions, are not sufficient. Barcelona is still the sixth most NO2 polluted city in Europe[9]. Barcelona is a city where vehicular traffic and on-street parking occupy approximately 60% of the city's public space[10]. This reality creates a serious spatial injustice, since the public space that belongs to everyone is handed over for the private use of a few. At the same time, there is great social injustice due to the impact on health caused by exposure to pollutants at street level. If there were no pollution, 2,100 deaths could be avoided every year in Barcelona[11].

The city will belong to whoever maps it.
To map is to know, to understand, to care. To map is also to produce evidence for public debate. The research for the *Air/Aria/Aire* project includes unpublished cartographies produced by the 300,000 Km/s team (led by Pablo Martínez and Mar Santamaría) following the analysis of large quantities of data: exposure to pollution, the impact of cities with high levels of inequality on health, and actions needed to dethrone and banish fossil fuel vehicles and the root causes of the influx of traffic in cities, which is primarily the need to commute between home and the workplace and the unplanned transport of goods. What is also radically new is that these city maps show where actions are needed on a street by street, corner by corner basis and how urban morphology,

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[8] Maria Neira, *"Health must be the number one priority for urban planners,"* 21 March 2018. Available at: https://www.who.int/mediacentre/commentaries/2018/health-urban-planning/en/

[9] Available at: https://isglobalranking.org/city/barcelona-metropolitan-area/#air

[10] Basic Mobility Data 2015, p. 38. Available at: https://www.barcelona.cat/mobilitat/sites/default/files/documents/pmu_bcn_2013-2018_introduccio_i_diagnosi.pdf

[11] Barcelona Air Quality Report, 2019. Available at: https://www.aspb.cat/wp-content/uploads/2020/10/Informe_qualitat-aire-2019.pdf

sunlight and prevailing winds are decisive in understanding how pollution behaves: the so-called "urban canyon effect." The quality and diversity of the data are what provide this level of detail and reveal a new way of setting priorities for action.

Data for the common good

Mapping is more than visualising data. The analysis of large amounts of data in this case is not "technological solutionism," which views the city as nothing but a big data mine. The "smart" city is not the one that uses the most advanced technology, but the one that uses the most appropriate technology as a tool to defend what should be public and puts people at the centre of the decision-making process.

Measures for a healthy and just city.

In addition to maps showing the impact on public health, *Air/Aria/Aire* presents other maps that explain the measures to be undertaken: 1) eliminate traffic; 2) increase public transport; 3) demand mobility without polluting emissions; 4) design mixed use spaces so that basic services are within walking distance; 5) densify, desaturate and even de-urbanise; 6) implement zero-emission freight hubs in the "last mile"; 7) reduce parking; 8) obtain more public space; 9) design green; 10) fight heat islands; 11) design the urban canyon; and 12) rehabilitate housing and use minimal, 100% clean energy[12].

Collective breathing

Cartography is a fundamental tool in times of ecological and social emergencies which can be used as evidence to debate, to interweave practices, knowledge, and feelings regarding lifestyles; to build consensus on redesigning the air; and to redesign cities by putting health and life at the centre. Were we to focus on the air we breathe in our cities, air would no longer be something that remains between buildings but rather that which we breathe in a "social breath," a collective breath, formed by the network of relations between various agents and sensibilities that recognise each other's fragility and interdependence and mutually value each other in order to feel, think and act accordingly.

Olga Subirós
Architect and curator of the *Air/Aria/Aire* project

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[12] Available at: https://air.300000.eu/#ca

RADICAL AIR

Air pollution
in cities,
is a local public health crisis,
interconnected
with the global climate crisis.

The origin of these two crises
is anthropocentric.
Emissions need to be reduced.
To decarbonise locally
is to decarbonise globally.

Redesigning the air,
redesigning cities,
prioritising the health of all
humans and non-humans
is the radical change we need

It is more than a personal choice,
it is a requirement for collective eco-social justice.

