SUBMECHANOPHILIA

by
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I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners. I understand that my thesis may be made electronically available to the public.

Abstract

Twenty-three federal offshore oil platforms line the coast of Southern California for approximately 200 miles from Point Concepcion, Santa Barbara County to Huntington Beach, Oxford County. Installed from1968 to 1989, they are some of the oldest platforms in the world and currently face the process of complete decommissioning after having consumed the site's 200-million-year-old reserves in just over a century. The site under study holds a history heavy with oil; from one of the world's first offshore oil wells in 1896, to large and catastrophic oil spills, to present day unregulated offshore fracking.

However, beneath the surface of the water, the metal lattice structure that anchors them to the earth is covered in a thick layer of life, having grown into dense micro-habitats that support an entire food cycle - from deep sea invertebrates to fish and large mammals. The site composes the first half of the Southern California Bight, a zone of the pacific coastal shelf that is rich in ecological diversity. Here, complex offshore winds and eddies twist larvae, nutrients, and plankton to the platforms, initiating the growth of life. The question of the preservation of life on the platforms has placed a doubt in the process of decommissioning, giving rise to speculatins on keeping the platforms in place with a future use.

Inspired by contemporary French sociologist Bruno Latour's spirit of inclusivity and collectivity amongst the sciences, this thesis proposes the reuse of oil platforms as centres of scientific and field research, inviting the sciences to re-enter the site as a collective whose intention is to study and cohabitate with the site's ecology. Gathering the sciences that maintain an interest in the site, the design aims to engage with site's assembly of human and non-human forces and immerse us into the forces of energy, matter and life.

Acknowledgements

I would like to start by thanking my supervisor Adrian Blackwell for the constant encouragement, support, rigour and inspiration he provided throughout my thesis. His patience and depth of knowledge while I explored new and multiple topics has proven to be a great driver in this book. I would also like to thank my committee members Anne Bordeleau and Dereck Revington. Anne, for her great influence at the beginnings of the thesis, and for always making me question everything a bit deeper. Dereck, for challenging me at every exchange and strengthening my intentions in this process.

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Finally, for my family, the greatest thank you, for your kindness with me in a part of my life we do not entirely share. Your constant and unconditional patience has been an unwavering spine for me in my thesis.

For my grandmother, Premalatha Krishnamurthi, and my uncle, Vijayagopal Conjeevaram.

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"A book has neither object nor subject; it is made of variously formed matters, and very different dates and speeds."

- Gilles Deleuze, A Thousand Plateaus: Capitalism and Schizophrenia

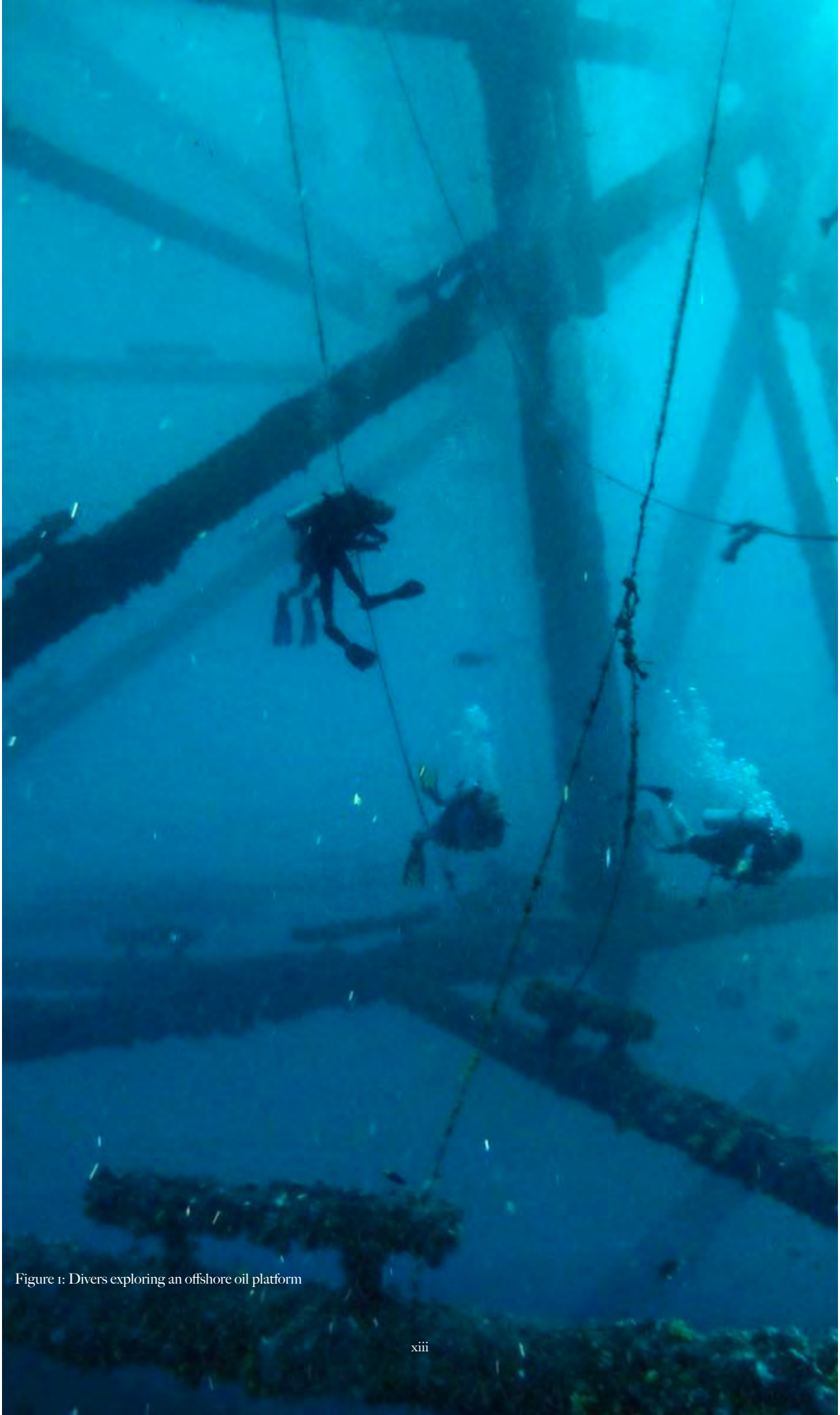


Figure 1: Divers exploring an offshore oil platform

Figure 2: View of the platforms from Carpinteria Bluffs

Figure 3: Four platforms at a distance

Prologue

"Collections: wholes and not wholes; brought together, pulled apart; sung in unison, sung in conflict; from all things one and from one all things"

- Heraclitus, 500 B.C.

At first, I borrowed the clean capitalist glasses worn by most others to observe the site. I could not blame myself as the surface had developed an opaqueness of such strength, it hid what was below and behind it. I viewed the site with its strict translation of order, the dichotomy of production, the occasional blame game. These exposed fascinating conditions: striations of politics and power told stories of periodized history that gave the site some color. I could have worn these glasses forever, in fact, it was almost impossible to take them off. However, anything permanent is but a trick...so what is the secret of the site once I finally break free of this lens?

Luckily, I was not here alone and soon enough we helped each other see the vibrant universe that grows under the surface. Together there were seven of us: the Sociologist, the Geologist, the Physicist, the Marine Biologist, the Engineer, and myself, the Architect. At the beginnning, we each had a keen interest in a certain section of the site. We each brought to the table our unique perspective of the epistemology under which our minds grew, but found a unity in our designs for the site, holding common intentions for its continuing future. In this book, those intentions will peel down the layers hiding what

Figure 4: Children playing on Santa Barbara beach, with the platforms in the distance

we have come to recognize as the site's uninhibited natures. They have always been and always will be the strongest forces at play on the site. They have taught us the great lessons of chaos and being within which we chose to exist, finding our place of dwelling amongst the natural world.

Over the course of this book, I will narrate the uncovering of this site. First, we will explore the site as it is first seen: through its layers of oil identity, thick with conflict and capital. Next, we will go deeper, under the surface and into the strata of earth, sea, sky to discover the site's ecological heartbeat: an unimposed, stronger rhythm that exists within and despite the surface. Finally, we will find why science and the quest for understanding forms a collective intention for our species to re-enter the site.

The mind of the Sociologist investigates the divisions with which we have become accustomed to relating to one another and our surroundings. It seeks to understand *the reassembly of our social world* with the mentality that the social does not explain but must be explained, and re-explained, as it evolves.[1]

The Geologist's understanding of our natural world is at once grounded in its physical states as well as its grand scale of time. This mind weaves a connective thread through scales of time space larger than daily human cognition, foreshadowing the future through knowledge gained from the *matter of the earth.*

The Marine Biologist explores unchartered territory in the space of water where the rules of forces are different from what we are familiar with in air. This mind studies *the spatial nature of life's network* as revealed through the habits and relationships of different species that occupy the ocean.

The mind of the Physicist questions *the energies of earthly and atmospheric matter* that range from microscopic to macroscopic scales, engaging with weather and climate to help explain our environments and speculate their futures.

The Oceanographer's mind is curious about the nature of the ocean as an ever changing environment. It questions the *degrees of change and transformation that occur amongst moving water* as it makes its way through earth, sea and sky.

The Engineer's mind is concerned with the creation of new matter amongst the ancient environments of the site. It looks to understand *the ecology of things* in time and space as they relate to and affect their surrounding environments.

Finally, my mind seeks to create a collective narrative of our exploration and understanding of the site. From this, I will explore the human's role in the webs of action on the site as it projects into the future, instigating a design sense whose intention is to provoke our cohabitation with the site's ecology. The mantra: societies *and* natures, not Society *over* Nature.

To make this journey with us, be prepared to stand on a ground that never stays still. In order to find our balance, we will have to adopt a perception that can shift at any time. The world we are entering is in constant unsettlement, so we must abandon our instincts towards a static sense of living. *The only permenance is change.*

1. Latour, Bruno. Politics of Nature : How to Bring the Sciences into Democracy. Cambridge, Mass. ; London: Harvard University Press, 2004, pp.32.

Figure 5: Unprecedentedly large waves at Venice Beach

If I were to assume the clouds were my home
Then perhaps I escaped when they looked away
To a place where men hurt each other, and others
With a surprising sense of hate and pleasure.
I'd look back up at my home now forsaken
Moving fast and patient against the buildings' edge,

A tiny cloud on Earth, in love with a new moon's horizon.

If I were to assume my new home was chaos,
Then I would fit right in, lost cloud on a lost planet
Caught in the eddies of greed, lust and capital
Swept away by the wishes of everyone but me.
I'd wonder why everything went so wrong,
When we began to hide behind exclusion

And when we slayed empathy with avarice.

If I were to assume our sanity was just hidden,
Then I may be able to look past defined solid walls
Hasty constructions of fear and control
They grew so large, we forgot we made them
Grew so permanant, we thought we couldn't forsake them.
So we let them be our kings and queens and presidents

Ruling strong the land of lies.

[poem by author]

Figure 6: Watching a platform's jacket being towed

California in the Capitalocene

A HISTORY & IDENTITY OF OIL

"The surface of the sea, which was perfectly smooth and tranquil, was covered with a thick, slimy substance, which when separated or disturbed by a little agitation, became very luminous, whilst the light breeze, which came principally from the shore, brought with it a strong smell of tar, or some such resinous substance. The next morning the sea had the appearance of dissolved tar floating on its surface, which covered the sea in all directions within the limits of our view."

- Captain Cook, 1792, in observing a natural oil seep

The site is located on the Pacific Continental Shelf, along the Ring of Fire, and is marked by shifting, active earth. The site has borne witness to the story of energy from its very beginnings: its origins date back two million years to the middle of the Pleistocene epoch, when its sedimentary rock floor deformed to produce a series of folds that accumulated oil. Along these fold trends are California's prosperous oil fields; Summerland, San Miguelito, Rincon, Ventura, Carpinteria and Dos Cuadros.[1]

The lightness of oil over water allows it to permeate upwards, rising through cracks and faults, porous sand and rock, untill it gets trapped under a layer of impermeable rock, forming deposits. With the aid of a puncture, it rises free to the surface where it assumes the powerful role as a vital source of energy. "Emerged under such conditions, petroleum possesses tendencies for

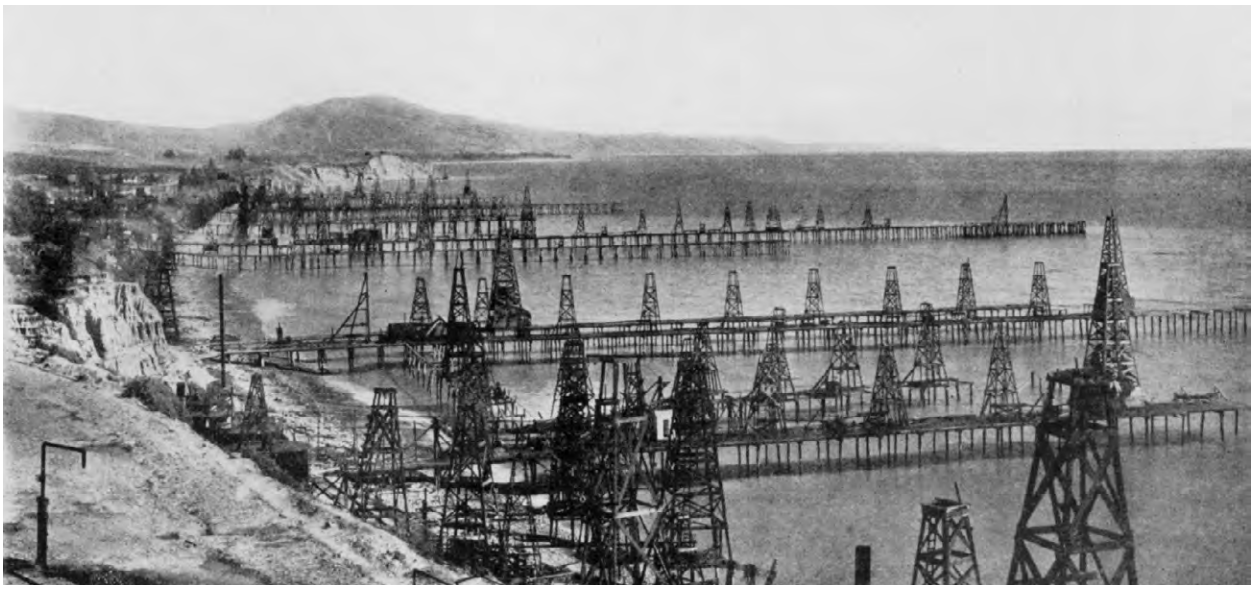


Figure 7: Summerland oil piers at the end of the 1800's

Figure 8: 1969 oil spill from Platform A

1. Steinhart, Carol E. "Oil and Santa Barbara, Partners in History." In *Blowout : A Case Study of the Santa Barbara Oil Spill*, edited by Steinhart, John S., 18. North Scituate, Mass; North Scituate, Mass., Duxbury Press c1972: Duxbury Press, 1972, 10.
2. Negarestani, Reza. "Bacterial Archeology." In *Cyclonopedia: Complicity with Anonymous Materials*, 17: Re.Press, 2008.
3. "Native American Uses of Asphaltum." US Geological Survey. Accessed 10 October 2016, . http://walrus.wr.usgs.gov/seeps/native_uses.html.
4. Steinhart, Carol E. "Oil and Santa Barbara, Partners in History." In *Blowout : A Case Study of the Santa Barbara Oil Spill*, edited by Steinhart, John S., 18. North Scituate, Mass; North Scituate, Mass., Duxbury Press c1972: Duxbury Press, 1972, 18.

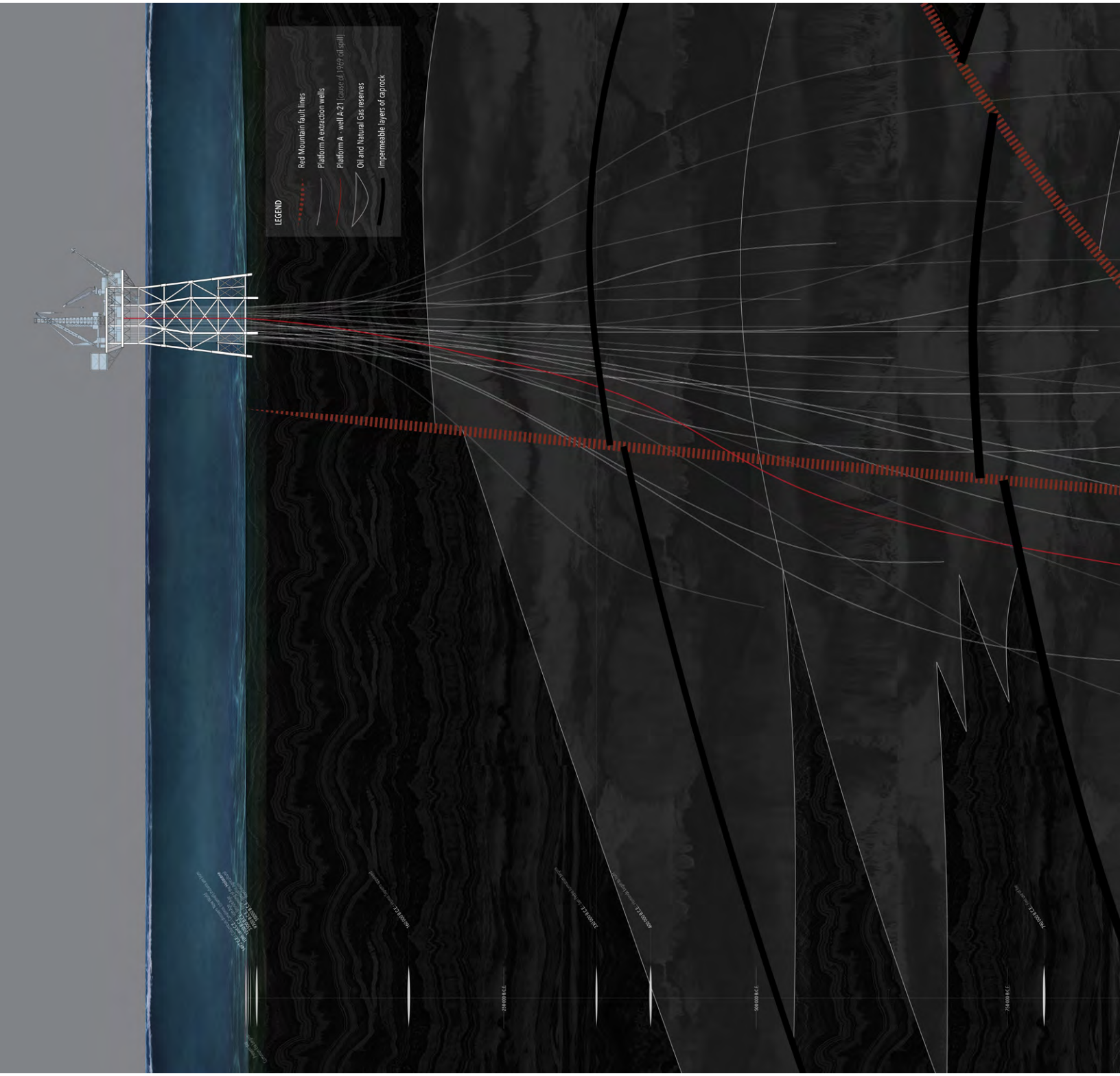
mass intoxication on pandemic scales."[2] With these qualities, we can understand why our species might be so obsessed as we allow it to drive our inherent greed into a way of life. In his text *Oil Depletion - The Heart of the Matter*, petroleum geologist Colin J. Campbell identifies the delusions with which oil and its depletion are addressed by various experts in the matter, revealing the complex spell it holds us under. Contemporary life regards oil with qualities of the divine, enabling its powerful grip on our day to day actions.

Although our species has inhabited the site for several thousands of years, oil did not maintain significant control over the site until its extraction as an energy resource. For example, oil was a small, yet important part of the native Chumash Indians' lives as they would use alpahltum from natural oil seeps as caulking for their Tomols (plank canoes), hunting weapons and baskets.[3] However, after its discovery offshore at Summerland, Santa Barbara in the early 1850's, oil began to dominate the site's identity.

It was an accidental find when digging for water 150 meters away from shore. We had struck black gold. Following this, the Summerland Oil Company drilled the world's first offshore oil well in 1859, consisting of wooden piers extending out in the ocean [Fig.7]. By the end of the century, 300 derricks had been installed in Summerland. It was a time of prosperity and production. It was a time when a 50 meter oil gusher was a cause for celebration rather than anger.

With the introduction of federal regulation (1920) and state regulation (1921) for offshore leasing, oil exploration expanded as more fields were claimed by piers stretching out into the ocean. In 1966 the first federal lease was sold, setting the stage for the twenty three federal platforms built from 1968 to 1989.[4] Over the course of the 20th century, oil extraction formed its dominant surface on the ocean. However, not everyone was enamored by this wondrous liquid flowing from the earth. In 1969 a large oil spill threatened the coasts, exposing our rapacious tendencies with oil [Fig.8]. The spill occurred off of Platform A, a Union Oil Company owned offshore platform offshore Santa Barbara.

