

This year: no brief. Rather, an emerging figure, a system yet to come whose outlines and contours are beginning to reshape the grounds of the Earth.

The technosphere baffles architecture: from within it appears as the result of the multiple projects, designs, actions and processes of humans, within the remit of control and capacity to act. From the outset humans are only a component of it, drawn into its functioning and endeavouring for its sustainment.

The year is dedicated to investigate specific conditions where this inversion of agency appears as a form-generating process. We start by outlining with precision the material characterisation of specific sections of the technosphere, to then investigate how architecture can contribute at stabilising and reshaping the processes giving rise to the Anthropocene.

While the figure of the technosphere is like a filigree, yet to be more clearly defined and articulated since its conceptualisation in Earth-System sciences in 2014 by Peter Haff, we investigate it through the well-established procedures of architectural intelligence. We investigate the technosphere, the new dimension of the Earth history, as an architecture in the making.

We use architecture to investigate and to prefigure, i.e. architecture is both the object of detailed scrutiny as major component of the technosphere (with its materiality, energy systems, as well as with its complex forms of influence on the World System), and it is the method of inquiry. We investigate how design and planning prefigure technological developments and deployments, how architecture is the material counterpart of a complex system of power relations, artistic endeavours, cultural, linguistic, economic and financial structures and procedures.

World-System and Earth System in rapid oscillation: the technosphere is a radically new phenomenon in the deep time history of our planet: the intense interceptions of the Earth System and the World-System.

Made up of all the elements that humans have constructed and shaped to remain alive, from buildings, infrastructures, industrial complexes, transport systems, farms, plantations and institutions, to technological equipments and the complex protocols that sustain them, plus the energy flows crossing these systems, the technosphere is rapidly evolving and growing.

Its sheer size and magnitude is now so vast that the hypothesis of it is being carefully compared to the biosphere and the geosphere.

A new paradigm of the complex Earth System in the making, the technosphere is a system largely dominated by humans, yet also vastly outside our direct control. In order to sustain our lives we are constantly contributing to its development and articulation.

Stability versus multiple dynamics, extension and apportioning versus intensities: the study of the technosphere activities is a grounding of potential elements of future architectures. The specific human relations are shaped, structured and hardened by these historical processes. Individuals, groups and societies are shaped in their interactions by these processes as much as they contribute to their dynamics.

World-Systems are a coherent, sweeping force, unfolding across large areas and through economic, social, political and cultural structures and interactions. They operate at very high levels of coherence and unfold at scales well beyond the individual elements that shape them. They are whole: the boundaries they structure and the flows of energy, money, ideas, language, social class and rank, law, population, power that characterise each world-system in its particular development, shape complete systems which operate as a complex entities, as elements of the technosphere.

The social construction of time and space evolves through rapid transformations, a succession of different dynamics, where different forms of documentation and different practices of power affect the overall system, where a new form of architecture appears and triggers transformative thought action and behaviour, producing options and potential for action and intervention: how to interact with these processes?

The development of the technosphere is in rapid acceleration, forming in different ways across a number of locales and pre-existing structures, vastly modifying the material basis of our environments through a series of non-synchronous transformation processes. They are processes of simultaneous growth, integration and expansion, as well as decay, abandonment, seclusion and extinction. The material complexity of the technosphere is both in space and in time. It articulates and cuts across existing processes and structures and reconfigures the relationships between the shifting material processes and the more and more volatile institutional structures of our polities. It builds upon and with existing structures and strata and forms vast amounts of residue layer. Architecture is here understood as a series of technofossils and human trace fossils in the making.

The multiple semi-stable forms of processes of construction and modification of the technosphere are shaping a complex system of intensifications: a change in the intensity of processes of circulation of human capital, information, food, materials and energy that appears to be the hallmark of the Anthropocene. The new geological epoch is a transition of the Earth System away from the stable processes and dynamics that have characterised the last six to seven thousand years of relative climatic stability. The times of formation of human civilisations, languages and architectures has come to an end with the beginning of the expansion and intensification of the technosphere in the mid-twentieth century and the exit from the Holocene.

We endeavour to measure the physical dimensions of the technosphere: its mass, processes and energy flows. We start with simple questions: how heavy is a city? How heavy is a landscape? These are simple questions with complex answers, where sorting out and measuring man-made structures and their influence is an exercise in architectural form-making.

We assess and develop methods of inquiry into the extent, scale and intensity of the energy and material flows. We consider these flows and their solidifications, encrustations, as a process of construction over time and across space: as an architecture. The technosphere is analysed in its dynamic formations: a large and rapidly growing collection of complex objects resting atop and within a vast and growing layer of waste, only minimally recycled back.