Fig 0. This is a text that I summarised as a "manifesto."
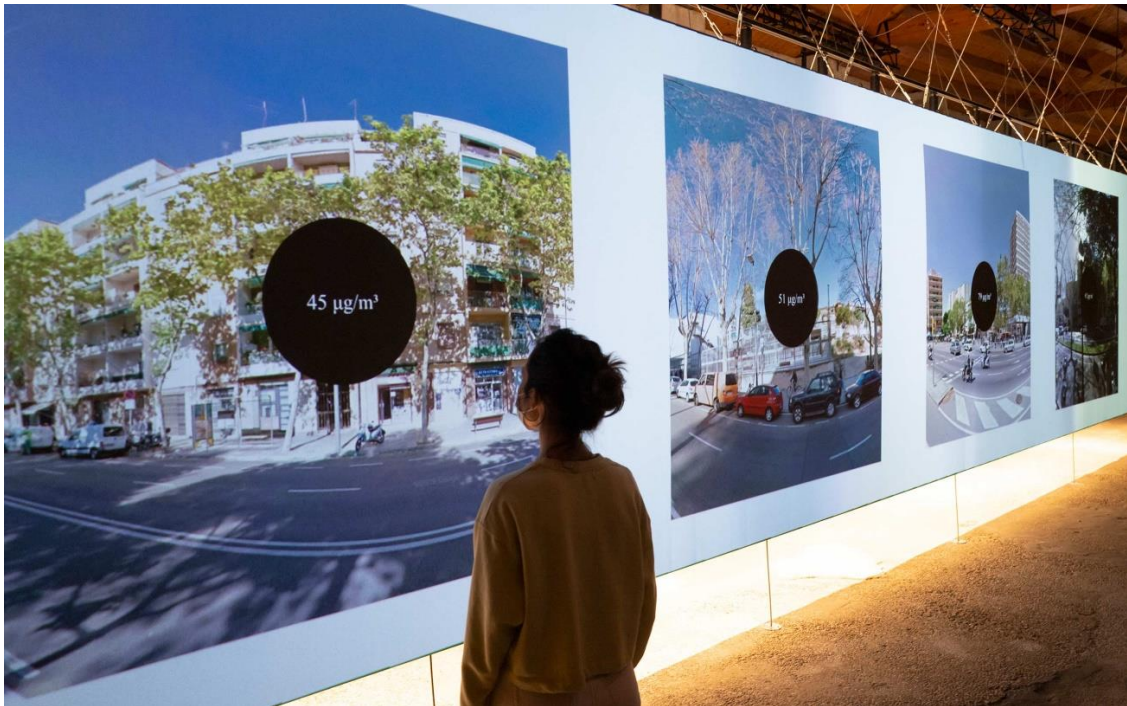
Fig 1. NO2 levels higher than those permitted by the WHO and the EU. *Air/Aria/Aire* installation. Photograph by Gunnar Knechtel.