On the morning of January 28th 1969, five month old Platform A was being prepared for its fifth well. This well was going deep, tapping into a reservoir 3500 feet below the surface of the earth [Dwg.1]. An hour after the drilling started, the casing around the well gave way causing the drilling mud to pour out of the well onto the platform. We often forget the earth is one body; the pressure disturbance in deep earth caused a



Drawing 1: Section through Platform A [foldout]

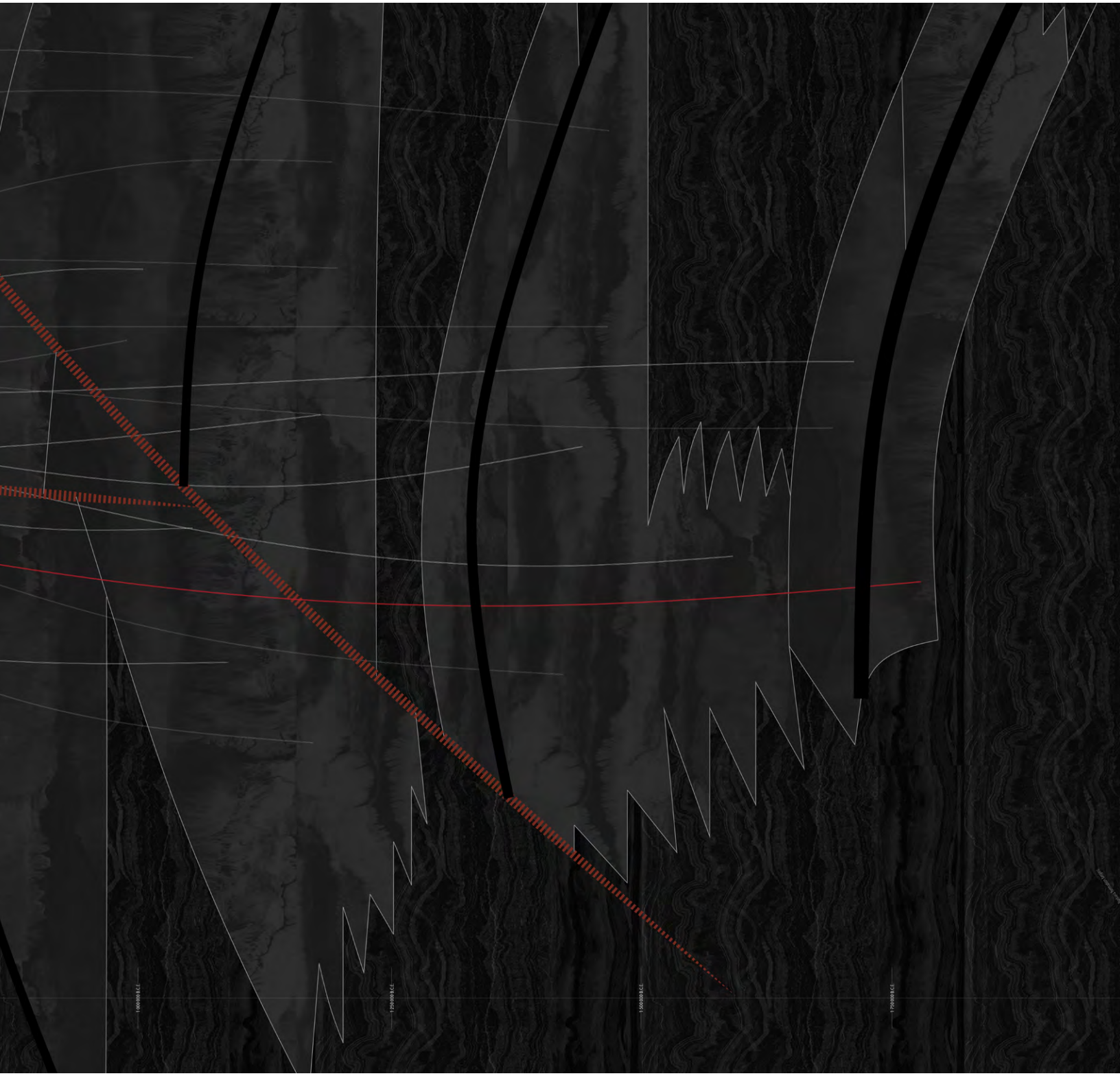

1000000 B.C.E.
1250000 B.C.E.
1500000 B.C.E.
1750000 B.C.E.

Figure 9: President Nixon visits Santa Barbara after the spill

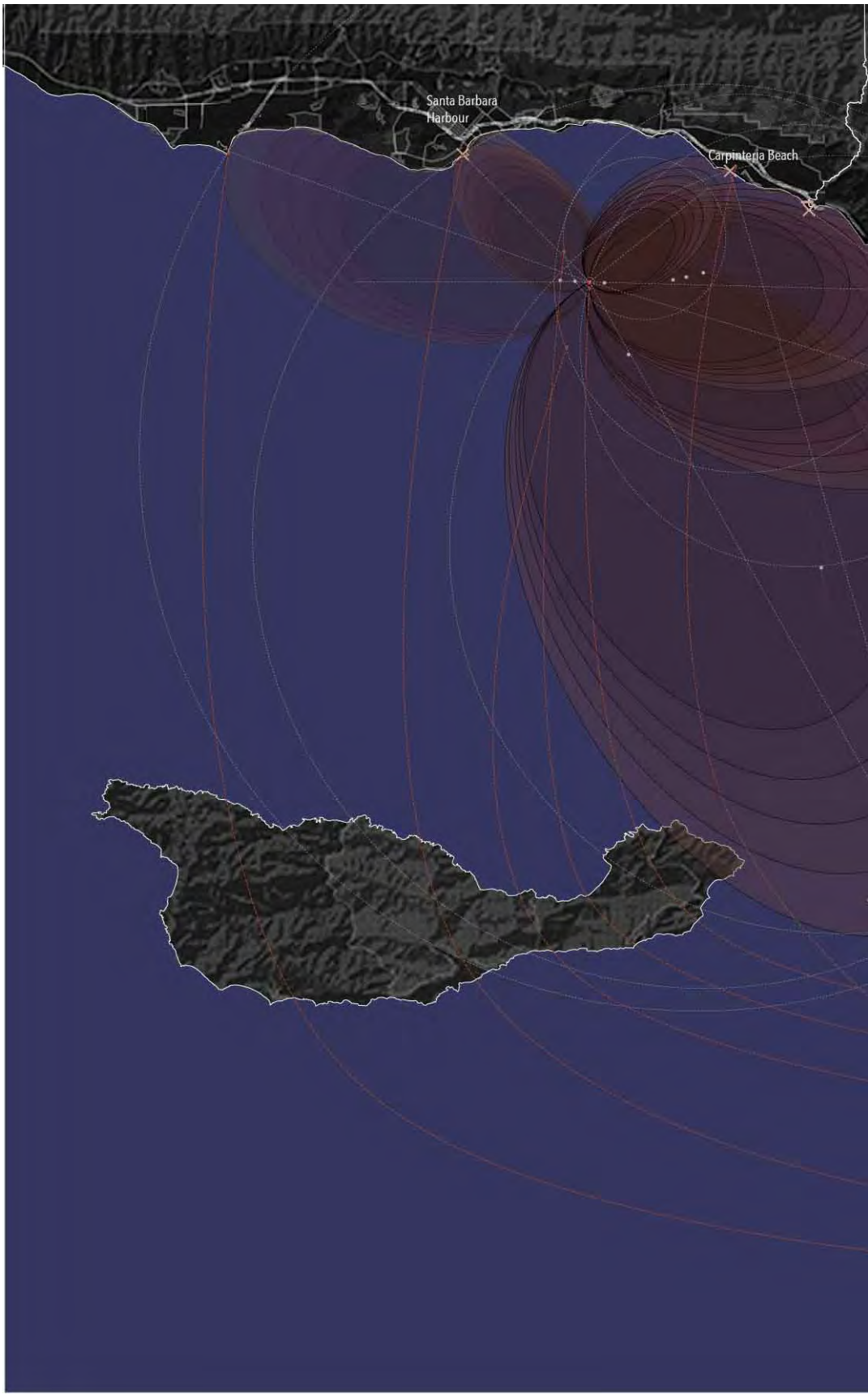
Figure 10: Workers cleaning a scoter covered in oil

5. Steinhart, Carol E. "Oil and Santa Barbara, Partners in History." In *Blowout : A Case Study of the Santa Barbara Oil Spill*, edited by Steinhart, John S., 18. North Scituate, Mass; North Scituate, Mass., Duxbury Press c1972: Duxbury Press, 1972, 20.

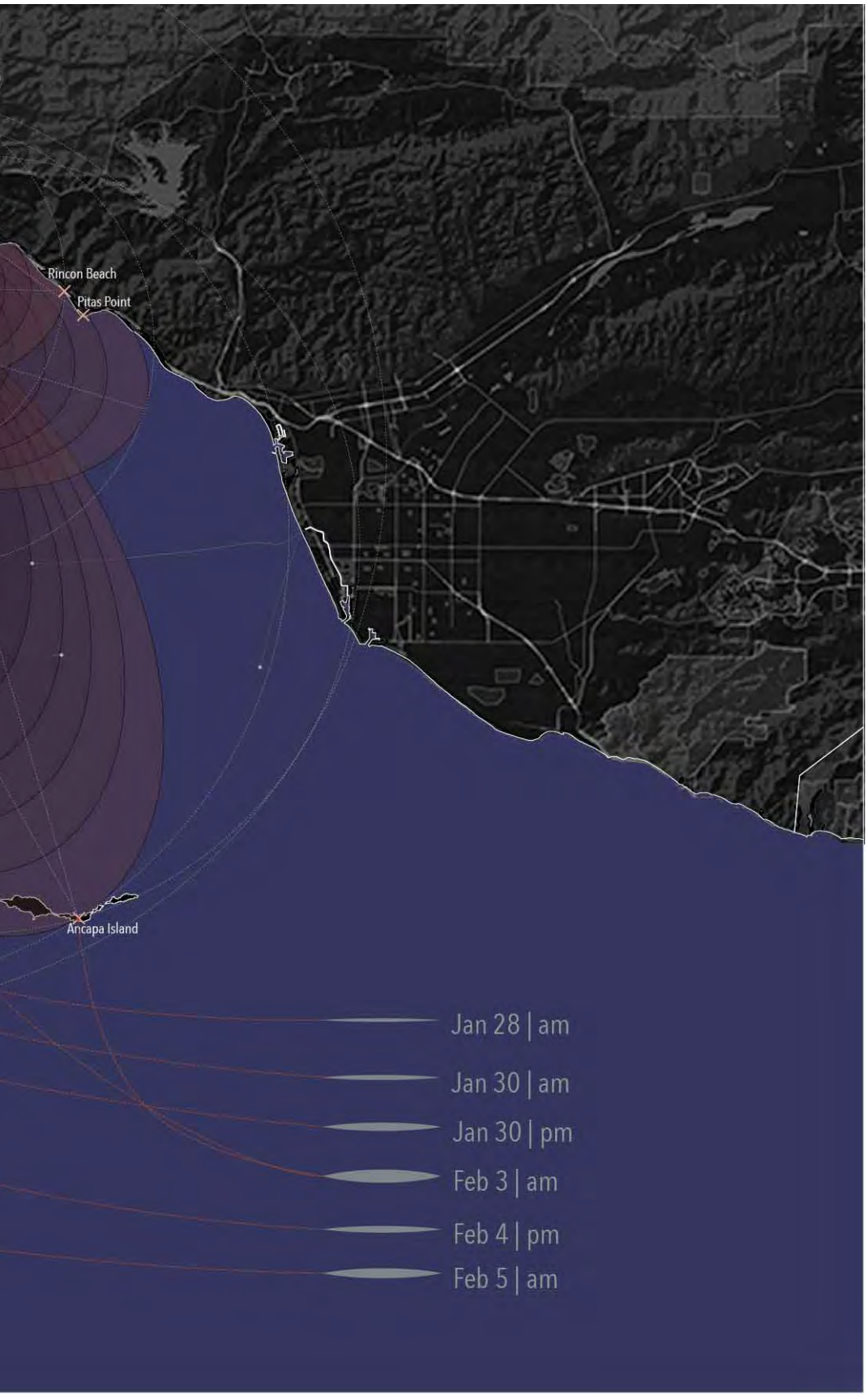
rutpure in the seabed 200 yards north-east of the platform. The drilling engineer on call noticed slight bubbles which suddenly turned into dark waves of poisonous oil that rolled toward the platform. The spill lasted for weeks while retention and clean up efforts tried in vain to quell the spread of oil in varying directions and intensities to the will of the wind and weather [Dwg.2]. The international reaction to the disastrous consequences of pollution, ecological disturbance and infrastructural instability caused a rush of worldwide awareness and gave birth to the modern environmental movement.

The following days were a frenzy of attempts in clean ups and cover ups [Fig.9]. The public was furious, Union Oil Company was trying to act calm and anybody who was somebody spouted various versions of 'I told you so'. Meanwhile, the oil spread relentlessly. Over three million gallons of oil was leaked in an 800 square mile radius. 35 miles of shore was contaminated, killing close to 15,000 seabirds and poisoning dolphins, seals and sea lions [Fig.10].[5] The spill left its aftermath of death and destruction along with a lot of apprehension. The Secretary of the Interior, Walter Hickel, suspended federal leasing and drilling for a few months to reassess inadequate drilling safeguards by oil companies. However, his soul searching did not last long and within a month Hickel lifted the ban on offshore drilling. At the end of that year Platform Hillhouse was installed right beside Platform A. In twenty years, twenty more platforms were added to the site [Dwg.3].

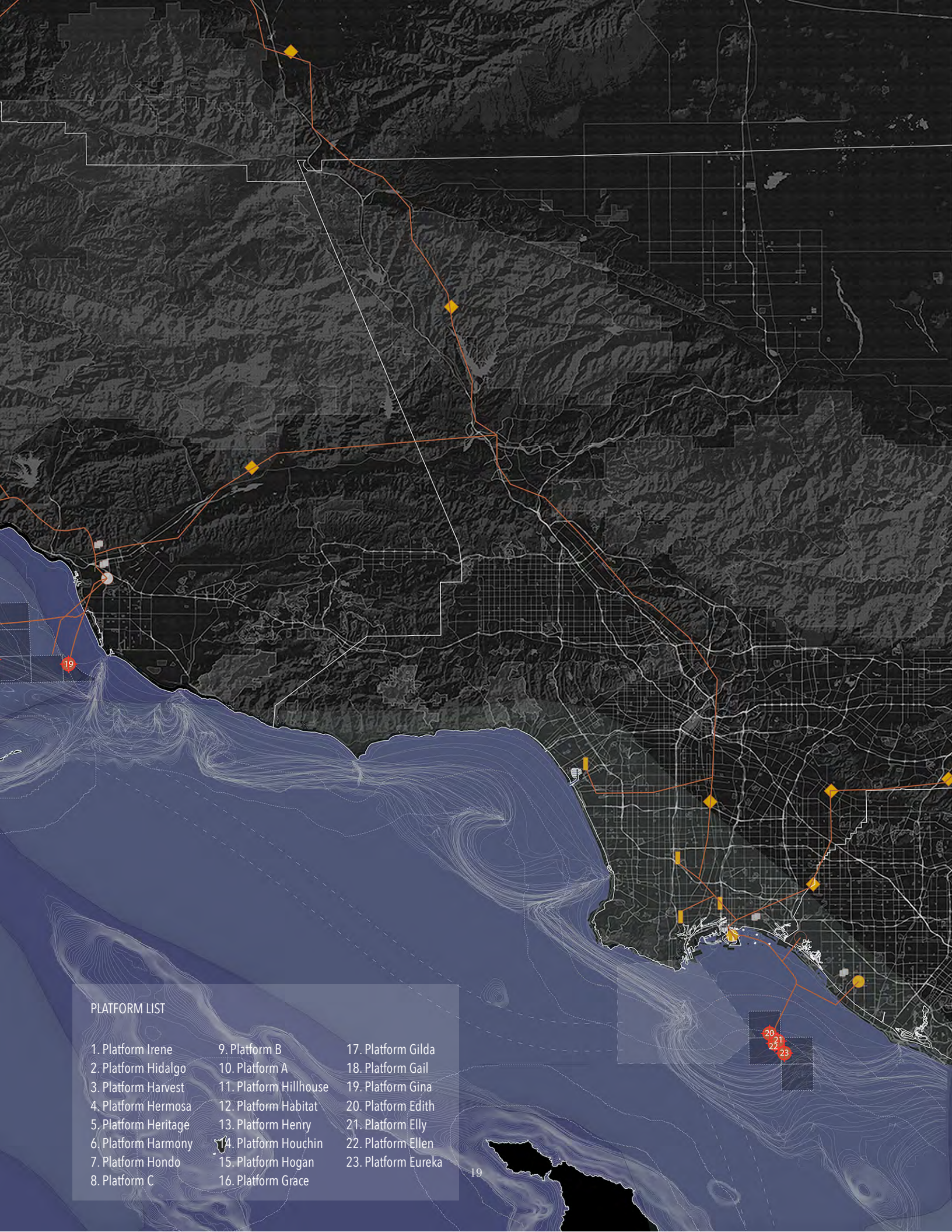
The relationship of oil with the people of California has maintained a perpetual state of complication; immersed in the politics of production and disaster, the platforms reside in the daily disdainful view of Californians along the coast. The story no longer has characters with starry eyes for oil; now the topic of oil brings heated debate and displeasure as we face the truth of our dependence on this resource and the implied disasters that come with it. However, built with a material sustenance, the offshore infrastructure will live past its intended use. What will the story hold for its future?



Drawing 2: Spread and timeline of the 1969 oil spill


Rincon Beach
Pitas Point
Arcapa Island
Jan 28 | am
Jan 30 | am
Jan 30 | pm
Feb 3 | am
Feb 4 | pm
Feb 5 | am

Drawing 3: Site Plan - offshore and onshore oil production



PLATFORM LIST

1. Platform Irene
2. Platform Hidalgo
3. Platform Harvest
4. Platform Hermosa
5. Platform Heritage
6. Platform Harmony
7. Platform Hondo
8. Platform C
9. Platform B
10. Platform A
11. Platform Hillhouse
12. Platform Habitat
13. Platform Henry
14. Platform Houchin
15. Platform Hogan
16. Platform Grace
17. Platform Gilda
18. Platform Gail
19. Platform Gina
20. Platform Edith
21. Platform Elly
22. Platform Ellen
23. Platform Eureka

Figure 11: Lake San Antonio, California [January 15th 2014]

Figure 12: The San Andreas fault runs for 800 miles, passing through California

6. UNFCCC COP 21 Paris France. Accessed December 13, 2015. http://www.cop21paris.org/about/cop21.
7. C. Ellis, Erle. "Ecologies of the Anthropocene: Global Upscaling of Social- Ecological Infrastructures." In New Geographies, edited by Daniel Ibañez and Nikos Katsikis, 021. 06th ed. Vol. Grounding Metabolism. Cambridge, Massachusetts: Harvard University Press, 2014.
8. Crutzen, J. Paul and Christian Schwägerl. "Living in the Anthropocene: Toward a New Global Ethos." (24th January 2011, 2011): October 13th 2015.
9. W.Moore, Jason. "Part 1: On the Nature & Origins of Our Ecological Crisis." In *The Capitalocene*, 01-02. Binghamton, NY: Binghamton University, 2014.
10. "*As U.S. Congress Lags, California Leads Push to Divest from Fossil Fuels Linked to Climate Change*. broadcast. Directed by Goodman, Amy. Democracy Now!, 2015.

THE BURNING, TREMBLING STATE

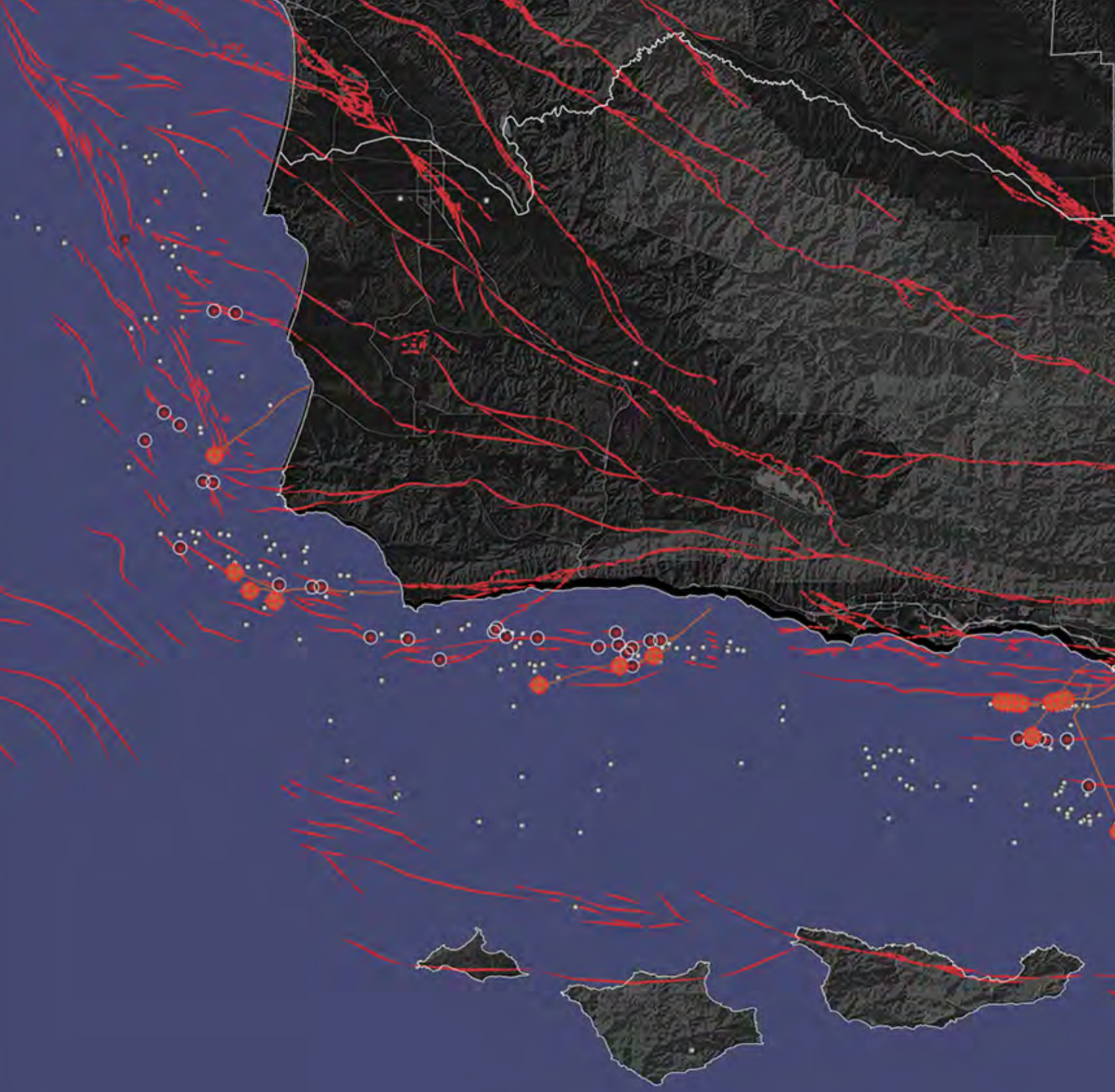
"The difficulty lies not in telling the story, but in convincing everyone else to believe it. Much of history revolves around this question: how does one convince millions of people to believe particular stories about gods, or nations, or limited liability companies? Yet, when it succeeds it gives Sapiens immense power, because it enables millions of strangers to cooperate and work towards common goals."