The work focus is on construction processes and innovative satellite remote sensors, geodesy, thermal images, radar refraction, 3D point clouds and other innovative image technologies in order to envision how complex material systems act and design solutions for their integration in coherent spatial arrangements.

The aim of these investigations in image production is to conceive of innovative interventions in complex construction processes, infrastructural deployment and integration of resources. Through a tight connection between TS and the Unit project, you achieve a deeper understanding of the modalities to conceive of complex material systems and their delivery.

The technosphere is on many levels deeply intertwined with the formation of the European project, its expansion and colonial structures as well as its first development of a capitalist World-System. The project is to critically re-evaluate and reset many of the modern processes and structures, and to engage Europe in the formation of a complex system of re-circulations and re-territorialisations.

Europe's landform is marked by two vast depressions to the North and to the South, flooded by the oceans to form two parallel chains of seas that penetrate deep into the interior. The European peninsula, with its outreaches, bays, meanders, and straits is a unique set of environments, urban structures and political organisations in constant transformation. It is defined in the North by the North Sea – Baltic Sea lane that connects the Atlantic to Russia. In the South the Mediterranean – Black Sea chain stretches from Gibraltar to the Caucasus.

The Coast of Europe is a set of territories open on all sides, where international and non-state polities are reshaping the forms of cohabitation and construction of human landscapes. These landscapes are continuously re-written, reshaped and reconfigured to form a stratification process, a non-centred space where post- almost- quasi- semi- neo-colonial practices undo and reconnect authorities and territories.

The 136106 km of European coastline, ranging over four seas – the Mediterranean, the North Sea, the Baltic and the Black Sea – and two oceans – the Atlantic and the Arctic Ocean – are almost equal in length to the Equator. With almost 50% of the nearly 500 million inhabitants of the EU-22 coastal countries, the coast of Europe is a vital and strategic element for its future.

The European space is transformed by accumulation, addition, superimposition, intensification and consolidation, rarely by outright replacement or elimination. The project for the re-modernisation of Europe investigates how architecture can engage with the layered and differentiated modalities of growth and change – combining intensification, preservation, modernisation, stagnation, downturn, stasis, decay, growth, conservation, dispersal, abandonment, erosion, consolidation, densification – that are reshaping the territories of Europe and its Seas. The project is defined by the arrangements of motions into which it enters, which is always composed and recomposed by individuals and collectivities.

What are the patterns of these changes? How can architecture affect them? How are inhabited spaces shaped by the multiple uncoordinated initiatives and forces that characterise today's European connection and relations? How to fathom their differences? How does architecture interact with their internal form-generating processes? How to modify, accelerate, hinder, divert, consolidate or shift them? How can architecture guide innovation in the relation between space and society? What is needed for something new to appear?

Diploma 4 operates as a think-tank, intimately combining research into real-world issues with architectural experiments and testing. Our main tool is our roundtable weekly meeting, with seminars, workshops and individual and collective discussions and experimentation.

The three terms of the academic year each form a complex work, combining diagrams, drawings, 3D models, laser scans, satellite imagery, geographical datasets, interviews, texts, videos. As we move along the year, we discuss and collaborate with a number of the most prominent scientists and institutions studying the Anthropocene and its multiple ramifications.

The sum of the work is a precise architectural take on this urgent and complex figure in the making.

1 The Technosphere—Observing transformations

We characterise the technosphere through specific samples, measuring its material processes and elements, as well as the energy and information flows that sustain it.

During Term 1 a series of seminars structure the theoretical background of the work at the unit and articulates a set of specific tools for thinking architecture and contemporary territorial transformation.

2 Territories

The measurement of the technosphere leads to the interception of a number of specific transformation processes, each one surveyed and measured by multiple institutions and actors. The careful articulation of these leads to the delineation of a specific series of territories, characterised as systems that sustain specific groups and institutions, often overlapping and weighing in on each other.

During Term 2 we design spaces of renegotiation of these territories, specifying both new procedures and re-imagining complex spatial representations that can lead to direct action.

3 Elements of a plan: how to act

The third phase for the project of re-modernisation of the coast of Europe outlines the details of specific architectural interventions. The elements of the integrated plan are further developed and refined, shaping different ways and strategies for bringing change into being.

The dimensions of how to intervene, of what is to be done, can only appear within a set of real forces, a field of actions and initiatives that are initiated by a plurality of subjects and that operate across, above and beneath a number of authorities. The dimensions of the architecture project are confronted with the existing processes of transformation and its differentiated rhythms.

In this sense, architecture acts as a practice amongst other practices: *inter alia*. The works in this phase envision tactical pointers: here are the constraints, some constrictions, blockages, there openings, new paths for the creative re-appropriation of underused resources and potentials.

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The Coast of Europe
Technosphere

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