Fig 2. PM10 filters for airborne pollutants. *Air/Aria/Aire* installation. Photograph by Gunnar Knechtel.
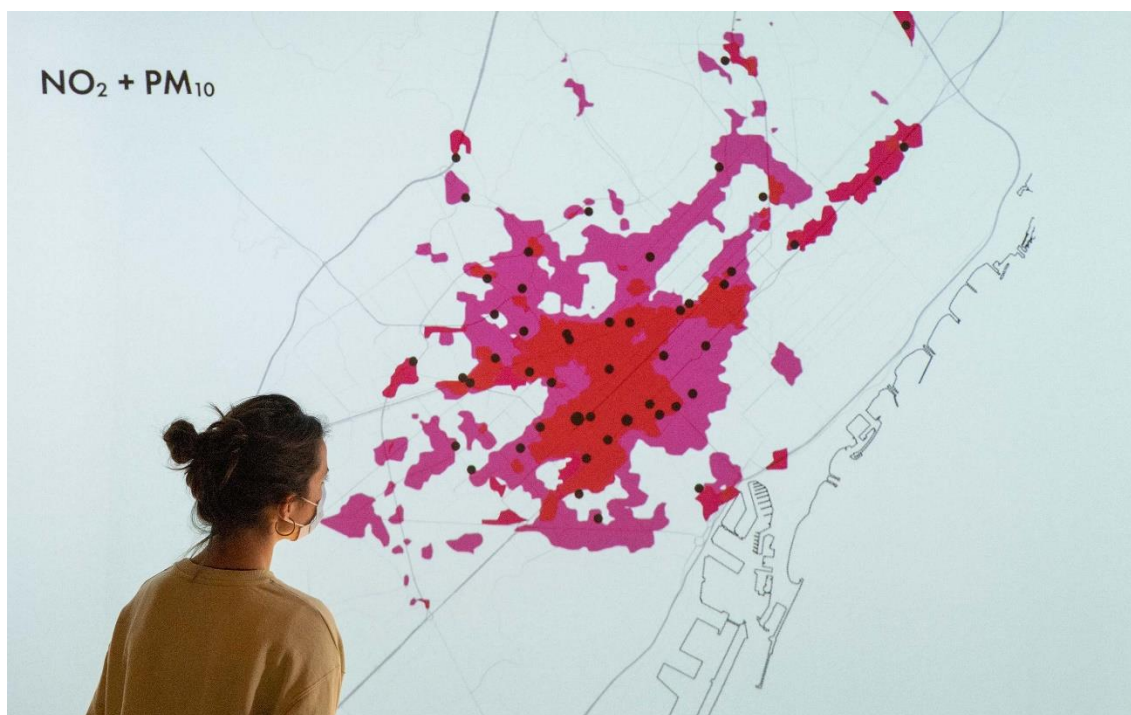
Fig 3. Cartography overlaying NO2 emissions and the presence of PM10 particles within the city of Barcelona higher than those allowed by the EU. *Air/Aria/Aire* installation. Photograph by Gunnar Knechtel.
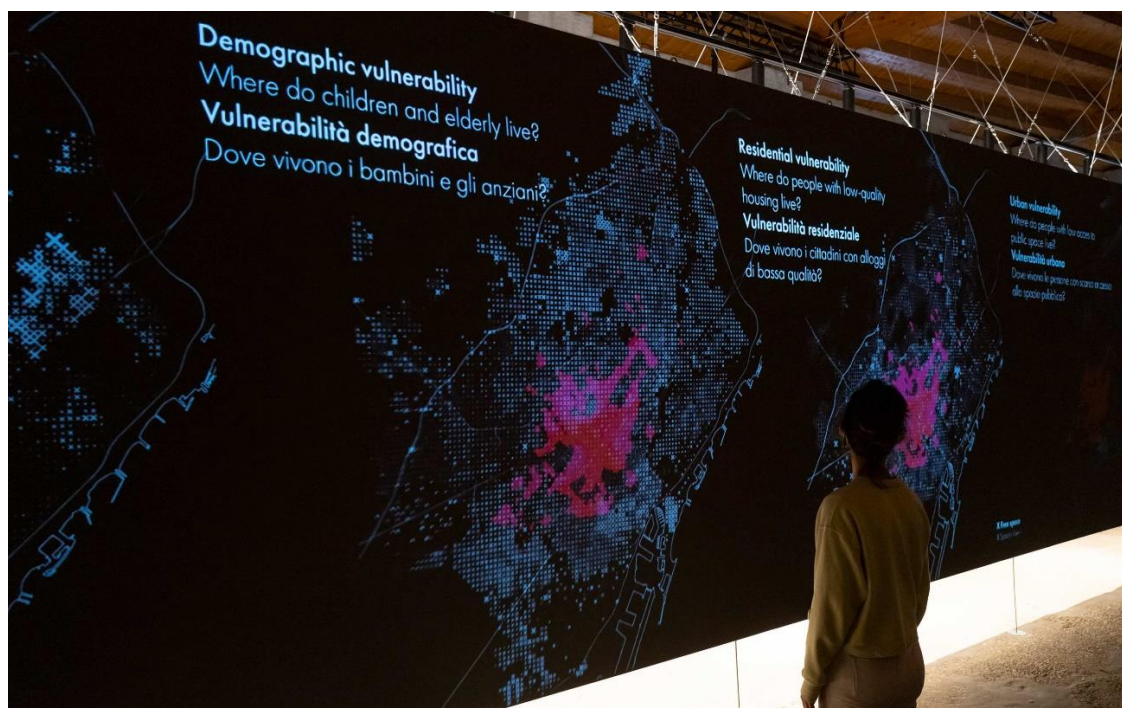