- Yuval Noah Harari

The world has just been witness to a set of universal agreements on Climate Change action as 195 countries banded together on November 30th 2015 in the much awaited Paris Climate Conference. It concluded with an aim to limit global temperature rise to below 2°C from the pre-industrial period by 2100.[6] This conference marked a world-wide acknowledgment of the current environmental crisis, where effects of our anthropocentric actions are causing man-made natural disasters, large scale infrastructural collapse, and excessive contamination of our natural environments. The sped up anthropogenic transformation of our Earth's landscape along with intense global changes in climate, hydrology and biodiversity has led to the recognition of a new epoch of geological time: the Anthropocene.[7] Atmospheric physicist Paul Crutzen first described the concept of the Anthropocene as the "human dominance of biological, chemical and geological processes on Earth"[8]

Today, society functions in an accelerated state of the Anthropocene. This is the Age of Capital, where industrial, technological and social advancements have sped up, its anthropocentric roots tracing back to the rise of 16th century mercantilism.[9] Continued actions by capital driven societies cause, and are combined with, effects of the Anthropocene in a deadly exchange of stimulus. This is seen to disastrous extents in the state of California, the 7th largest economy in the world.[10]

In January 2014, California's Governor Brown proclaimed a *state of emergency.* California is experiencing record dry conditions, with 2014 being the worst measured year to date [Fig.11]. Surface and groundwater levels have dropped to 20 percent of the average placing many California communities at risk for drinking water supplies.[11] Meanwhile, millions of gallons of freshwater are used for hydraulic fracturing[12] [commonly known as 'fracking'] operations on and offshore California. In an investigative report conducted by the Environmental Defense Centre in 2014, five offshore platforms on the site were confirmed as



Drawing 4: Offshore wells and position of fault lines [draft - label major fault lines]

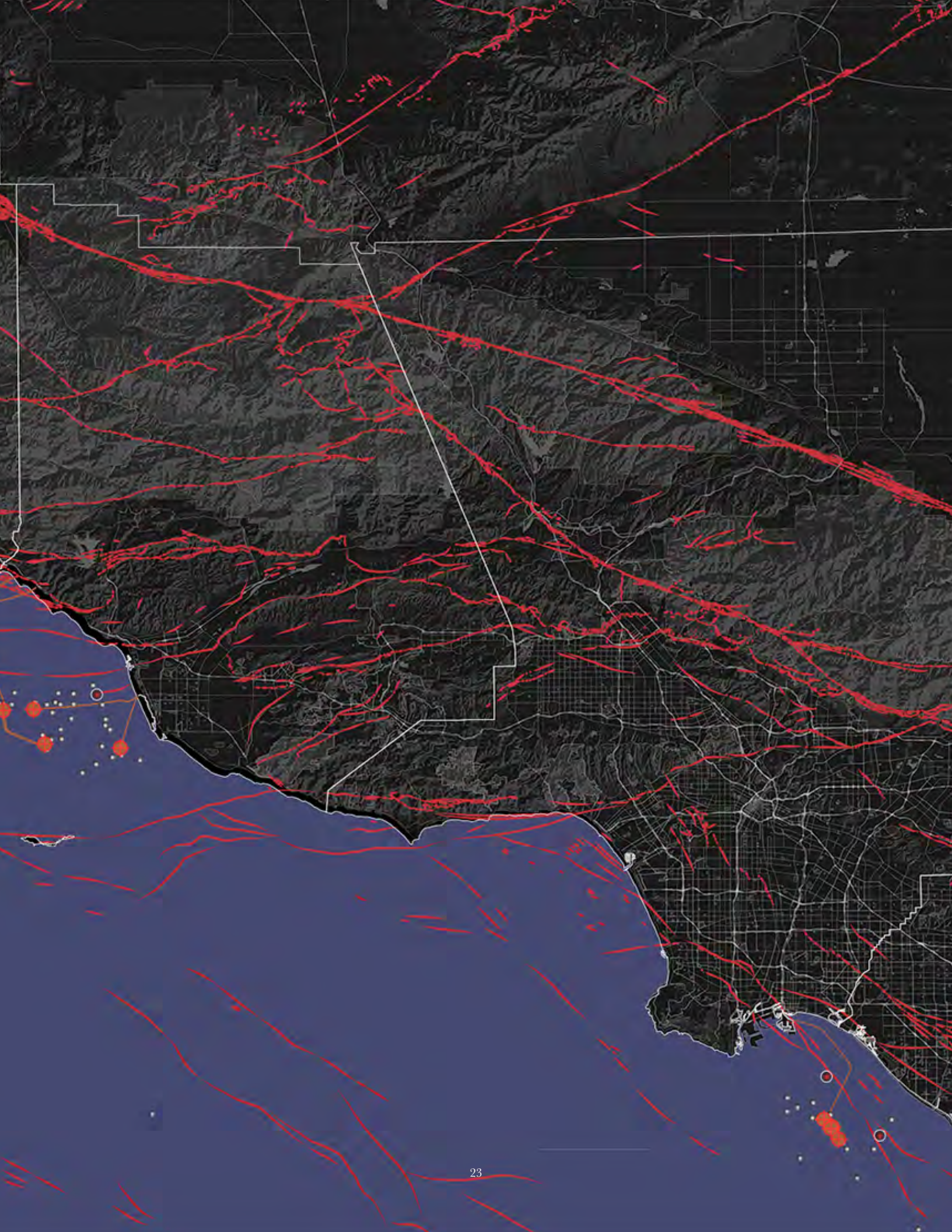


Figure 13: Twin platforms Ellen & Elly

11. "Water Conditions: Declaration." California Department of Water Resources. Accessed December 5, 2015. http://www.water.ca.gov/waterconditions/declaration.cfm.
12. Defined by the Geological Society of America, hydraulic fracturing is the injection of a mixture of water, sand, and chemical additives through a well drilled into an oil- or gas-bearing rock formation, under high but controlled pressure in order to extract oil that does not rise from natural pressure differences.
13. Segee, Brian P., and Elise O. Dea. Dirty Water - Fracking Offshore California, 04. Report. Santa Barbara: Environmental Defence Center, 2013.
14. Rosa, Hartmut. *Social Acceleration: A New Theory of Modernity,* 6-10. New York: Columbia UP, 2013. Print.

sites of unregulated offshore hydraulic fracturing, with the high possibility of all other state and federal platforms also using aggressive enhanced oil recovery methods. The report states that "although fracking has been conducted off of California's shores for at least two decades, the practice was until recently largely unknown to state and federal regulators, as well as the general public."[13] The worst case, but probable scenario of fracking occurring on all offshore platforms [Dwg.4] presents three major risks for California: a high potential of aggravating intersecting fault lines [Fig.12], the continuous use of much needed freshwater, and unregulated pollution due to dumping fracking fluid and compromises in fracking operations that catalyse oil spills.

Sociologist Hartmut Rosa defines *social acceleration* as waves of change in technology, social change and the pace of contemporary life; identifying capitalism [the fundamental equation of 'time equals money'] as the primary driver of this acceleration.[14] As the speed at which we consume increases, society enters deeper states of desynchronization and detachment. This accelerated pace of life has entered the realm of space to establish a sense of transience and isolation in the way we inhabit. The duration for which society's expectations align with its experience shrinks, compressing what is perceived as the present.[15] Our value of space has been compressed, at times even eradicated by our value of time. We serve quantity over quality; dimensionality over directionality. The meaning of *being in place* that results from this value system compromises on aspects of space such as interaction, scale, exposure and empathy. Do we notice how our embodiment in space has reduced?

However, the industrial architecture that stems from this anthropocentric mentality express its power and dominance with the aid of excessive scale and visceral materiality, contrasts to our otherwise reduced space [Fig.13]. The infrastructural giants that provide for our consumption are constructed landscapes and mechanical terrains that have evolved into their own material ecosystems. Over time society has separated itself from these landscapes, moving to more dense 'urban' areas. These *anthromes*, or human altered biomes, cover a vast portion of our earth, often situated in environments not usually inhabited by gatherings of our species. What is the sense of place in these offshore platforms; micro-environments perched out into the distant ocean [Fig.14]? They are isolated vertical cities, where workers spend two week intervals amongst the complex metal structures, the wild wind and waves, and the dirt and grit of fossil fuel extraction [Dwg.5].

Figure 14: Platform A

Drawing 5: The platform's subnatures

Figure 15: Scale, Subnature and human beings

15. Rosa, Hartmut. *Social Acceleration: A New Theory of Modernity*, 11. New York: Columbia UP, 2013. Print.
16. Gissen, David. *Subnature: Architecture's Other Environments*, Introduction. New York: Princeton Architectural, 2009. Print.
17. Brenner, Neil and Christian Schmid. "Towards a New Epistemology of the Urban?" City 19, no. 2-3 (05/04, 2015): 151-182, 154.

Metal has as much a presence in the site's processes of transformation as does the earth, sea and sky. The platforms have braved half a century of contact with abrasive environments of wind, water, fire and oil. They wore on the platforms' skins, leaving behind an array of rust, debris and dirt. Everyday the platforms are consumed in fumes of smoke, gas, mist and other airborne particles of the industrial process. These conditions are identified by architectural historian David Gissen as *subnatures,* which lie in contrast with their purer ancestral counterparts such as wind, water, earth and fire.[16] Unlike these grander forms of nature, the subnatures do not bring to mind ideal notions of a habitat. It is then perhaps difficult to accept these less ancient natures, to greet the sublime with open arms. However, it is amongst these subnatures that the existing ecologies of the site thrive, finding a new sense of inhabitation. And, it is amongst these subnatures that our species enters to become a part of the site's ecology [Fig.15].

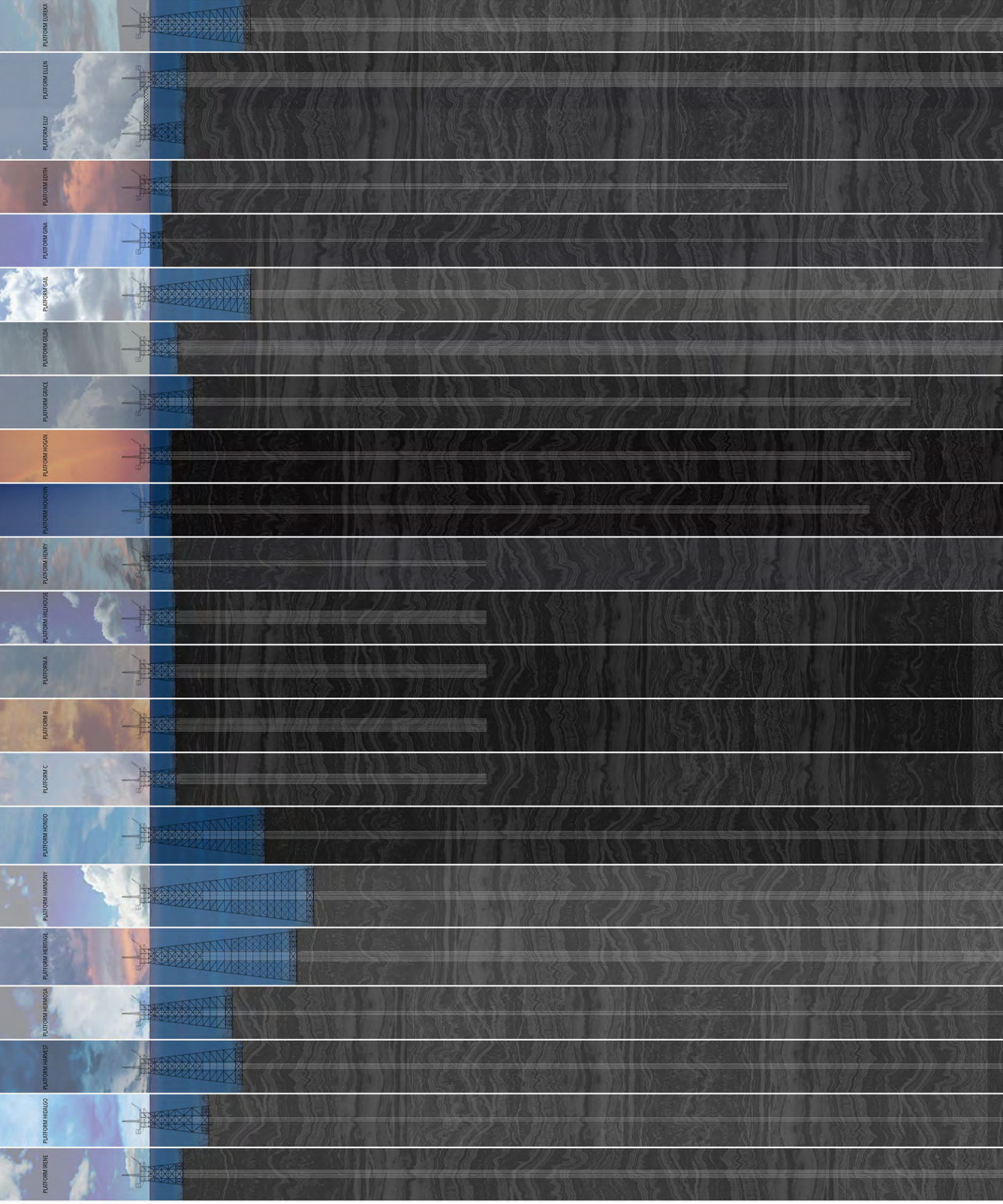
THE 23 OIL PLATFORMS

"It is as if the sea were not only the archetype of all smooth spaces but the first to undergo a gradual striation gridding it in one place, then another, on this side and that. The commercial cities participated in this striation, and were often innovators; but only the States were capable of carrying it to completion, of raising it to the global level of a 'politics of science'. A dimensionality that subordinated directionality, or superimposed itself upon it, became increasingly entrenched."

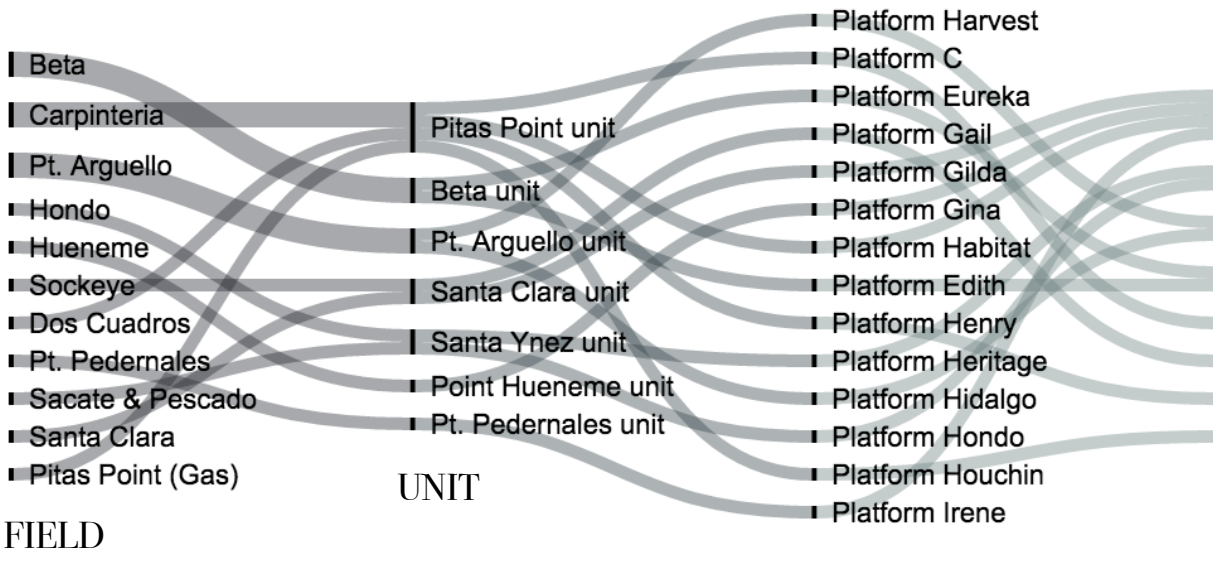
- Deleuze & Guattari, A Thousand Plateaus

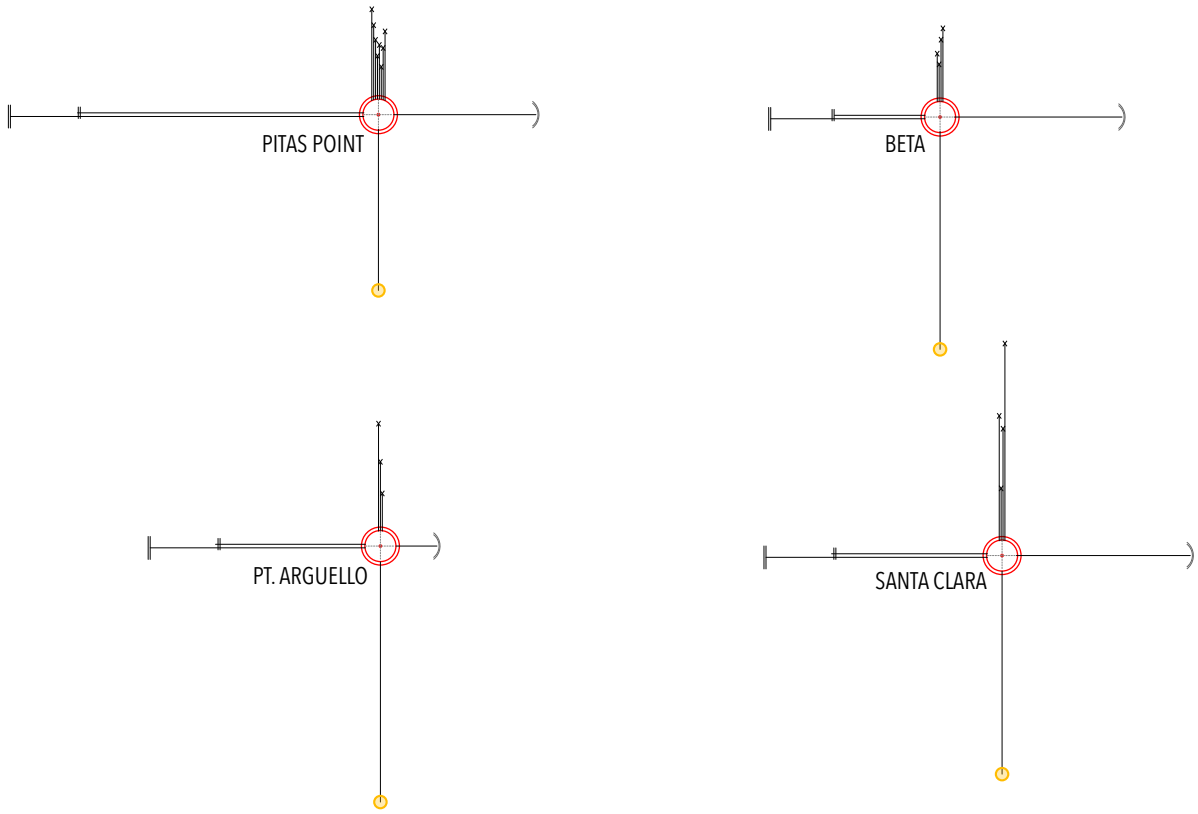
The 23 federal platforms [Dwg.6] are owned by six oil companies and occupy eight oil fields. Starting from the source - basins that have accumulated oil, the resource travels through an established hierarchy of production. Drawn through deep drilled wells, it is brought up to the platforms that service their production, processing and storage. It is then transported to shore through ships and networks of underground pipelines to onshore processing, refining and storage facilities [Dwg.7].