Fig 4 Cartography overlaying NO2 emissions and the presence of PM10 particles with values in the city of Barcelona higher than those allowed by the EU, and data on demographic vulnerability (minors and people over 65), residential vulnerability (housing quality), economic vulnerability (lower income). *Air/Aria/Aire* installation. Photograph by Gunnar Knechtel.
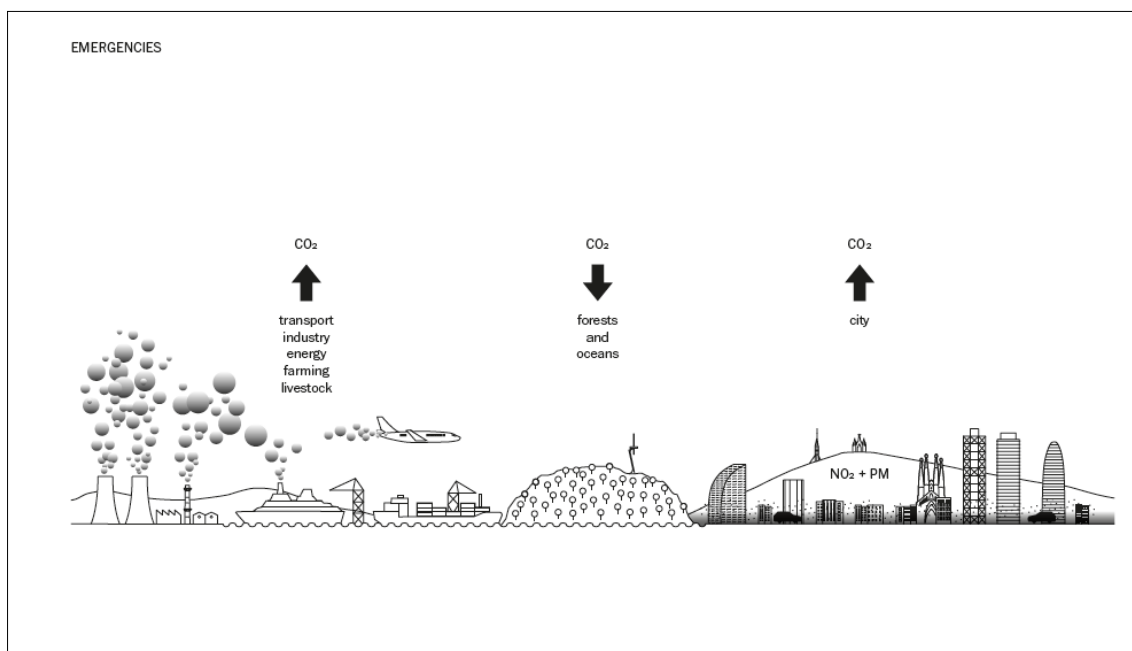
Fig 5. Climate emergency and air pollution are two sides of the same coin. Fossil fuels emit CO2, which produces the greenhouse gas effect that causes climate change, and NO2 and PM pollutants, among other harmful gases, that directly impact health. Illustration by Olga Subirós Studio. Or use the image by Gunnar Knechtel with the proposed text.
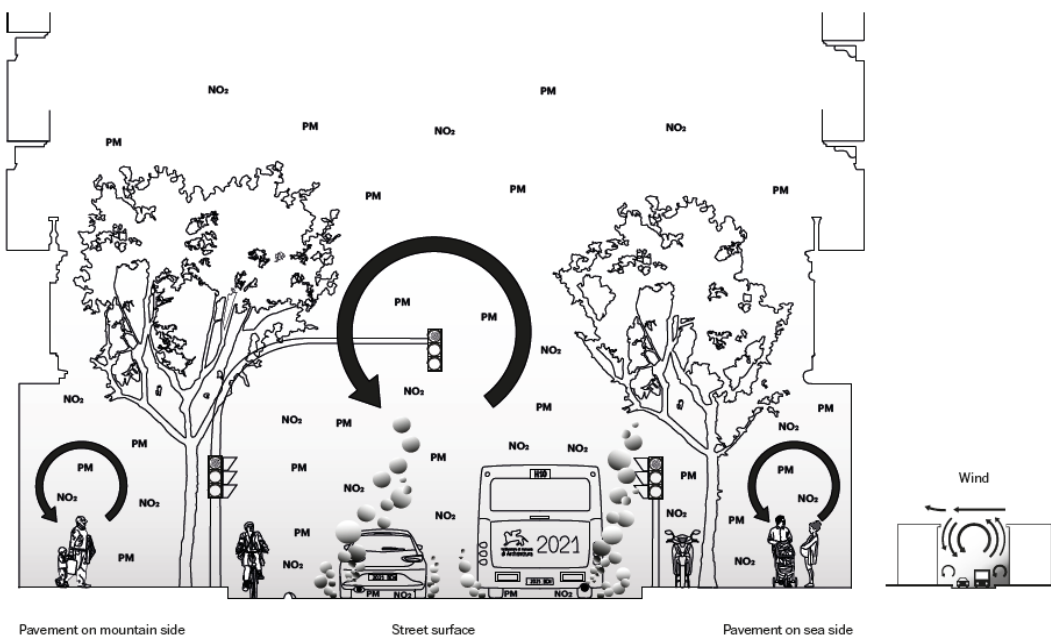
STREET CANYON — WITHOUT TREES