The understanding of urban studies that originated in the early 20th century established the city as integral in defining what is *urban*.[17] Thus, the urban was defined as a bounded area or unit of settlement, controlled by empiricist identifications of population density, capital outputs, comparative GDP and notions of proximity in production, consumption and movement. Following this establishment, our best intentions and efforts were focused on bettering the urban city. In a text

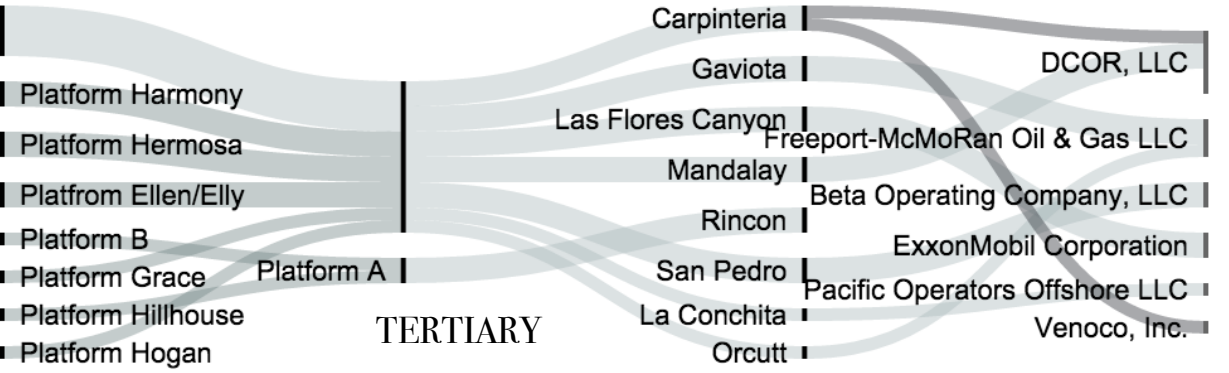


Drawing 6: Sections through the 23 platforms





Drawing 7: Production and transportation of oil & relative distances in each production unit

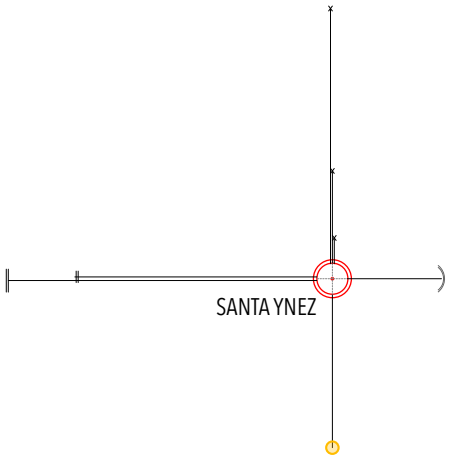


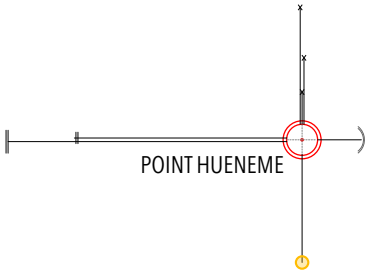
SECONDARY PLATFORM

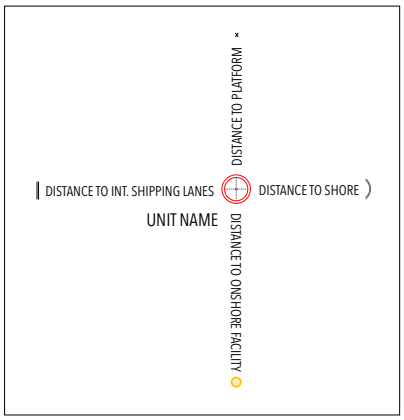
TERTIARY PLATFORM

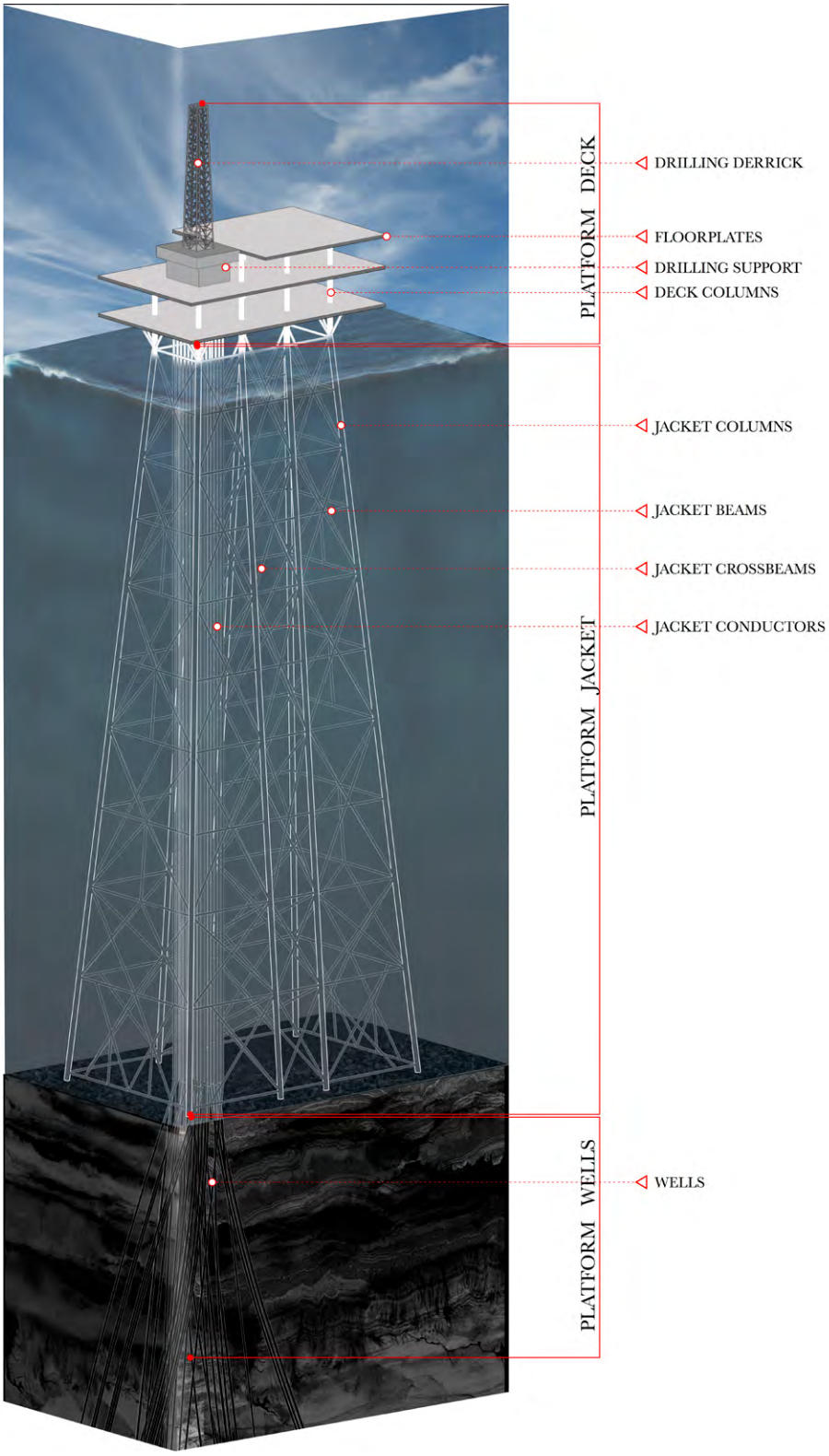
ONSHORE FACILITY

PRIVATE OWNER









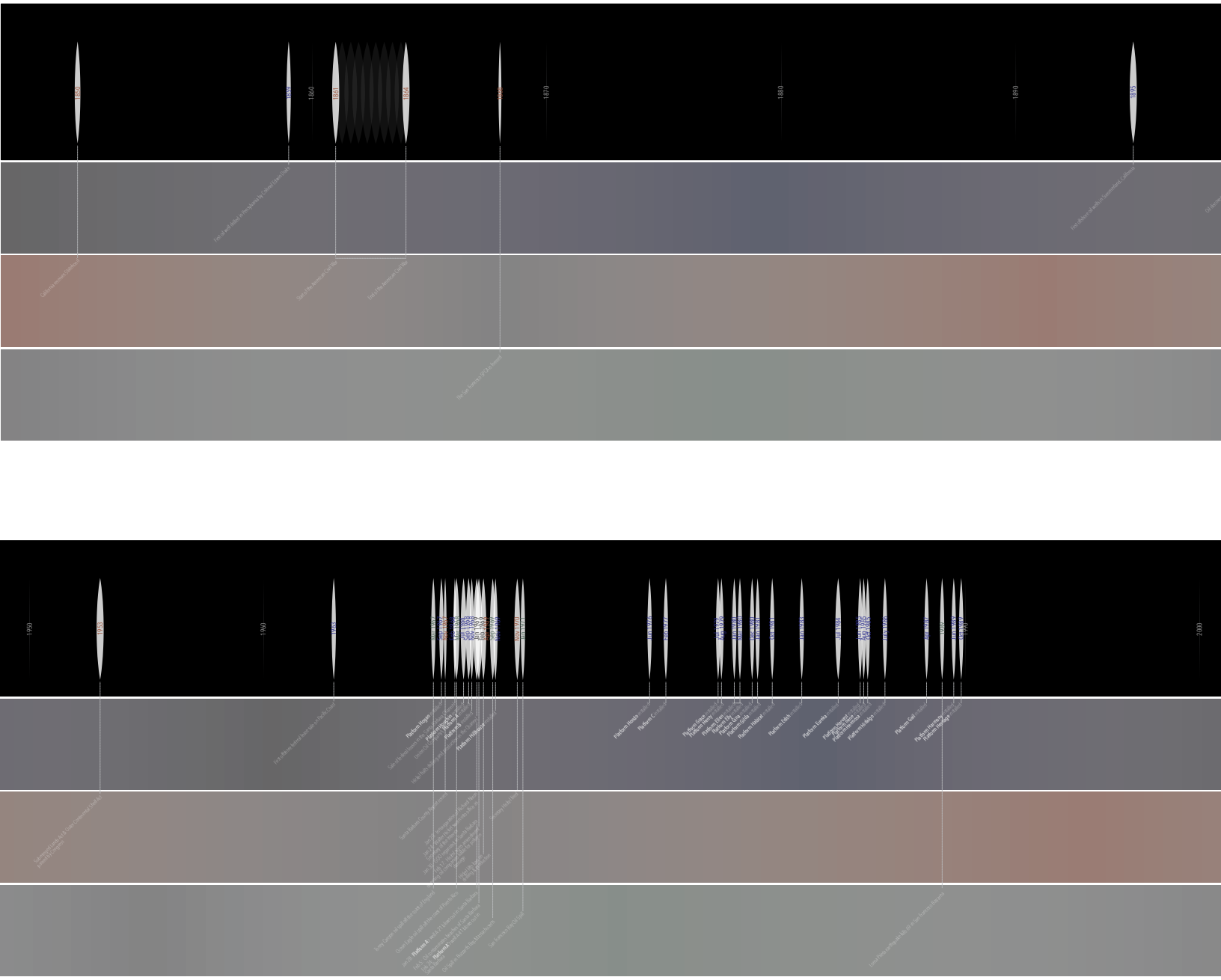
Drawing 8: Skeleton structure of a platform

18. Brenner, Neil and Christian Schmid. "Towards a New Epistemology of the Urban?" City 19, no. 2-3 (05/04, 2015): 151-182, 169.
19. Brenner, Neil and Christian Schmid. "Towards a New Epistemology of the Urban?" City 19, no. 2-3 (05/04, 2015): 151-182, 162.
20. Brenner, Neil and Christian Schmid. "Towards a New Epistemology of the Urban?" City 19, no. 2-3 (05/04, 2015): 151-182, 159.
21. Agamben, Giorgio. "What is the Contemporary?" *The Stones* (2008).

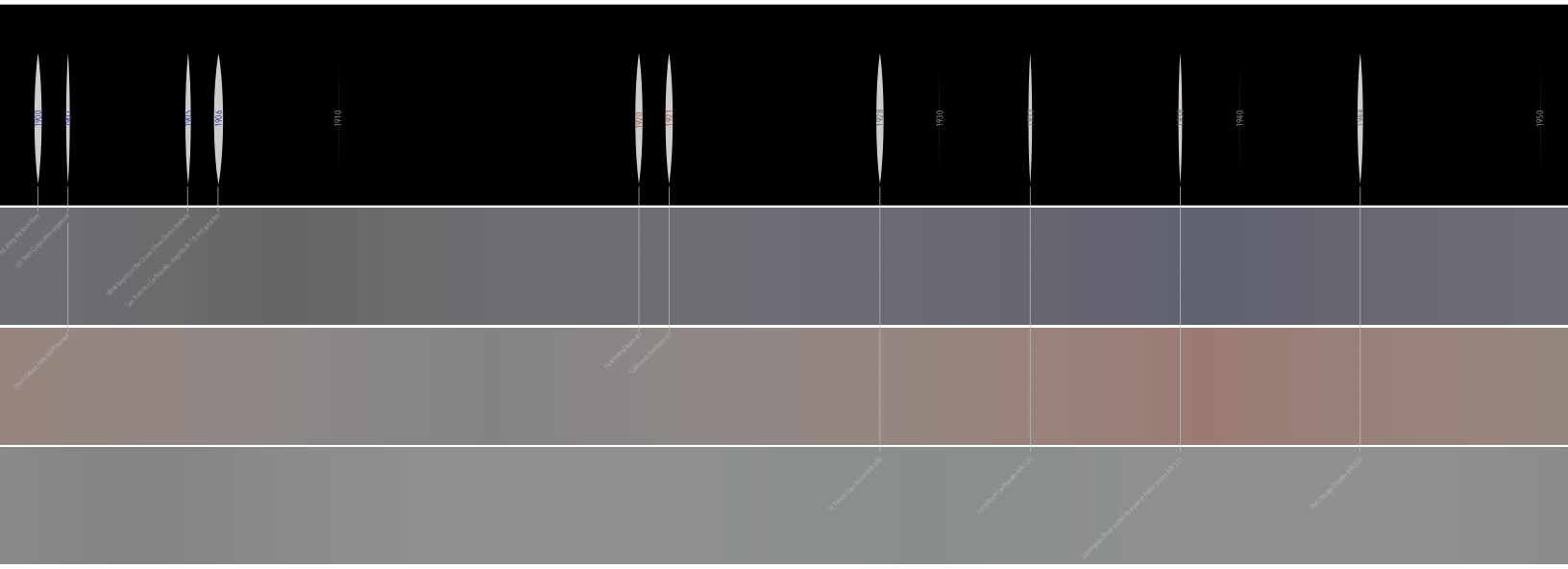
challenging this epistemology, urban theorists Neil Brenner and Christian Schmid introduce a multidimensional notion of the urban process such that "They are no longer expressed simply through the city, the metropolitan region or inter-urban networks, and nor are they bounded neatly and distinguished from a putatively non-urban 'outside'".[18]

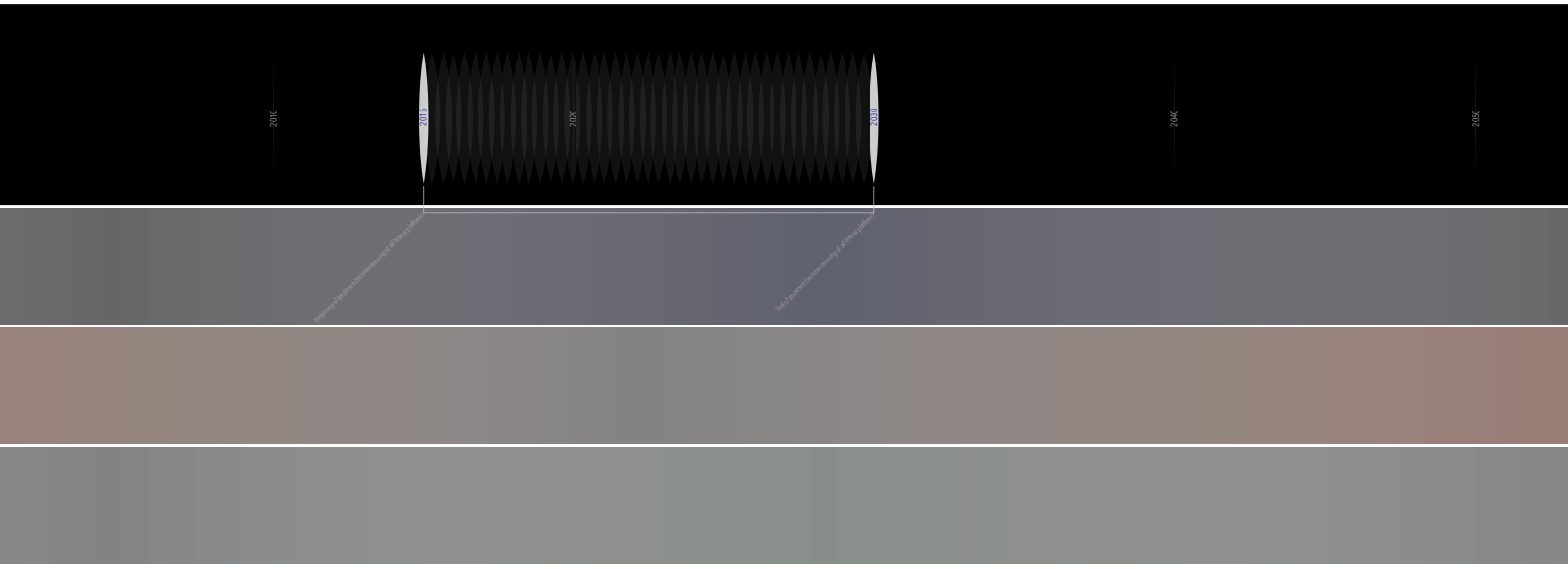
These preconceived *outsides* that are separated from the bounded urban through borders of rural and urban, industry and urban, and nature and society, need to be addressed when challenging contemporary ecological and environmental crises. They form the source for our daily consumptive lives; we built them and we must take responsibility for them. The platforms are evidence of this distant source that fuel the state of California and beyond. This vast network of infrastructural fabric can enter the contemporary discussion of the urbanism as the 'extended urban'. For Brenner and Schmid, 'extended urbanization' is understood as the primary conditions that make possible or feed the production of our comprehension of *cityness*, and therefore must be situated and studied as a central part of any urban understanding in the 21st century.[19] Understanding the site in this manner adopts the value of *reflexivity*: a commitment to understand the site's condition from the perspective of various fields of knowledge, while being adaptable to the constant change and flux of the various accelerations that affect it.[20] Seeing the site through the lens of the extended urban, entails a study of the site through a socially and historically aware multifaceted lens that contains a vital axis of time [Dwg.9].

A typical fixed offshore oil platform is a metal structure composed of a deck [above water], and a jacket [under water]. Wells descend from the derrick that rises above the deck, through the structure of the jacket and into the earth for thousands of feet, accessing fields at various depths [Dwg.8]. The jacket's structure is a lattice of columns, beams and crossbeams that are anchored with piles into the ocean floor and rise up to the surface of the water, supporting the weight of deck that holds a high density of equipment and machinery. The deck is generally two to three levels of floorplates resting on a similar structure of columns, beams, and trusses or crossbeams. During installation, the jacket is towed to site and placed in position after which the deck follows and is attached on top. The base structure is then fitted and filled with the equipment neccessary to carry out the platforms intended operations. Over the years, each platform has gone through transformations in these contained machineries, changing according to the types and needs in production. At the end of the platform's oil life, the clearing of these machineries will reveal the original skeleton structure of the platform, with its own unique spatial qualities; a large sense of scale in space, intricate structural elements meant to support a great amount of weight, and a close relationship with the layers of earth, sea and sky.



Drawing 9: Timeline of events on the site [foldout]


1900
1905
1910
1920
1925
1930
1935
1940
1945
1950


2010
2015
2020
2030
2040
2050

What if I could find our song beneath the surface,
Then perhaps I could set it to flight
In harmony with the winds and waves
Echoing through our compartment lives.
We'd find our body without organs,
Our collective rhythms through time and space,

Wide open eyes with sight beyond

If only I could find the right language,
Then perhaps this song can show you
What a lost cloud found in its travels:
A universe of infinite, intricate chaos
Ensuing beneath our ignorant grounds
We could sing it free from whence we caged it

Watching as it fills the earth, sea and sky.

What if we claim there are no borders?
Then perhaps our skin would cease to exist, and
Our blood would touch the plants and ocean
With a defiant roar of love and withdrawal.
We'd find the refrain of all things in motion,
All things in parts and all things in wholes.

All things one and one all things.

[poem by author]

Figure 16: View along the coast

Earth, Sea, Sky & Metal

WHERE LAND MEETS WATER

"Unity is plural, and at minimum sixfold"
- Buckminster Fuller

We noticed a curious condition that occurs where land meets water. At once, the setting takes into account three material layers of habitat: earth, sea and sky. Into this setting enters metal as the platform intersects all three layers, and with each, forms a different relationship. Each layer is a force, colliding with the platform to create different environments and ecologies. We became acutely aware that our species is a creature of the land. We are accustomed to two of the three layers: earth and sky. As our actions and built fabric have entered the layer of sea, we began to develop methods of being on the surface of water. However, as we re-enter the site with more permanent intentions of inhabitation, we must question the meaning of being in and amongst earth, sea, sky and metal.

Seen from above, the site consists of the mainland, the ocean along the continental shelf, and six islands. The platforms line the coast, occupying the space between the coast and the islands. Eight thousand years ago, the water level was significantly lower, and earth had a greater presence on the site. The five channel islands were united as one, closer to the mainland allowing the Chumash to sail their tomols to and from the mainland. A life altering event of seismic activity,

Figure 17: THUMS Islands (also known as Astroanaut Islands) are four artificial oil producing islands

Figure 18: State platform Eva off the coast of Huntington Beach

not uncommon to the fragmented geology of the site, caused a high degree of sea level rise, breaking the island into six, and widening the gap between them and the mainland. This change made the ocean what it is today, creating the space to allow for activities of resource extraction that took over the site in the 20th century. For the Chumash, and those familiar with the site's history, the earth of the mainland and the islands have always been one, separated by the presence of water in its valley. However, through dense urbanization, the mainland has slowly changed, with large highways and man made beaches carving out of its steep mountain slopes. Today, the islands are a reminder to what the coast once was, untouched by human urbanization. When travelling from the coast to the islands, one feels like they are travelling back in time.

Urbanization is seen to varying degrees along the coast; being the highest in the south and decreasing as one moves north west along the coast. Comparisons of the landscape along coast and on the islands are evidence of this alteration [Fig.19, 20 & 21]. The southern coastal points along the site house the most urbanization, as areas such as Huntington Beach [Dwg.10-M1] and Long Beach [Dwg.10-M2] drew in large populations of people over the 20th century to their sunny beaches and arid climates. To support this, the cities populated with infrastructure to support the energy consumption and activities of large populations. Adjacent to this area lie three state oil platforms, four federal oil platforms - platforms Eureka, Ellen & Elly, and Edith [Dwg.10-M3] and four artificial islands that all support the coast's consumption [Fig.17 & 18].

As we travel north from here along Highway 1 passing Santa Monica, the presence of urbanization reduces for just over 50km, till we enter Oxnard [Dwg.10-M5], with its patchwork agriculture, long beaches stretching along shore and suburban clusters surounding the Port Hueneme naval base [Dwg.10-M6]. Fishing is a thriving recreational and commercial practice in this area, as fishermen line up along Ventura Pier [Dwg.10-M7] to find exciting catch [Fig.22]. Adjacent to this area lie federal platforms Gina, Gail, Gilda and Grace [Dwg.10-M8].

Continuing our journey north-west, we leave dense settlements for close to 30km until we enter the cities of Carpinteria [Dwg.10-M9] and Santa Barbara [Dwg.10-M10]. Here, the mountains are most immediate to the coast and have settlements sprinkled on them. The climate rises in humidity as prevailing winds hit the windward side of the mountains where most settlements have

Figure 19a: Pathways

Figure 19b: Shore conditions

Figure 19c: Access and departure

Figure 19d: Pathways 2

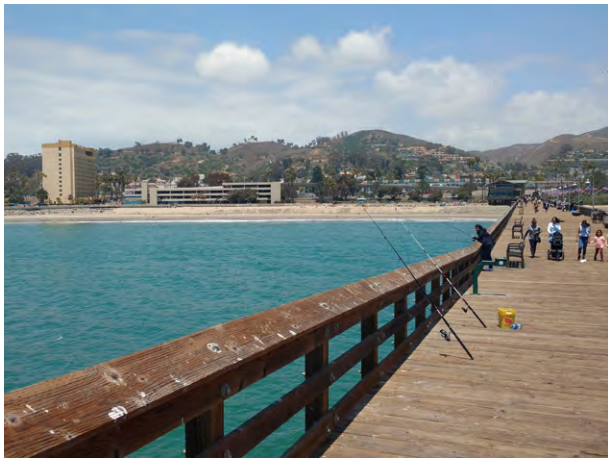


Figure 19e: Beaches and piers

Figure 19f: Evidence of human civilization

Figure 20: Earth, sea and sky on the islands

Figure 21: Earth, sea and sky on the mainland

Drawing 10 : Photo Map: Coast, Platforms & Islands


Shoals
Faria State Beach
Ventura
M4
Ventura Harbour
M5
Oxnard
Port Hueneme
M6
NAS Point Mugu
(navy base)
Platform Gina
Malibu
Santa Monica
Marina Del Rey
LA International
Airport
Anacapa Island
M2
Port of
Long Beach
M1
Huntington
Beach
Platform Edith
Platform Elly-Ellen
Platform Eureka
M3
Santa Barbara
Island
Santa Catalina
Island

Figure 22: Fishermen along Ventura Pier

formed. Adjacent to these cities are the oldest and closest federal platforms - platforms A, B, C, Hillhouse, Henry, Houchin, Hogan and Habitat [Dwg.10-M11].

Continuing west from here, the mountains push closer to shore restricting our ability to spread urbanization. After another 30km, we enter Gaviota [Dwg.10-M12], where our presence on the landscape is limited to smaller communities, onshore oil facilities, beaches and vista points. Adjacent to this area are federal platforms Heritage, Harmony and Hondo [Dwg.10-M13], spread out along a 10km stretch. Turning the corner around the sharp bend north on the coastline, we encounter the least touched landscapes of the coast at Point Concepcion [Dwg.10-M14] and Pt. Arguello [Dwg.10-M15], adjacent to which lie the federal platforms Hermosa, Harvest, Hidalgo, and Irene [Dwg.10-M16].

There is a clear correlation between the presence of offshore platforms and urbanization along the coast. This tendency to exchange and alter landscapes is inherent in human society, as environmental scientist Erle C. Ellis points out: "rather than simply adapting to environments as they are, our species, like some others, alters environments to sustain its populations, a process known to ecologists and archeologists as niche construction."[22] The human niche has grown along the coast, poking pipelines out to offshore platforms, leaving the islands mostly untouched. This is because in 1980, Santa Barbara, Ancapa, Santa Cruz, Santa Rosa and San Miguel Isands were designated as the Channel Islands Marine Sanctuary, giving the ocean wilderness around the islands a protected status. The sanctuary extends as a 6 mile boundary around each island. The sanctuary drives preservation, research, public awareness and checked recreation on the islands.

Water activities and sports are a common indulgence around the beautiful islands as people kayak, snorkel and scuba dive to experience the diverse marine life. A common occurence along the coasts of the mainland and islands are kelp forests, long vertical growths of kelp that are a rich habitat for a wide range of species. The presence of kelp is significant in the presence of marine habitats as their dense growth provides food, shelter and exchange amongst species. These are attractive environments for marine biologists to study due to vertical spatial composition of kelp growth. While the kelp forest along the islands still hold their richness, urbanization along the coast has significantly reduced the presence of kelp forests and in extension, the species that occupy

Figure 23: On the ocean: summer fog

Figure 24: On the ocean: feeding frenzy

22. C. Ellis, Erle"Ecologies of the Anthropocene: Global Upscaling of Social- Ecological Infrastructures." In New Geographies, edited by Daniel Ibañez and Nikos Katsikis, 021. 06th ed. Vol. Grounding Metabolism. Cambridge, Massachusetts: Harvard University Press, 2014.

these habitats.

The platforms lie between these contrasting landscapes in the terrain of water, signifying a place of collision between the site's diverse natural conditions and our built anthropocentric environments. This point of collision is critical in our understanding of these large feats of engineering as we explore their crucial role in the site's natural systems.

A THIRD LANDSCAPE

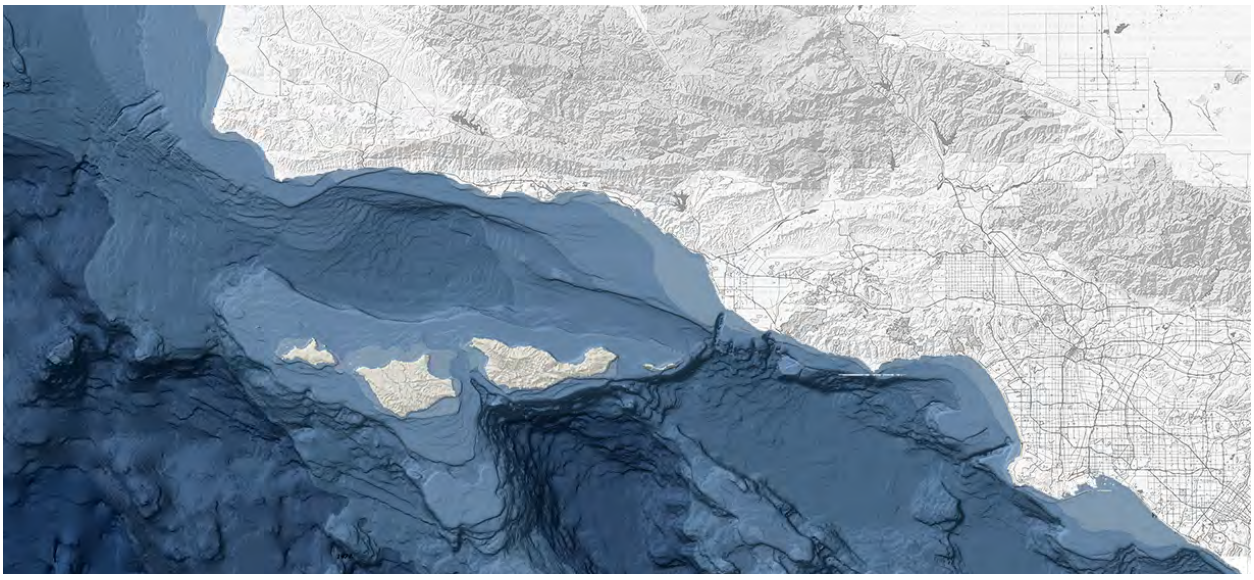
"Nature is not an orderly thing, it's about fractals, about branching, twisting, things that curled on themselves like a snake eating its tail."

- James Gleick

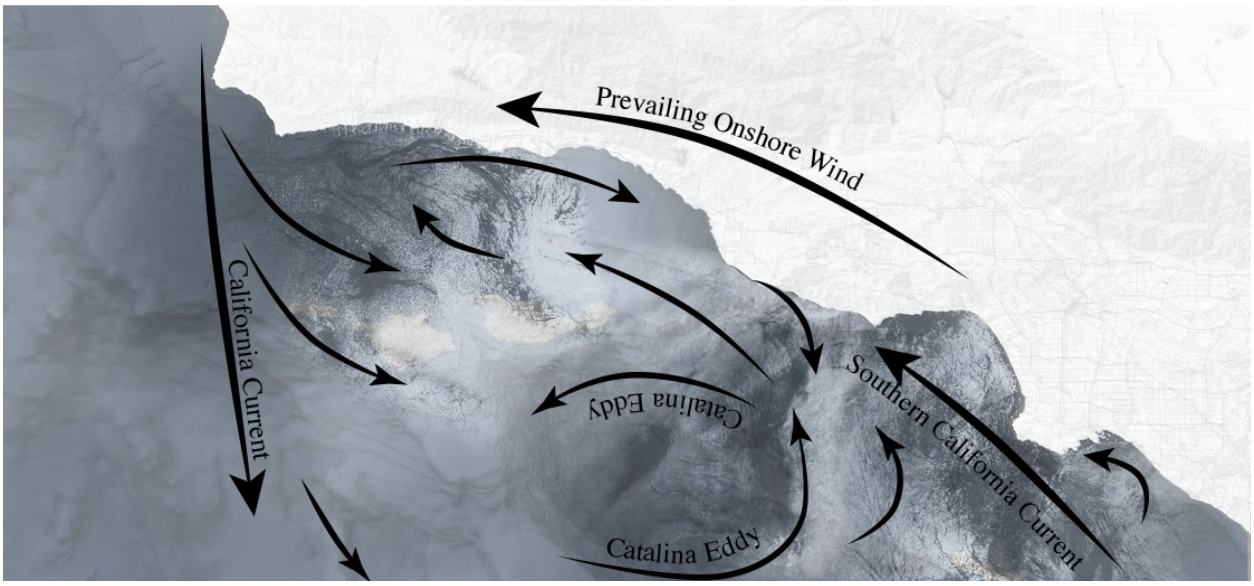
Some summer days, as we make the journey out to the platforms from the coast, the air above the ocean is gripped with a dense fog that causes mist to precipitate on every surface. This is the case even if the air above land is clear as blue skies. In this heavy fog, vision does not extend very far and the horizon line becomes indistinct [Fig.23]. On a moving boat this is quite a thrilling experience as one is prone to see various specieis of birds, dolphins and other sea mammals appear out of nowhere, in large frequent numbers.

A common occurence here is something known in biology as a feeding frenzy. When we first noticed this phenomenon, it began with a school of dolphins playfully following our boat. They slowly overtook us, diverting their course east. Soon, they were joined by a flock of gulls approaching from the north, and then flocks of brown pelicans, and murrelets. All at once, they began to make dives into the water. They had approached from different sides, chasing a school of fish that soon formed into a bait ball. The fish were cornered and all predators could feed at their convenience. The calm foggy waters were suddenly disturbed by a rhythmic, chaotic movement of life [Fig.24]. This is not a rare event on the site. Feeding frenzies occur when predators are overwhelmed by the large presence of feed. This, and the fact the predators involved cover a range of species is evidence to this: *despite all the pollution and coastal degradation this site has suffered, the body of ocean that the platforms lie in is an extremely clean and rich body of water.*

The site forms the northern half of what is known as the Southern California Bight. A bight is a geographical concave curve of a coast or shore, and can often be remembered as similar to 'bite', as it seems as if the earth is taking a big bite out of the ocean. Bights are unique in their shallow



Drawing 11: Site's Bathymetry



Drawing 12: Site's Prevailing Winds and Eddies

23. Dailey, Murray D., Donald J. Reish, and Jack W. Anderson. *Ecology of the Southern California Bight: A Synthesis and Interpretation.* Berkeley: University of California Press, 1993.
24. The Ecology of the Southern California Bight: Implications for Water Quality Management. Los Angeles: SCCWRP, 1972.

coastal shelfs and easy formation of circular currents, or eddies. This particular bight happens to be an ecological jewel, a point of collision for various interrelated oceanographic events of wind movements, eddie formations and horizontal and vertical transfer of sediments, nutrients and plankton.

The Southern California Bight's ocean bed has a complex bathymetry, marked by submarine canyons, basins and steep shelves [Dwg.11]. The site's geology brings deep waters fairly close to shore and creates zones of sediment and nutrient accumulation that grow into rich ecosystems. The complex bathymetry of the site offers a variety of habitats for marine organisms on the ocean bed and along the water column. Through wind and water movement, these ecosystems form a connected network: life affected in one zone directly affects those in other zones – a crucial factor in understanding the workings of the site. Due to this interconnectedness, any anthropogenic actions can reverberate through the entire site and beyond.

These conditions are enhanced by a system of atmospheric and oceanographic conditions. As the sun heats the air at the south of the site, lower pressures are created, causing prevailing winds to travel south. This forms the California Current that moves along the edge of the continental shelf. As the California Current hits the eastward indentation of coast at Point Concepcion, a surface counterclockwise gyre - the Southern California Eddy or the Catalina Eddy - breaks off and carries water north through the center of the bight forming the Southern California Current. Meanwhile, the onshore prevailing northwesterly winds provoke a dominant southwesterly current flow near shore. In this manner, the prevailing currents move water in opposing directions parallel to the coast forming various regional eddies [Dwg.12]. These wind and water currents reach their peak in summer months. Along with these seasonal influences, the site is subject to temperature fluctuations by long term events such as El Nino and La Nina (occurring few times a decade), the former raising water temperatures and the latter lowering them. This circulation and temperature fluctuation in water greatly affects the inhabitation of various species.[24]

The prevailing winds along the coast drive waters away from shore, a phenomenon called *ekman transport* which is the net motion of water from the difference in directionality between wind orientation and the earth's rotation[a concept introduced by Swedish oceanographer Vagn Walfrid Ekman]. These waters move nutrients with

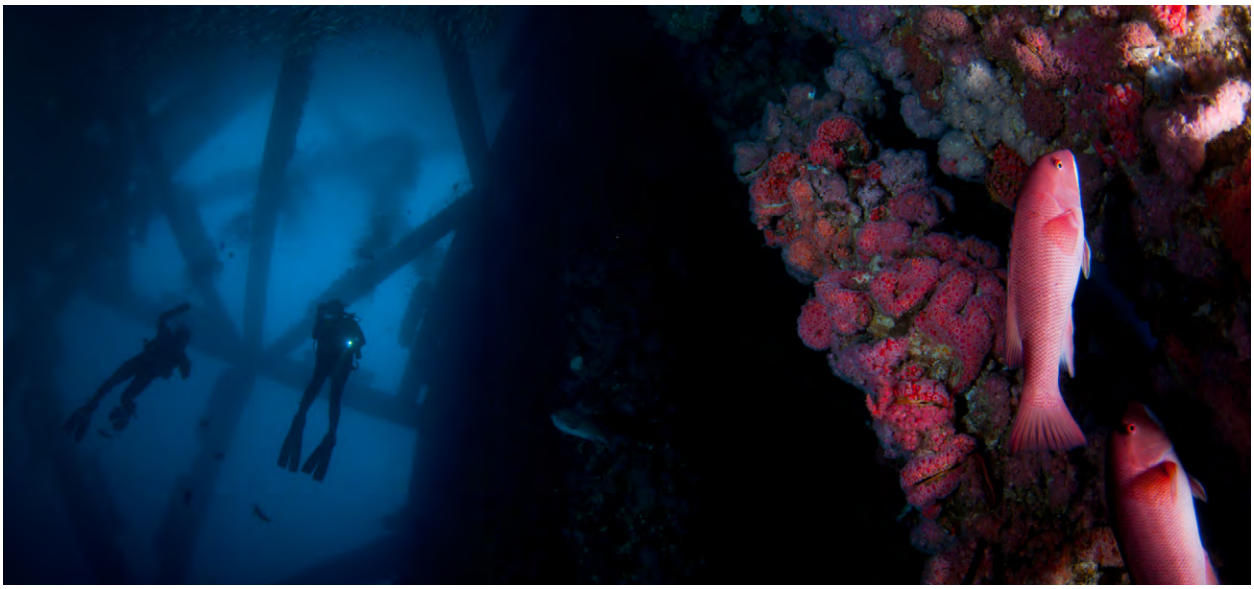


Figure 25: Female sheepheads nesting amongst the structure

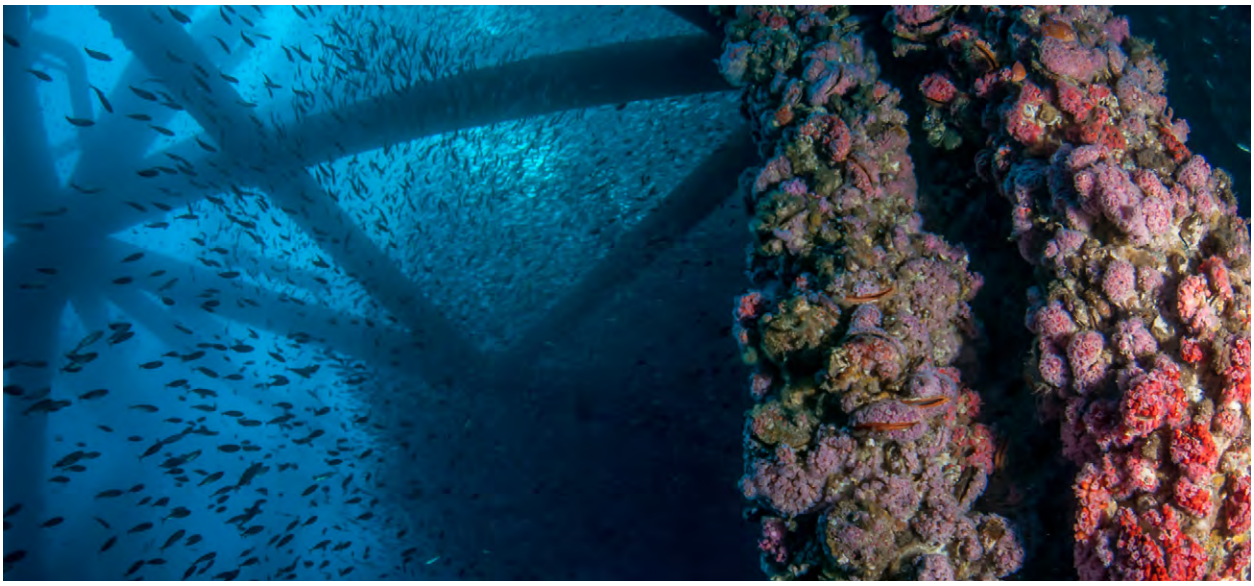


Figure 26: Structure's columns covered in a thick layer of life

25. Song, Hajoon, Arthur J. Miller, Bruce D. Cornuelle, and Emanuele Di Lorenzo. Changes in Upwelling and Its Water Sources in the California Current System Driven by Different Wind Forcing. Vol. 52. 2011. Accessed January 02, 2016. Dynamics of Atmospheres and Oceans.
26. Schroeder, D. M. and Love, M. S. "Ecological and political issues surrounding decommissioning of offshore oil facilities in the Southern California Bight," Ocean and Coastal Management, no. 47, pp. 21-48, 2004.
27. Wolfson, A, and Parr, T. (1975) The marine life of offshore oil drilling platform EVA. Marine Ecological Consultants of southern California. Tech. Rep. No. 75-11
28. Dailey, Murray D., Donald J. Reish, and Jack W. Anderson. *Ecology of the Southern California Bight: A Synthesis and Interpretation.* Berkeley: University of California Press, 1993.

them, along with plankton and larvae accumulated in kelp beds along the shore.[25] As water moves away from shore, a phenomenon called 'ekman pumping' occurs through the water column where deeper waters move upward to replace the shifted surface waters in continuous movements of convection, creating regions of local upwelling. The deeper waters are colder with higher nutrient concentrations and this vertical circulation moves nutrients to the surface. These two sets of circulations – in plan and in section - continuously distribute nutrients, plankton and larvae offshore, enriching ecosystems.

As eddy movements and regional upwelling bring nutrients, plankton and larvae offshore, they accumulate on the submerged structure of the offshore platforms initiating the beginnings of a food cycle. The platforms act as breakwaters and enable the formation of incredible artificial reefs that support thousands of species [Fig.25,26,27 & 28]. The vertical nature of these structures and the horizontal and diagonal members of beams and crossbeams allow for a variety of resting points and habitation in the water column facilitating shelter, feeding, mating and nesting. On these surfaces a substantial amount of invertebrates (such as mussels, barnacles and scallops) attach forming a layer of life up to 1.5ft thick, extending from the intertidal point to depths past 100 ft.[26] At times, these organisms over accumulate, die or are displaced by storms and sudden movement and rain onto the ocean floor forming shell mounds with surrounding substances (such as rock cuttings, deposits from drilling operations, etc.) growing up to 23ft above the sea floor and spreading upto a 2 mile square area around the platform.[27] Complete decommissioning can risk eradicating these habitats entirely, killing the thousands of organisms that call these platforms home.