STREET CANYON — WITH TREES

Pavement on mountain side   Street surface   Pavement on sea side

Wind
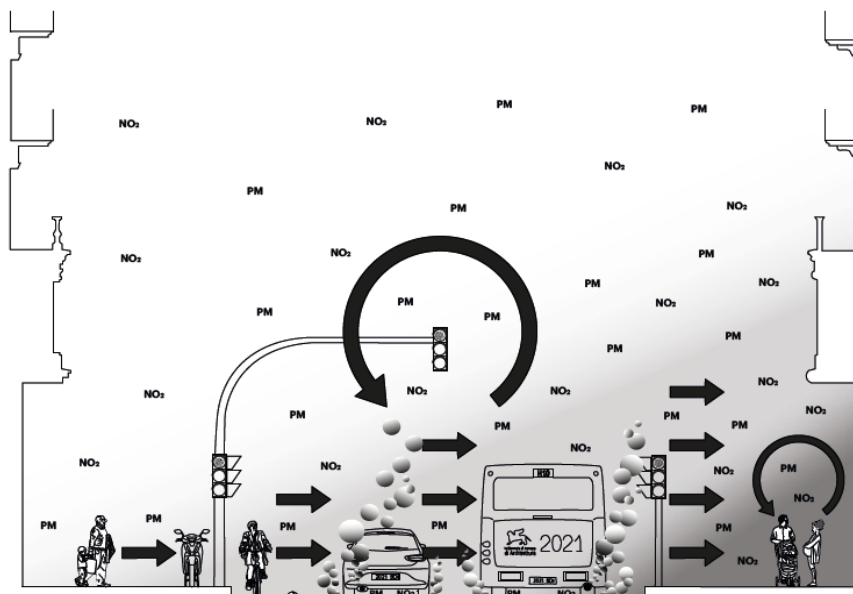
Fig 6. "Urban canyon" effect. Air pollution