The varying depths of the platforms allow for a great range of species [Dwg.13]. The species that inhabit the platforms range from epifauna (mussels and crabs), benthic fauna (crustaceans and anemones), mollusks (oysters and scallops), mesopelagic fish (treefish and lingcod), epipelagic fish (anchovies, sardines, mackerel, bass, croakers, flatfishes, rockfishes), marine and amphibious mammals (dolphins, seals and sea lions), birds (brown pelicans, murrelets, gulls, shearwaters and petrels) and human beings.[28] The ecological composition of each platform will vary due to their differences in depth, water composition, temperature, geographical location, etc. The platforms were engineered to withstand harsh weather, extreme depths and siesmicity, so the physical structure of the platforms outlive

Drawing 13: Species along the section

EXPERIENTIAL SECTION
PLATFORM EUREKA
1:400

INHABITATION
DEPTHS

Figure 27: A school of Jack Mackerel swimming around the structure's columns

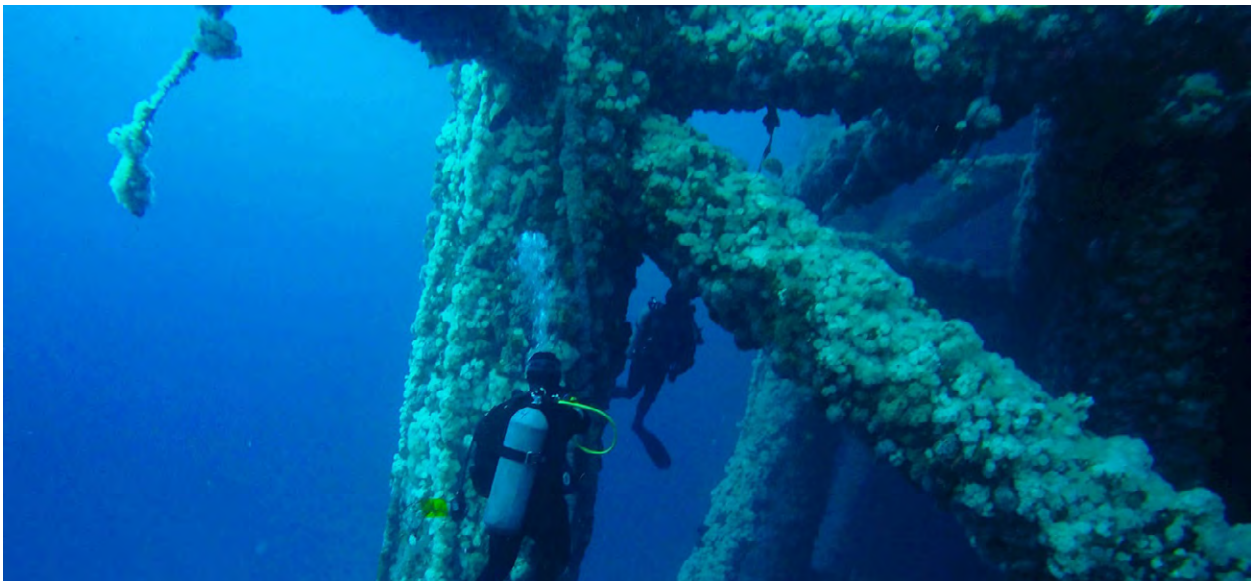


Figure 28: Divers investigating the structure

29. R. W. Hahn and A. Layne-Farra, "An Economic Analysis of a Rigs to Reefs Program for the California Continental Shelf," National Economics Research Associates, 2003.
30. Clément, Gilles. Manifeste Du Tiers Paysage. Montreuil: Sujet-Objet, 2004.
31. Wolfson, A., G. Van Blaricom, N. Davis, and G.S. Lewbel. "The Marine Life of an Offshore Oil Platform." Marine Ecology.

their useful production lives and can last for a significantly longer period of time with adequate maintenance. Due to the added skin of life that cover the platforms, the steel of the substructure is sealed off from oxygen, causing regular corrosion to occur at a much slower rate. It has been estimated that the platforms can stand for another two to three hundred years.[29] The average platform provides between 2 to 3 acres of habitat for species and can be entirely covered in life within a year of installation. The jacket's structure provides spatial variations in habitats amongst its structural elements, similar to submerging a tall building's structural grid.

Landscape architect Gilles Clement proposes the theory of *The Third Landscape*[30] in his designs. The third landscape designates the terrain leftover by man to the evolution of nature alone. These landscapes can be leftover urban or rural sites, neglected land or abandoned infrastructure. In these spaces left behind by our species, what is not man-made overtakes, consumes, thrives. We realized that the jacket of the platforms are a third landscape directly beneath a still functioning industrial terrain - the deck. For this reason, it was often hidden by its own economical surface. With the end of oil production, the whole platform enters the kingdom of the third landscape; the space of the future that we wish to re-enter.

Amongst the complex structure of the jacket, species exists in cycles of symbiotic life and death. One such case is seen in an account of data and samples collected by four marine biologists in a series of scuba dives from December 1986 to June 1987 on Union Oil Co. state Platform Eva offshore from Huntington Beach.[31] The platform's submerged structure encounters a tumbling down of sediments, sea bed sand formations and epifaunal species - that is, sea bed surface organisms as they move offshore, pulled by the movements of water. Similar to all the other platforms that live on the site, Eva plays host to a range of species that cling onto its submerged body that provides various niches that serve as home and rest. The space produced by the platforms create the setting for unique life long relationships among different species, a smooth accumulation of organic matter on the striated rhythms of inorganic matter. Here, the platforms' material structure, the moving forces of energy and the growth of life are intertwined, existing, relying, colliding, moving with one another in constant symbiosis, a state of being that is natural and wild with momentum.

Platform Eva's wells manage to create a dense environment of vertical steel shafts within her substructure. This crowded steel forest captures sediments, nutrients and organisms, forcing them

Figure 29: Mytilus Californicus, and Mytilius Edulis (sea mussel)

Figure 30: Corynactis Californica (sea anemone)

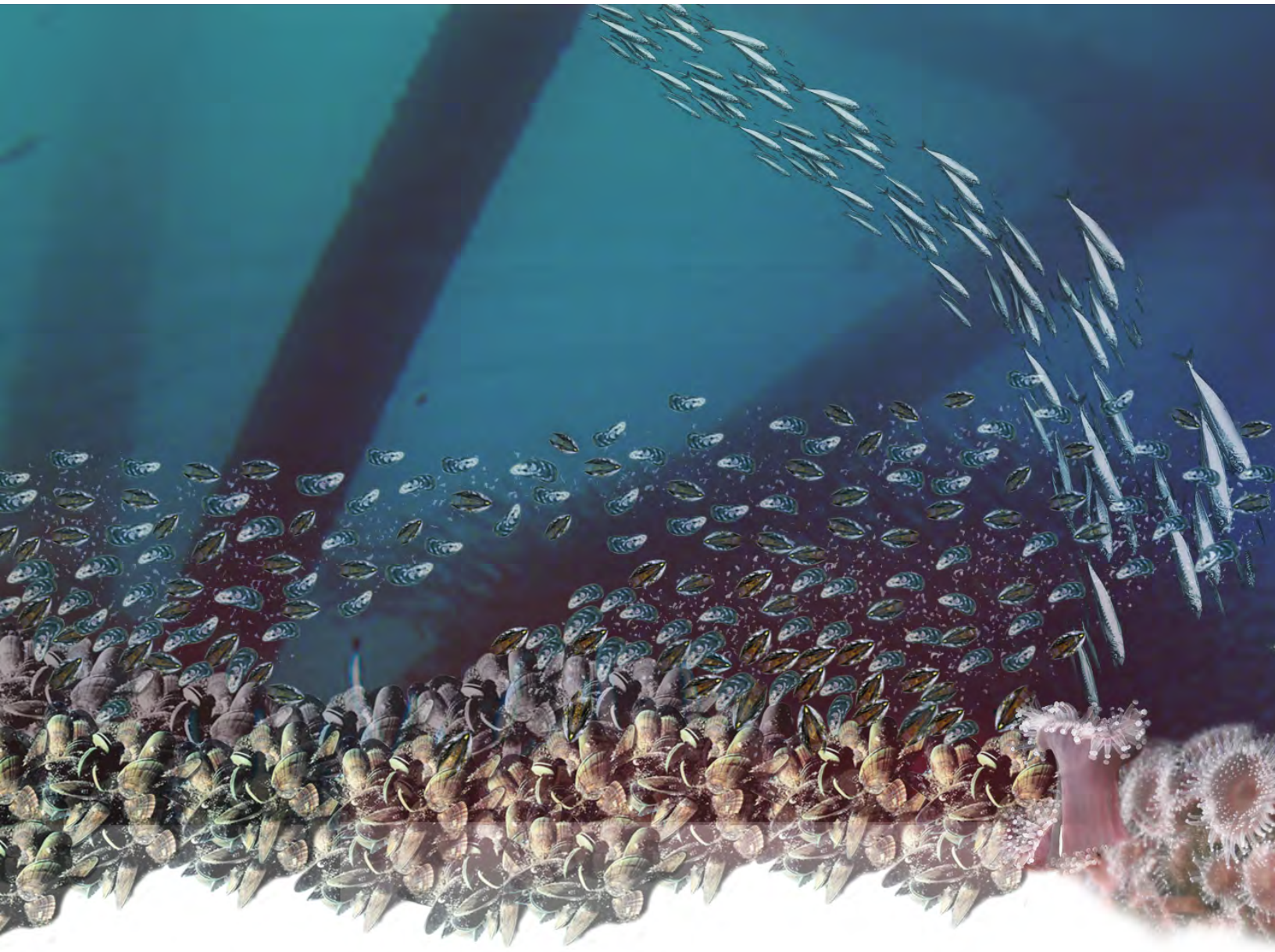
Figure 31: Pisaster ochraceus and Pisaster giganteus (sea stars)

to stay and continue their lives on the ocean bed where metal and water meet earth. In this curious combination of circumstances, three species maintain a complex relationship of movement and growth, small explosions of the cosmos, occurring despite and because of the rigid realities of their environment.

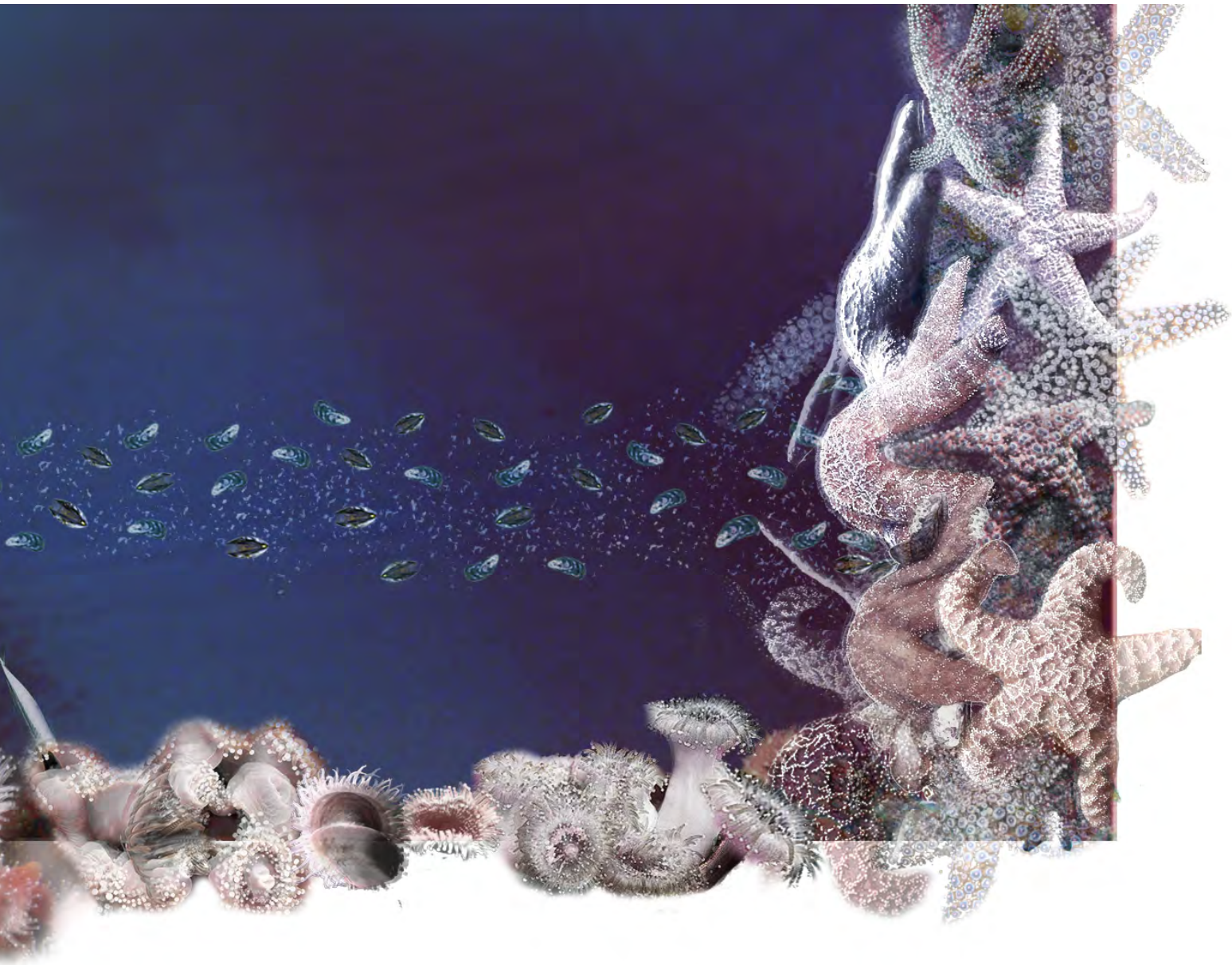
From roughly the mean tide level to within a few meters of the sea floor, the submerged substructure and wells are thickly fouled by the species Mytilus Californicus, and Mytilius Edulis, both sea mussels [Fig.29]. They grow in thickly forming clumps, multiplying and layering on one another, hanging on as long as they can. Their complex matrix of shells and threads provide secondary space and shelter for other more agile species such as small fish, attracting them towards the platform.

The space dominated by species Mytilus ends a few meters above the bottom. The remaining space is covered by densely packed individuals of the sea anemone, Corynactis Californica.[Fig.30] The anemones extend and retract their flexible bodies capturing curious small fish that are tricked into proximity by the inviting mussels. This band of anemones at the platform's base is vital for the continuing life and structure of the mussels above, its bright white stingers repelling a third species that would otherwise voraciously feed on the mussels.

This third carnivorous organism is the asteroid, or sea star, species Pisaster ochraceus and Pisaster giganteus [Fig.31]. The thicknesses of the platform's substructure is not enough for permanent settlement and growth of sea stars on them. Because of this, they inhabit the ocean bed amongst the structure, occasionally climbing up to feed on mussels and other mollusks. However, kept at bay here by the vicious anemones, they are restricted to the ocean bed, surviving due to a rain of dead or over accumulated mussels that falls from above. Captive to the kindness of gravity, the sea stars continue to thrive despite not being able to actually access their own food, relying on the will of the tide and the growth of the mussels. An estimated cubic meter of mussels falls from the platform's legs each day, supporting extraordinary densities of sea stars, and attracting feed for the stinging anemones. The three species are caught in their entangled movements, the semblance of a smooth symbiosis that stretches across the site, a rhizomatic growth of life amongst the striations of built order [Dwg.14]. This is the essence of the site: the momentous freedom of the small and large, the overtaking of what is natural, the unconditional states of relation that were always there and will always be there.



Drawing 14: Symbiosis between sea mussels, sea anemones and sea stars [foldout]



I do not yet know,
Although,
I would like to find out.
I think about knowing
All the time,
I seek to know
Everywhere,
I crave to know
Everything

But I do not yet know
If I ever will really know,
Everything, everywhere, all the time.
As of late,
I have queried in vain.
But I will never stop trying
As I know this...

With every question I ask,
With every poem I read,
With every word I speak,
With every thought I think,
With every love I embrace,
With every object I explore,

I will know a little bit more.

But I really hope
I won't know before I die.

Figure 32 : Alexander the Great being lowered into the Ocean

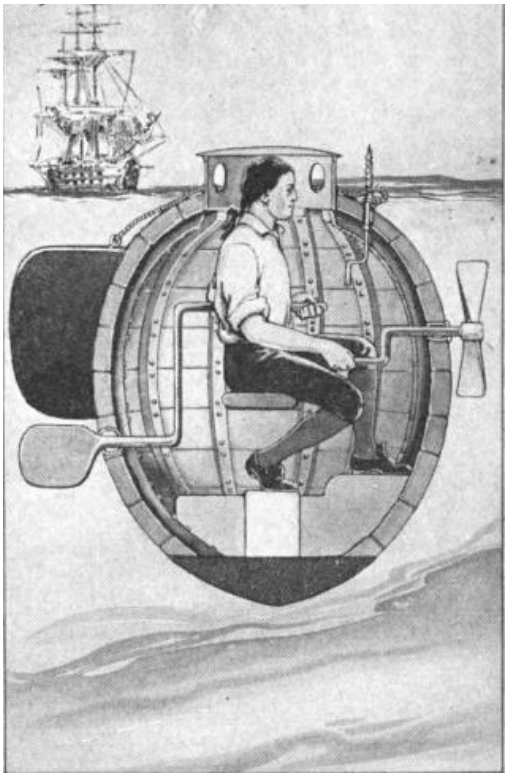


Figure 33 : Section through the Turtle

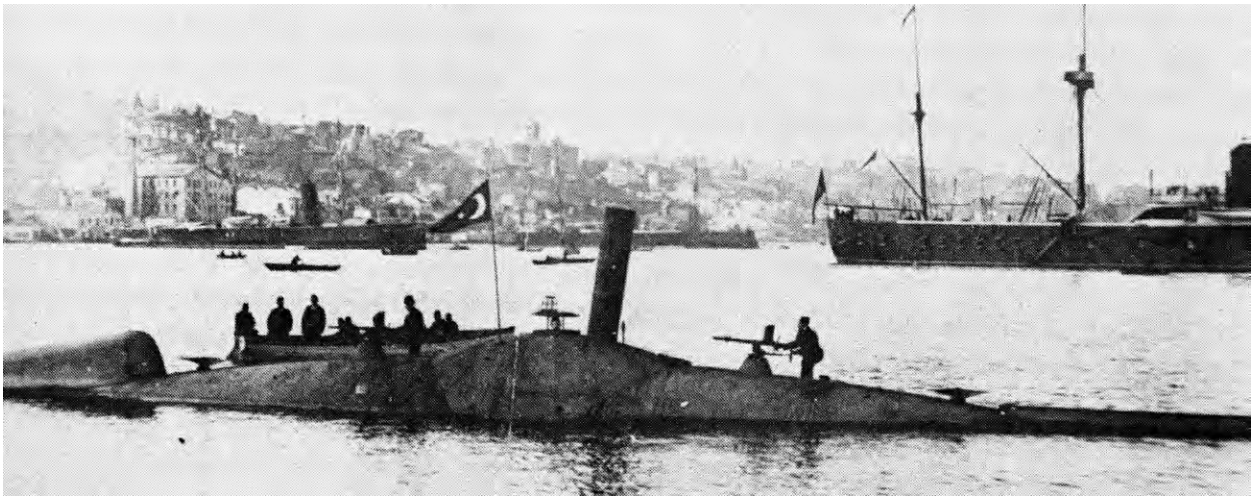


Figure 34 : Nordenfelt, the first steam powered submarine

32. Pararas-Carayannis, George. Turtle: A Revolutionary Submarine. Sea Frontiers, Vol 22, No. 4, pp. 234, July-August, 1976

On Science & Ecology

A BRIEF HISTORY OF SCIENTIFIC EXPLORATION

"The technical means called upon for the exploration of the high atmosphere and the submarine depths present such striking analogies that my editor has asked me briefly to narrate the conquest of the stratosphere."
- Auguste Piccard on his inventions: the FNRS (stratospheric balloon) and Bathyscape (submarine).

There have always been those amongst us who wish to go beyond our land-based existence and voyage up through our atmosphere and down through the oceans. With each voyage, we pass into deeper and farther territories and the extents of our universe increase. With each voyage, we develop more ingenious ways of going even further in this endless and fascinating quest. There are depictions of Alexander the Great being submerged in a crystal barrel called the Colimpha during the Seige of Tyre, in a voyage into the ocean. [Fig.32]

The first submarine was called the *Turtle* and was built and manned by American inventors David and Ezra Bunshell. [Fig.33] It was an egg-shaped wooden vessel that could hold one person as they operated a valve to ascend and descend through the ocean. It was a military submarine and was engaged in a naval battle in the New York Harbour in 1776, but failed to carry out its attack.[30] From there ocean exploration vessels evolved to engine and compressed air operation,

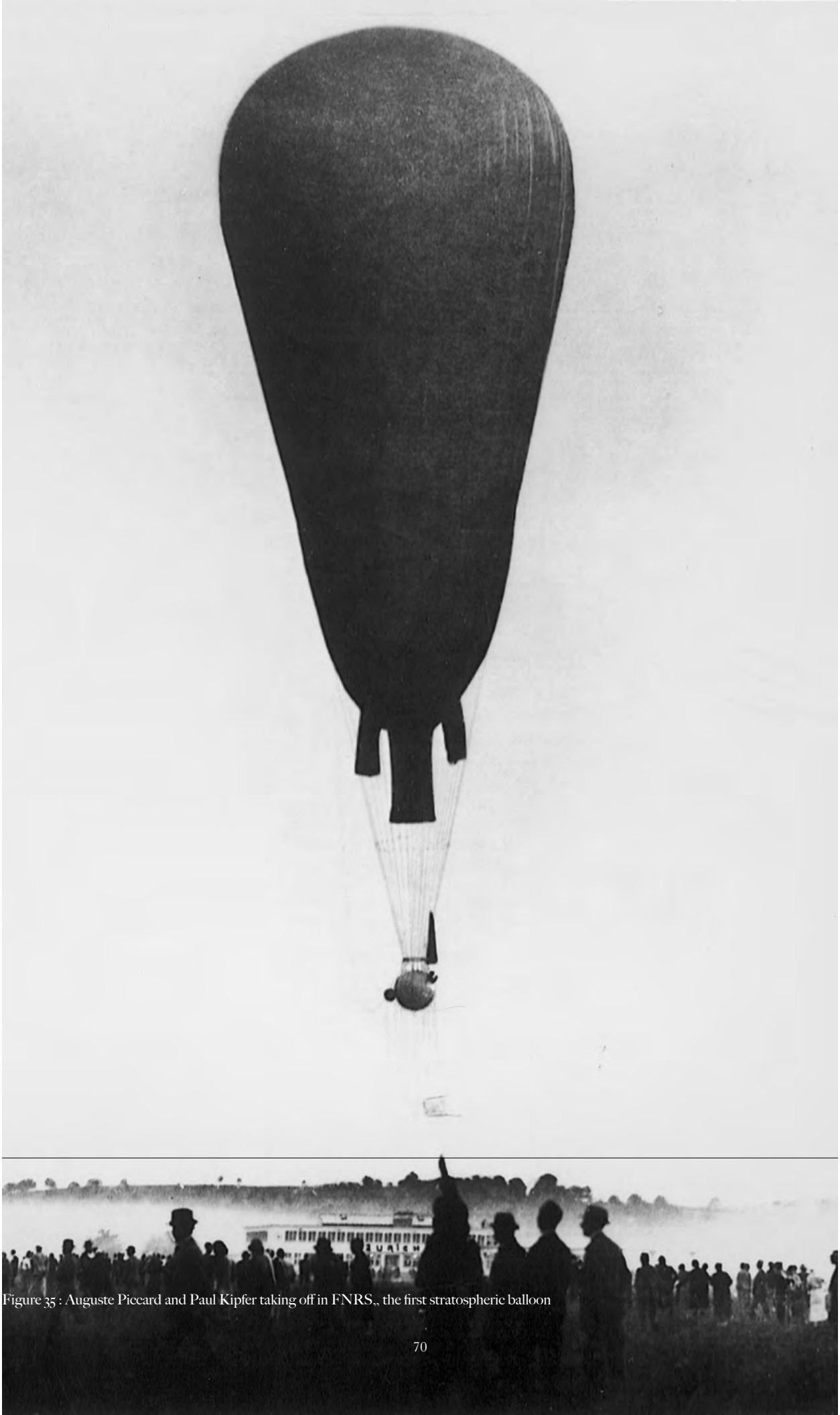


Figure 35 : Auguste Piccard and Paul Kipfer taking off in FNRS„ the first stratospheric balloon

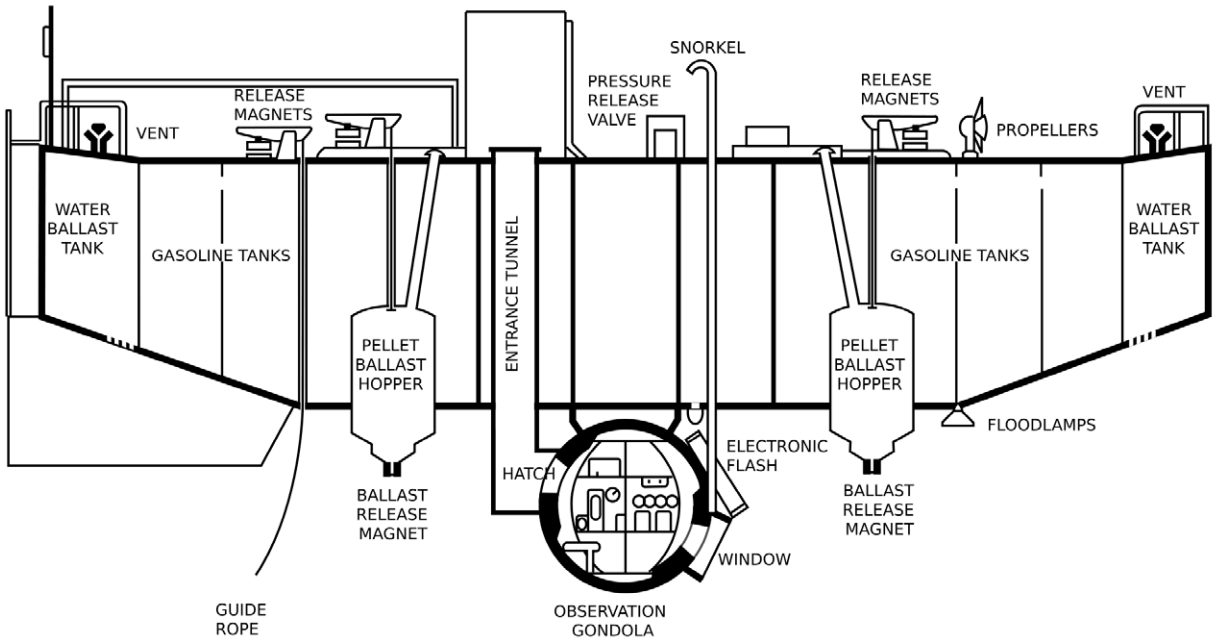


Figure 36 : Section through the Bathyscape Trieste

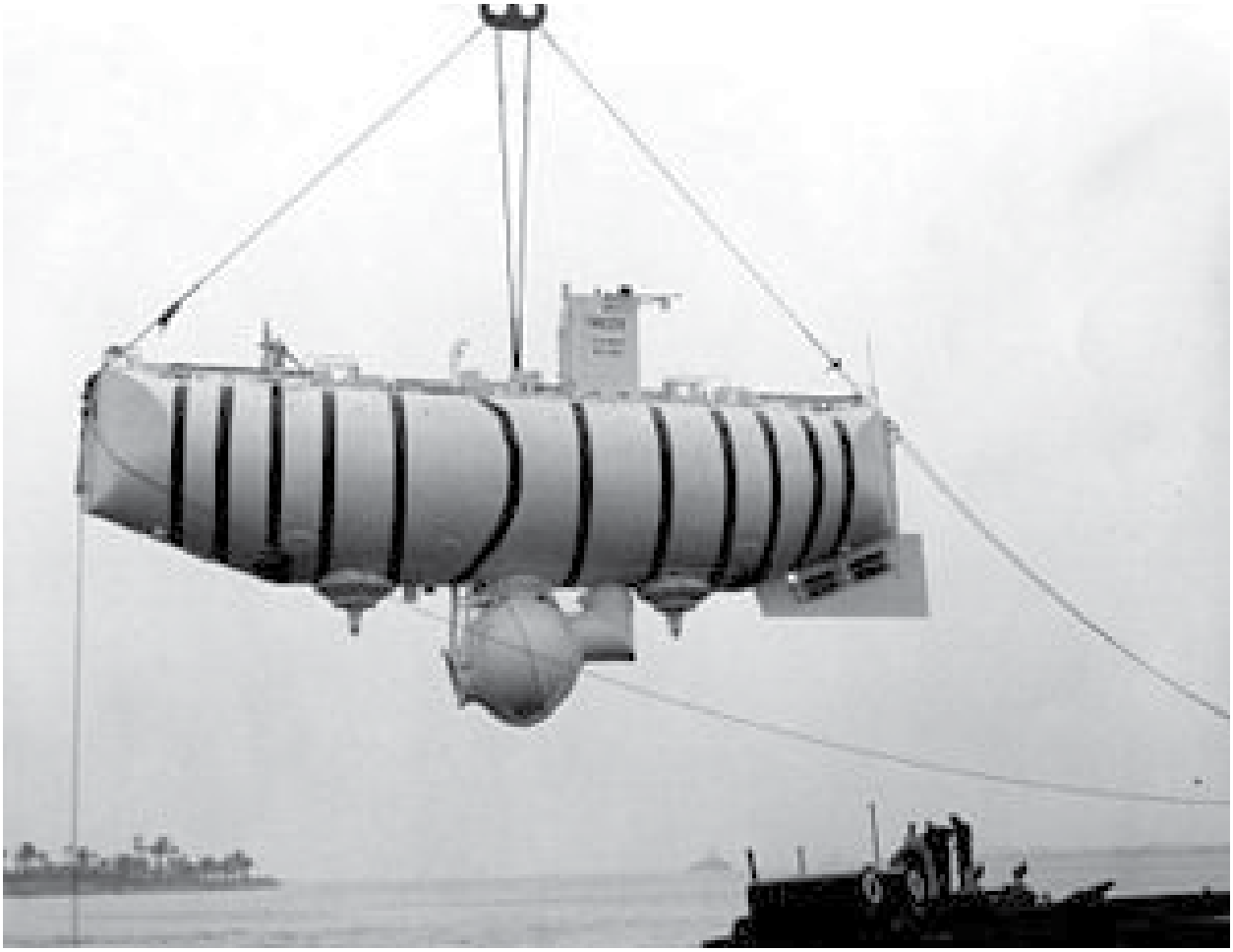


Figure 37 : Bathyscape Trieste being lowered into the water

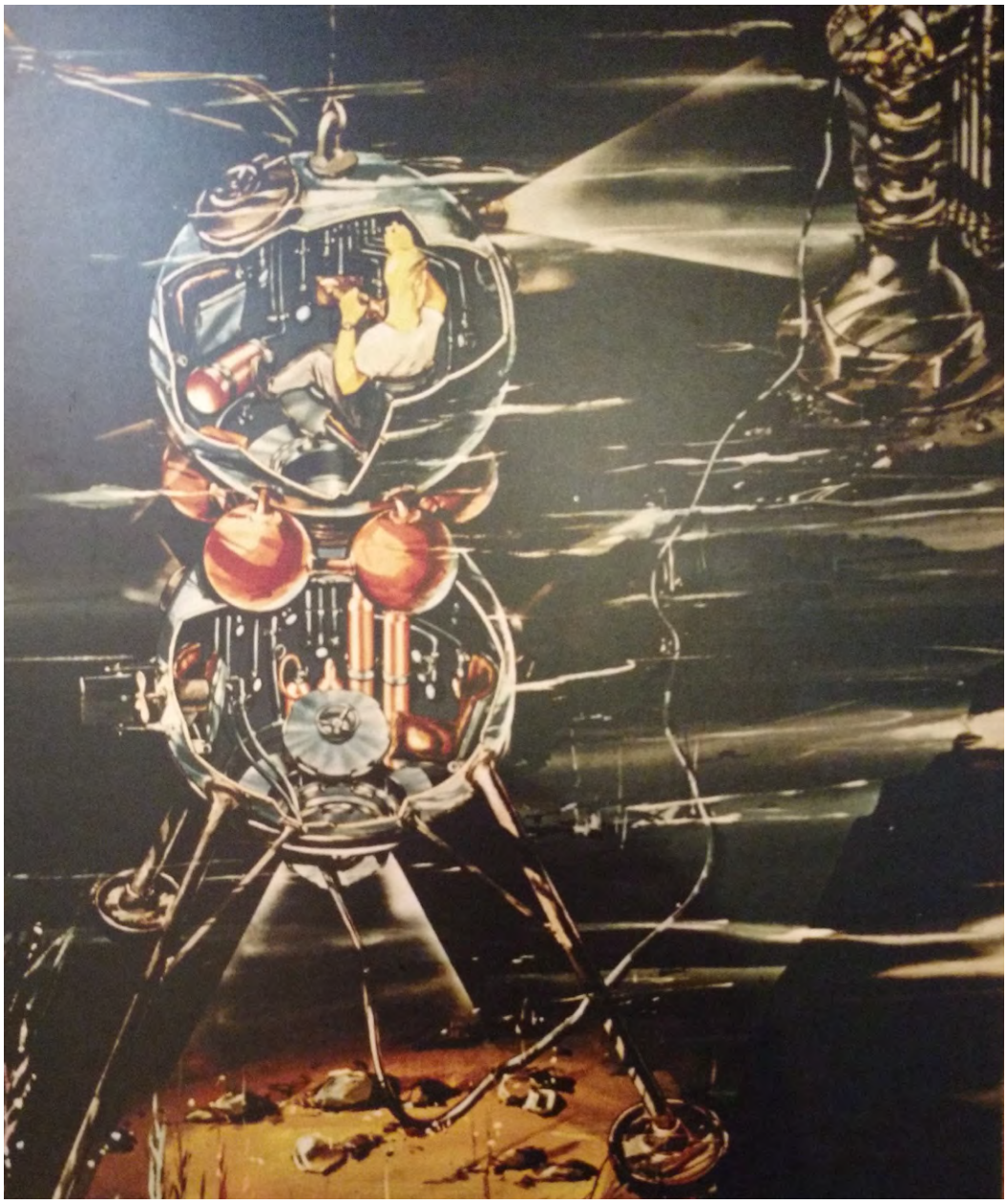


Figure 38: Design of the Purisma

33. Piccard, Auguste, 1884. *Earth, Sky and Sea*. Translated by Christina Stead ed. New York, Oxford University Press, 1956: 1965.
34. Piccard, Auguste, 1884. *Earth, Sky and Sea*. Translated by Christina Stead ed. New York, Oxford University Press, 1956: 1965, pp.2.
35. Piccard, Auguste, 1884. *Earth, Sky and Sea*. Translated by Christina Stead ed. New York, Oxford University Press, 1956: 1965, pp.54.
36. Hoover, Kelly. "A Deep Dive that Changed History : Dan Wilson Remembered on 50th Anniversary." Santa Barbara News-Press, November 4, 2012, 2012.

then combustion and steam operation [Fig.34], and finally electric and autonomous operation in present day.

On 27th May 1931, Swiss physicist August Piccard and German engineer Paul Kipfer operated the FNRS, a stratospheric balloon that they manned to a height of 10 miles.[31] Until this point, an unmanned weather balloon was the only way of exploring the high atmosphere. However, Piccard was interested in measuring cosmic rays and decided to make the journey himself, constructing one of the first 'heavier than air machines' to make the ascent.[32] [Fig.35] Soon after, in 1948, Piccard fulfilled his fascination of descending into the ocean by constructing the first Bathyscape Trieste [Fig.36&37] that descended 4 kilometres to the bottom of the ocean.[33]

On the site ocean exploration has dominantly been for commercial diving. The two driving factors of deep sea exploration were for fossil fuel surveying, and to acquire abalone - a rare Californian seafood delicacy. On 3rd November 1962, the *Purisma* [Fig.38] was introduced to the coast of Santa Barbara by abalone diver Dan Wilson who wished to revolutionize the offshore drilling industry by tapping into hard to reach areas of the ocean.[34] The Purisma is a two bell metal submarine that holds the diver in the bottom bell and an operating engineer in the top bell.

Dan Wilson held the same fascinations as Alexander the Great and Auguste Piccard: a fascination of territories we are not accustomed to. This is an inherent curiosity that has driven scientific thinkers for as long as we know, leading them to design and construct devices of observation and exploration. The platforms are situated in the ideal location for deployment of vessels of this purpose. It is a fixed point of human inhabitation from which one can access the earth, sea and sky in order to gain a greater understanding of these territories. The platform can serve as a take-off point for scientists who wish to access their objects of interest, connecting them to their subject of study in higher rates.

A CRITIQUE OF SCIENTIFIC EPISTEMOLOGIES

"Nothing is more active than thought, for it travels over the universe, and nothing is stronger than necessity for all must submit to it.."
- Thales of Miletus, 600 B.C.

The knowledge we have gained about the site thus far could not have been acquired without a collective knowledge from all of us and

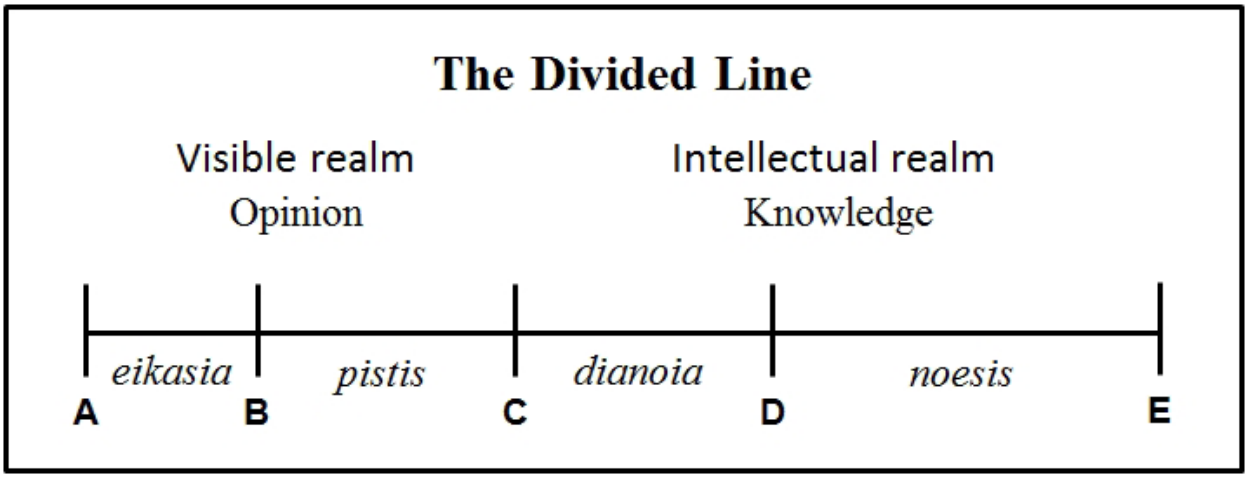


Figure 39: Plato's Analogy of the Divided Line

37. Latour, Bruno. *Politics of Nature : How to Bring the Sciences into Democracy*. Cambridge, Mass. ; London: Harvard University Press, 2004, pp.246.
38. Latour, Bruno. *Politics of Nature : How to Bring the Sciences into Democracy*. Cambridge, Mass. ; London: Harvard University Press, 2004, pp.10.

extensions of our disciplines. Continuing forward, out multiple disciplines have to work together, breaking the barriers between divided scientific epistemologies. This is especially neccessary as and when the site moves into a future past oil, and California begins to address its wicked problems of drought, seismic uncertainty and climate change. Our collective knowledge provides the path to understanding a situation as a whole, instead of in parts, and from there initiates solutions that address the crisis as a whole, as opposed to its different parts.

Our realm of understanding is often divided into two: the intellectual and the sensory. Sociologist Bruno Latour exposes this dichotomy in what he calls *political epistemology*, which is the rationalization of political order within the fields of scientific theory, but in turn severing any sense of coordination between the sciences and politics.[37] He traces this divide to Plato's Analogy of the Divided Line at the end of *Book VI of the Republic*, situating the visible and the intelligible as it leads to an ultimate understanding of truth. A line is divided into two unequal parts, the lesser being the visible world and the greater being the intelligible world. Each section is then divided further with the same ratio, creating four unequal and ascending measures. One passes through the four: Images and Perceptions in the visible realm, Hypothesis and Reason in the intellectual realm, to arrive at an ultimate truth [Fig.39]. In the first, there is none of the last and in the last, none of the first. This is an ontological divide and is the fundamental basis for the dichotomy between what we sense and what we think.

Platonism has presented the view that ideas are not physical, banishing reason to a realm outside of space. Through to modernity, scientific reasoning has allowed this division of the physical and the intellectual to filter through their every workings, which in turn divides it from a visibly changing society. Science, the study of our natural world, engages with this dichotomy, in an aim to establish an ultimate explanation for what is ensuing around us. We seem to have accepted scientific epistemology for what it is, so what then is the problem with understanding through this dichotomy?

Latour eloquently answers this question in *Politics of Nature*, where he states, 'first, get out of the cave.'[38] Here, Latour is referring to the Allegory of the Cave which follows the Analogy of the Divided Line in *Book VII of the Republic*. Plato's cave is a spatial rendition of this dichotomy, through which we have theorized that the heroic scientist [seeker of the ideal truth] must escape

from the darkness of the cave [realm of the social and political] in order to ascend to the light of truth. In the cave lie human prisoners of the public, chained to the shortcomings of their imperfect social characteristics and subjective feelings. The scientist seeking truth leaves the cave's narrow opening and enters the non-human realm of ideas, where he is enlightened. He then makes the passage back into the cave, the bearer of truth and established reason.

In this divide Latour points out a *double rupture*'.[39] There are two points of disconnect in Plato's cave. The first, when the scientist leaves the cave, is an assumption that the sensory world with its social public ceases to matter and affect the knowledge to be gained. All continuing events in this world are ignored, the tether between the subject and its objective explanation is cut. The second break occurs when the scientist makes the journey back into the cave, now equipped with the other-worldly truth of the intellectual world with which to address the conditions of the social world. However, the social world has undeniably changed as time has passed. Once again, the connection between the ideas and the subject they wish to explain is cut, leaving the realm of reasoning behind.

Yet, after this break, knowledge is seen as established with no room for reflection and alteration. This structure of understanding allows the quest for knowledge to become ignorant, exclusive, and most dauntingly - reduced. Learning on the basis of this dichotomy allows us to escape the most fundamental occurrence around us, which is change. Latour states that epistemological orders of the sciences and political orders of society are similar, if not the same driving force. One creates order in Science and the other in Society. However both create this order through the establishment of hierarchy and division.

Although the threshold between our scientific and social world has increased in the contemporary world - due to connecting phenomena like globalization and a universal access to knowledge - the speed of these very advancements have tethered connections between our intellectual and sensory self, maintaining this ontological divide in our daily lives.