is trapped between city buildings. Vehicles that run on fossil fuels emit pollutants and planting trees does not solve the problem as trees do not capture NO2. Trees have other benefits. Illustration by Olga Subirós Studio.
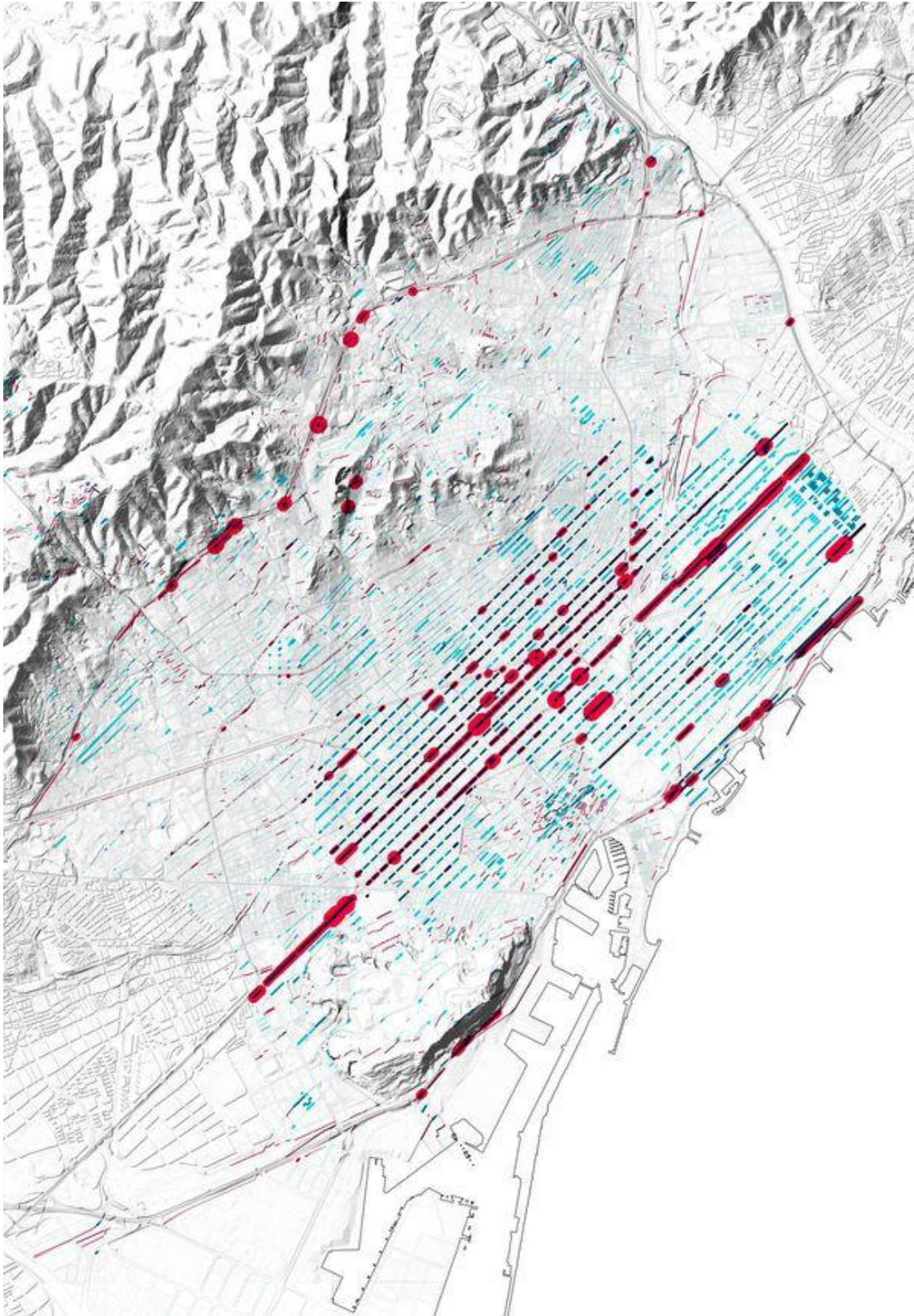
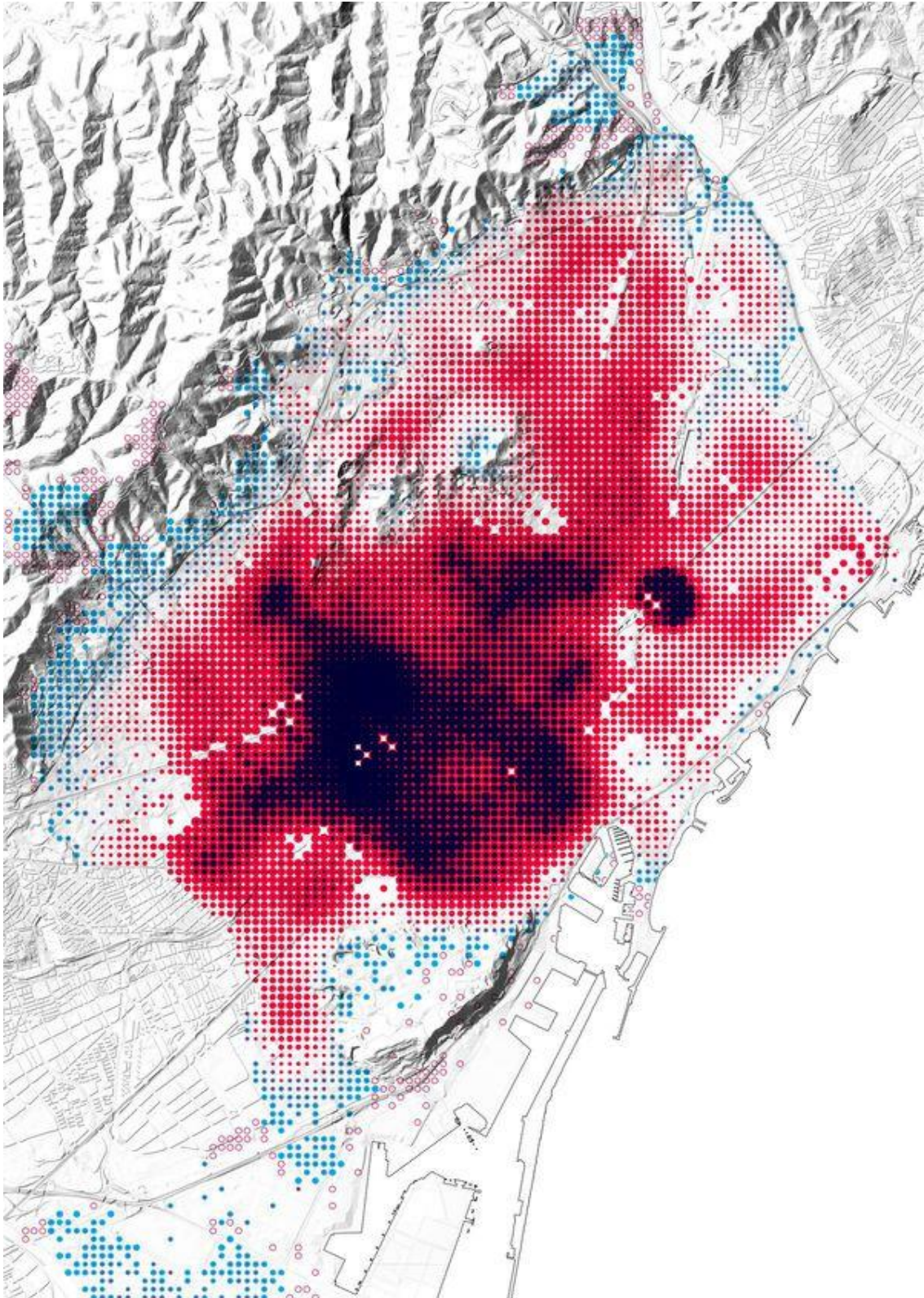Fig 7. "Urban canyon" in Barcelona. 300,000Km/s cartography

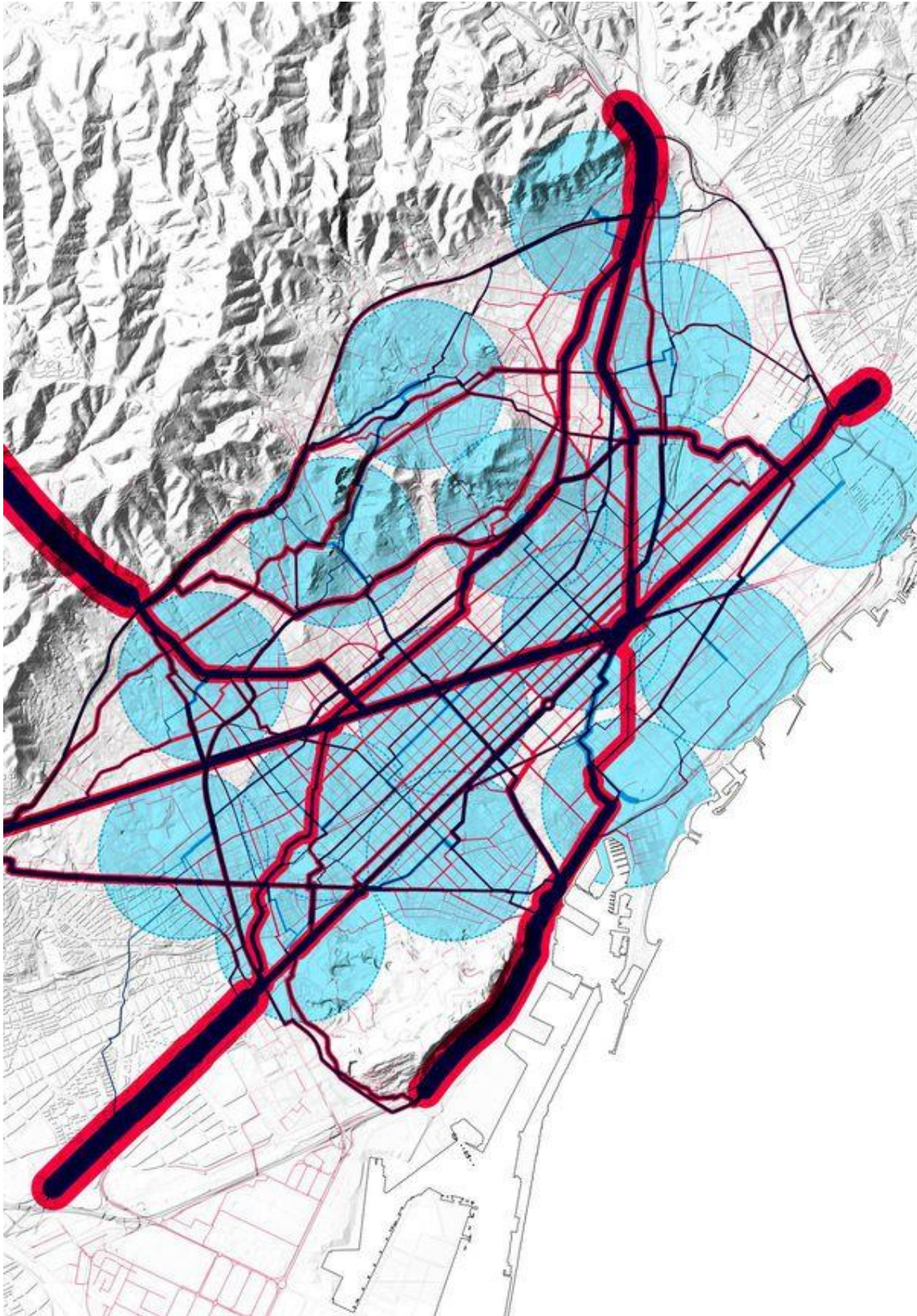Fig 8. "Densify, Desaturate, De-urbanise" in Barcelona. 300,000Km/s cartography

Fig 10. Proposed "Freight Hubs" in Barcelona. 300,000Km/s cartography

OLGA SUBIRÓS:

Olga Subirós is an architect and curator of projects which take an integrative approach to the far-reaching transformations of the digital age and eco-social crises. Her most recent curatorial and exhibition design project, AIR/ARIA/AIRE, on air pollution and the need to create cartographic evidence to help change the city model, was presented at the Venice Biennale 2021. She was co-curator and designer of the exhibition "Big Bang Data" on the datification of the world, which was presented at the CCCB and at several international venues such as the MIT Museum and Arts Science in Singapore. Subirós has developed more than fifty exhibition projects for various institutions such as the CCCB, MACBA, Museo Nacional-Bornemisza, Fundación Telefónica, Somerset House London, Artlab in Lausanne, and DOX Prague Contemporary Art Centre, among others. She is also a lecturer in the Design and Data Master's Programme at Elisava-School of Design and Engineering of Barcelona and a PhD student at RMIT University.