Let us now tackle the thought of removing the divisions between the sensory and the intellectual, and explore the permeable thresholds between them. In his essay *Mediators*, Gilles Deleuze

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39. Latour, Bruno. *Politics of Nature : How to Bring the Sciences into Democracy*. Cambridge, Mass. ; London: Harvard University Press, 2004, pp.10.
40. Latour, Bruno. *Politics of Nature : How to Bring the Sciences into Democracy*. Cambridge, Mass. ; London: Harvard University Press, 2004, pp.37.
41. Deleuze, Gilles,1925-1995, author. *Negotiations*, 1972-1990. New York: Columbia University Press, 1995, pp. 285.
42. Harari, Yuval N, *Sapiens : A Brief History of Humankind.* Cloth edition. ed. Toronto, Ontario]: Signal ; McClelland & Stewart, 2014.
43. Latour, Bruno. *Politics of Nature : How to Bring the Sciences into Democracy*. Cambridge, Mass. ; London: Harvard University Press, 2004, pp.28.
44. All Watched Over by Machines of Loving Grace - Episode 2 - the use and Abuse of Vegetational Concepts. Film. Directed by Curtis, Adam. The Collective Intelligence Research Institute, 2013.

questions the roles and relationships of the arts, sciences and philosophy, demonstrating how the three can be different ways of understanding the same thing. "Thus, philosophy, art and science come into relations of mutual resonance and exchange, but always for internal reasons. The way they impinge on one another depends on their own evolution. In this sense, then, we really have to see philosophy, art and science as separate melodic lines in constant interplay with one another."[41] This thinking can extend into the sciences, finding the manner in which individual lines of scientific epistemology can resonate with one another to form a collective knowledge of the whole.

The origins of the concept of Natural Science - the understanding of natural phenomena based on a process of observation and inference - has been a concern of our species for as far as we can trace. Historian Yuval Noah Harari suggests this inclination to be present when our brains developed to the cognitive ability it has today around 70,000 years ago. He calls this the Cognitive Revolution.[42] This original intention of Natural Science still holds but along with it comes a collective intention to establish permanent explanations of these phenomena. In the first intention, the discussion is about our natural world. In the second intention, the discussion is about our discoveries of the natural world.

For as long as we know, the sciences have been on a quest to understand and explain our natural world: questioning, answering, re-questioning, re-answering, and so on. In the context of this quest, Latour differentiates between 'the sciences' and 'Science'. The first, in plural, holds true to an original intention of seeking to understand our natural world. It holds in it the concepts of exploration, observation and learning that are constantly put to the test by more of the same.

The second, in singular, is a term limiting its concept. It is a political manifestation, constantly assembled, composed and bound in parallel with its political context. Latour states that in the singular, Science cannot be separated from its initiator: "as soon as we add to dinosaurs their paleontologists, to particles their accelerators, to ecosystems their monitoring instruments, to the ozone hole their meteorologists, we have already ceased entirely to speak of nature; instead, we are speaking of what is produced, constructed, decided, defined, in a learned City whose ecology is almost as complex as that of the world it is

Figure 40 : View of the platforms from Carpinteria Bluffs)

coming to know."[43]

Seeking simplification, over the course of this shorter scientific history, Science has divided itself into more specific epistemologies that tackle quantitative and qualitative divisions of our tangible and intangible world. Over time, these epistemologies have solidified, frozen into divisions of study that have lost the notion of integration that unites the sciences in the first place. The result of the epistemologies of Science is the production of Nature, another produced singularity that attempts to finally define the world around us. So how then, do we go back to the sciences of natures? How do we begin to understand the world around us through the multiplicity it really is?

The first step would be to collect the sciences, bringing them together to understand the same site from different perspectives. What is common in our seven fields of study that have gathered to address this site is a process of an understanding through observation, inference and documentation. However, once documented, the natures of the site are left established, awaiting a serious claim of disproof in order to re-question the nature of things. Equipped with Science's prior dichotomy, the mind that studies can be separate from the phenomenon being studied, a sort of distant observer who at best, has a blurry vision of the moving object they are seeking to understand. The second step, then, is to conduct our research and learnings of the site *in the site*. To be immersed in the changing natures we wish to understand allows us to be a part of it, and change with it, leaving no room for a delusion of permanence. This left us seeking a future for the platforms that is driven by the notions of collective learning and scientific exploration, in which we could be immersed with our natural world, and one another, as we further explore this complex site.

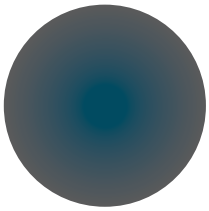
ENERGY, LIFE & MATTER

"This adventure is made possible by generations of searchers strictly adhering to a simple set of rules: Test ideas by experiment and observation. Build on those ideas that pass the test. Reject the ones that fail. Follow the evidence wherever it leads, and question everything."

- Neil Degrasse Tyson - Cosmos, ep.1

After the first world war, the idea of the natural world being a functioning network of connections took over fields of science. The natural world - and our roles in it - began to be looked at as systems of linked entities, through which energy flows, fastening them all together. This idea was first brought forth by biologist Arthur Tansley, who named this the 'ecosystem'.[44]

Harmony



[6th cent. B.C]
Thales of Miletus (first known western scientific thinker) proposes that matter is alive and united, originating from water

[3rd cent. B.C]
Aristotle once again links matter and form, creating a set of unifying principles accross biology, physics, metaphysics, ethics & politics

[20th cent.]
Quantum Physics introduces a scale and set of systems that once again pose a sense of harmony in understanding phenomenon.
1915 - Einstein's Theory of relativity
1963 - Chaos Theory
1973 - Deep Ecology
1980's - Actor Network Theory

Dichotomy

[4th cent. B.C]
Socrates &Plato strip matter's agency, separating the sensory from intellectual as seen in the allegories of the cave and the divided line, placing objective thinking over subjective

[16th & 17th cent.]
The Scientific Revolution brings forth a mechanistic way of thinking focused analytics and quantitative understanding.
1637-Descartes' Cartesian system
1687-Newton's Laws of Mechanics
Also see: Bacon, Copernicus & Galileo

Aristotelian philosophy dominates for almost two thousand years

Drawing 15: Harmony and Dichotomy in Science and Philosophy

45. Haeckel,Ernst Heinrich Philipp August, 1834-1919. *The Riddle of the Universe at the Close of the Nineteenth Century.* New York and London: Harper & brothers, c1900], 1900, pp.18.
46. Haeckel,Ernst Heinrich Philipp August, 1834-1919. *The Riddle of the Universe at the Close of the Nineteenth Century.* New York and London: Harper & brothers, c1900], 1900, pp.18.

Tansley was inspired by a theory of Sigmund Freuds - that the brain was a machine of networks powered by the energy of information it drew in through senses. Tansley applied this idea of the network in our mind to nature, envisioning energy as the connecting factor of all living and non-living things.

What Tansley was suggesting is that there is an underlying natural balance, or a tendency towards universal equillibrium. This balance entails a harmony between all things that compose our world. This harmony can only be understood when seen as a whole system, when all its connected parts are seen with equal brevity. Scientific inquiry has always oscillated between harmony and dichotomy [Dwg.15]. However, the underlying hypothesis that all things are related, and therefore affect change on each other, has always had a presence in our modes of inquiry. The inherent nature our species possesses of wanting to understand the relationships between things entered Science as the term *Ecology*. It was introduced by German biologist Ernst Haeckel as *Ökologie* [oikos - household]. Ecology became the study of the organic and inorganic world as they related to one another in their environment.

Haeckel was a firm believer in *monistic thinking*, which in its simplest form calls for unity in all our modes of inquiry. Haeckel believed Science (experience) and Philosophy (thinking and speculation) to be of equal value and inseparable in our quest to solve all great cosmic riddles.[45] Haeckel also calls for unity in our social and scientific worlds. He says, "We can only arrive at a correct knowledge of the structure and life of the social body, the state, through a scientific knowledge of the structure and life of the individuals that compose it."[46]

Modern ecology has moved towards a further understanding of the interconnectedness of our natural existence. Ideas on ecosystem ecology and theories like the Gaia hypothesis (a proposal that organisms and their inorganic surroundings maintain conditions of life on the planet) have opened an inclination towards thinking of our environment as a synergistic loop between the living and non living aspects of our world. Ecology stands on its trinity of Energy, Matter and Life. Through it, we hold the capacity to understand the world through a lens that is constantly changing, a study that mirrors the nature of the thing it studies. The hypothesis here is one of continuity, one that binds matter and life through the inextinguishable energy that moves amongst and through them. Energy, matter and life are the site's *actants*, a Latourian term that means: any entity

Drawing 16: Earth, sea and sky in motion

that manifests another in trial.[47] On the site, they exist in a web of relationships, constituting what the proposed architecture is surrounded by, and chooses to understand.

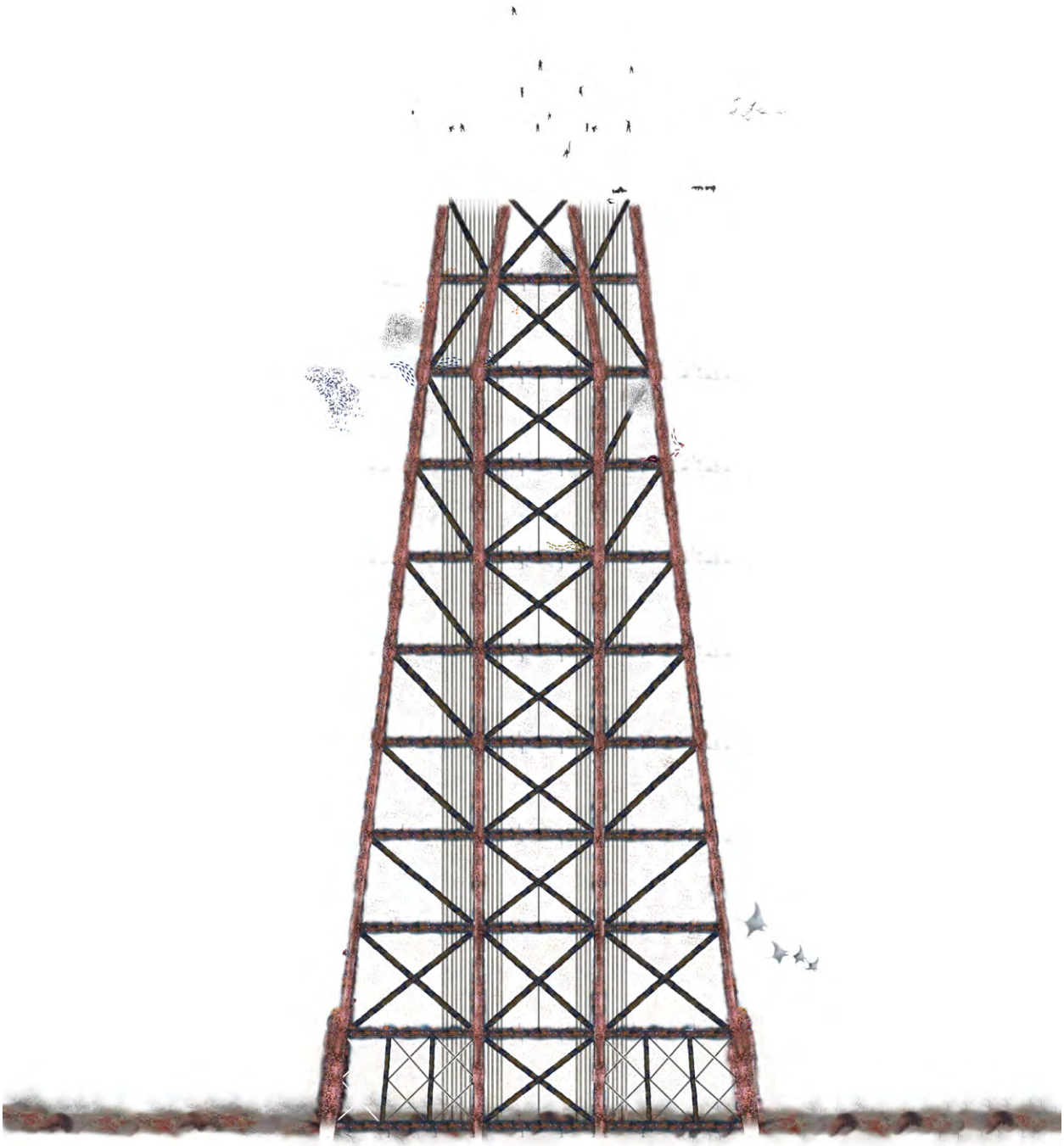
The energy of the site is its constant motion. It is never resting, always changing. Energy connects the site, a grand network of forces that are transferred through the matter and life of the site. Energy is the ability to be active. Energy, along with matter, is a fundamental unit of exchange. Matter and energy began to exist 13.5 billion years ago, with the appearance of atoms and molecules. This is the beginning of the sciences of Physics and Chemistry. [48] On the site, this movement of energy helps unite the living and non-living, the sensory and the intellectual.

The energy of the site is felt by all who inhabit it. The most intangible of the three, it is witnessed in the high swells of surface currents that bring keen surfers from around the world, it is felt in the winds that are chased by sail boats small and large. The energy of the site is a thrill to navigate and a force to be reckoned with. Its movement is largely unpredictable, changing drastically over seasons, experienced both by the coast's eclectic mix of harbors, piers, beaches and parks and by those who choose to navigate its waters. [Dwg.16]

When we sail this bight, we understand why it it is one of the healthiest bodies of water - simply so because of its ability to self cleanse through constant movement. As we design a place for the sciences on the site, we wish to create a functioning machine that feeds from these forces at play on the site.

Earth, sea, sky and metal are but physical matters that are moved by this energy. Matter is the abiotic, physical composition of the site. Matter is vibrant with a great sense of inertia, evolving through time scales greater than that of life. Matter is vibrant, its forces steady and heavy. As matter changes, it alters our environments, affecting our sense of space as it harbours our subnatural surroundings. Its aging is evidenced in its material transformations through frictions with the other actants.

A series of movements in thinking called New Materialism have emerged in the 21st century, giving credit to the power of non-human forces and the rethinking of subjectivity, a result of anthropocentric thinking. A term introduced by contemporary philosophers Manuel Delanda and Rosi Braidotti in the 1990's, New Materialism opposes dualist tendencies, seeking nature and culture as a joined force. "What can be labelled New Materialism shifts these dualist structures by allowing for the conceptualization of the travelling



Drawing 17: Composition of life on the platform is seen to rely on its matter and energy

47. Latour, Bruno. *Politics of Nature : How to Bring the Sciences into Democracy*. Cambridge, Mass. ; London: Harvard University Press, 2004
48. Harari, Yuval N, *Sapiens : A Brief History of Humankind*. Cloth edition. ed. Toronto, Ontario]: Signal ; McClelland & Stewart, 2014.
49. Dolphijn, Rick and Iris Tuin. ""Matter Feels, Converses, Suffers, Desires, Yearns and Remembers"." *New Materialism: Interviews & Cartographies*, November 15th 2016.
50. Harari, Yuval N, *Sapiens : A Brief History of Humankind*. Cloth edition. ed. Toronto, Ontario]: Signal ; McClelland & Stewart, 2014.
51. Cosmos: A Spacetime Odyssey. Film. Directed by Pope, Bill. Cosmos Studios, 2014.
52. Harman, Graham, 1968-. *Prince of Networks : Bruno Latour and Metaphysics*. Melbourne: Re.press, 2009.

fluxes of nature and culture, matter and mind, and opening up active theory formation.[49]

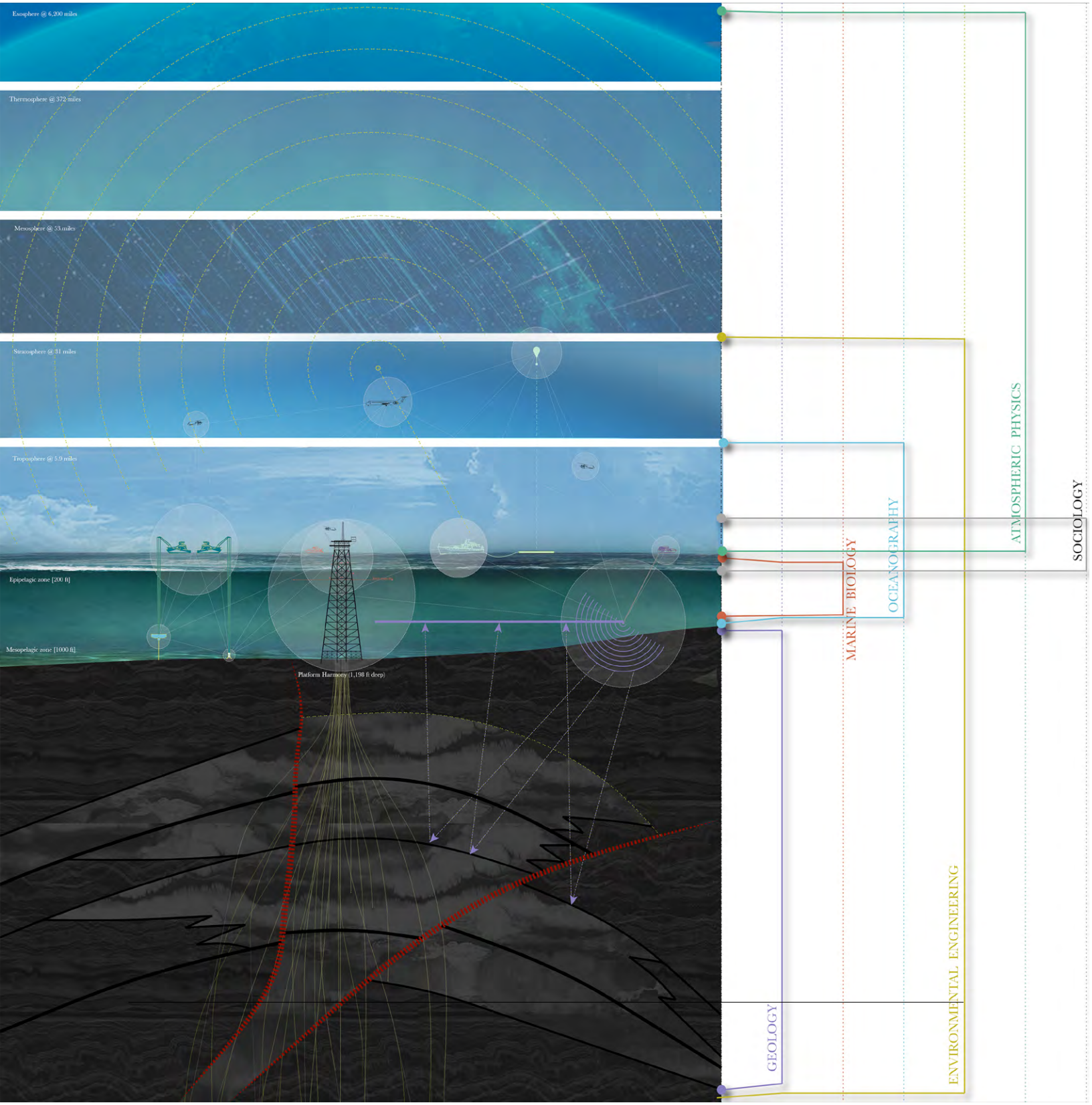
Our design will add to the material composition of the site. Attention will be paid to matter's nature of flux, its energy of movement and change. Through design, the added layers of matter can grow in tandem with the site's material characteristics, using them as a predecessor for joining the surrounding natures and heightening our sense of embodiment on the site.

In a series of fortunate events, the site's constant energy and its unique matter provided the force of life on the site with an occasion of prolific growth. Formed by the accumulation of plankton and nutrients that were moved to the platform through the site's convectional momentum of water, life found safety from the degrading and polluted shore amongst the safer, cleaner substructure of the platform.

Life is the biotic, physical composition of the site. Life is moved by energy, but often finds its own inherent movement. Life is agile, its movements quick and complex. Life's growth is often independent but its formation is intertwined with the forces of energy and matter. [Dwg.17] Life is the newest of the three, an enigma the sciences will constantly seek to understand. Its nature of being living sets it aside from the rest, for being alive denotes a separate set of cycles of being. The emergence of organisms 3.8 billion years ago marks the beginnings of the biological sciences.[50] The question of the origins of life - the origins of ourselves - is a scientific enigma we seek to answer everyday. We do know this: life originated in the ocean.[51] The oldest life on earth is at the deepest depths of the ocean. For this reason, the events that occur at these depths are critical clues into the nature of life.

Despite the dwindling habitats along the coast, non-human life still thrives on the site, with the platforms forming intense micro-habitats for a range of species from single-celled deep dwellers to large mammals such as the humpback whale. As we have seen, in an ecosystem with this daily diversity, life shows its complexity in the way beings come together. Any surface placed into the water is almost immediately covered in life. This proliferation is a certainty in the character of life on the site, making way for activities such as feeding frenzies that give us a glimpse into the chaotic existence of life, and a peek into further understanding the ecology of the site.

Through our design, we wish to enter into the tangle of life on the site. We strive to pursue a deeper understanding of ecological complexity as we sustain our habitat in the world beside all



Drawing 18.: Sections of interest (draft)

our fellow species. It allows us a look into future implications of how we can live with and within and amongst the world. When we re-enter the site, we will do so with a horizontal ontology of all actants, including us.

In the very beginnings of his career, Latour had an epiphany of a new principle in his philosophy, one which became his first text, *Irreductions* and carried through the rest of his work: "I knew nothing, then, of what I am writing now but simply repeated to myself: 'Nothing can be reduced to anything else, nothing can be deduced from anything else, everything may be allied to everything else.' This was like an exorcism that defeated demons one by one. It was a wintry sky, and a very blue. I no longer needed to prop it up with a cosmology, put it in a picture, render it in writing, measure it in a meteorological article, or place it on a Titan to prevent it from falling on my head....It and me, them and us, we mutually defined ourselves. And for the first time in my life I saw things unreduced and set free."[52]

We will see every participant on the site as their own autonomous agent, irreduced by any singular definition. Continuing forward, we strive towards two things: first, the growth of an assembly focused around a collective of human and non human actants (gathering together due to the entanglement of the sciences [Dwg.18]), and second, a high degree of exposure to the forces of energy, matter and life at play on the site, which will in turn initiate a practice of reflexivity in our processes of scientific exploration, free from the ropes of heirarchy and reduction.

Figure 41 : Platform Gail

SUBMECHANOPHILIA

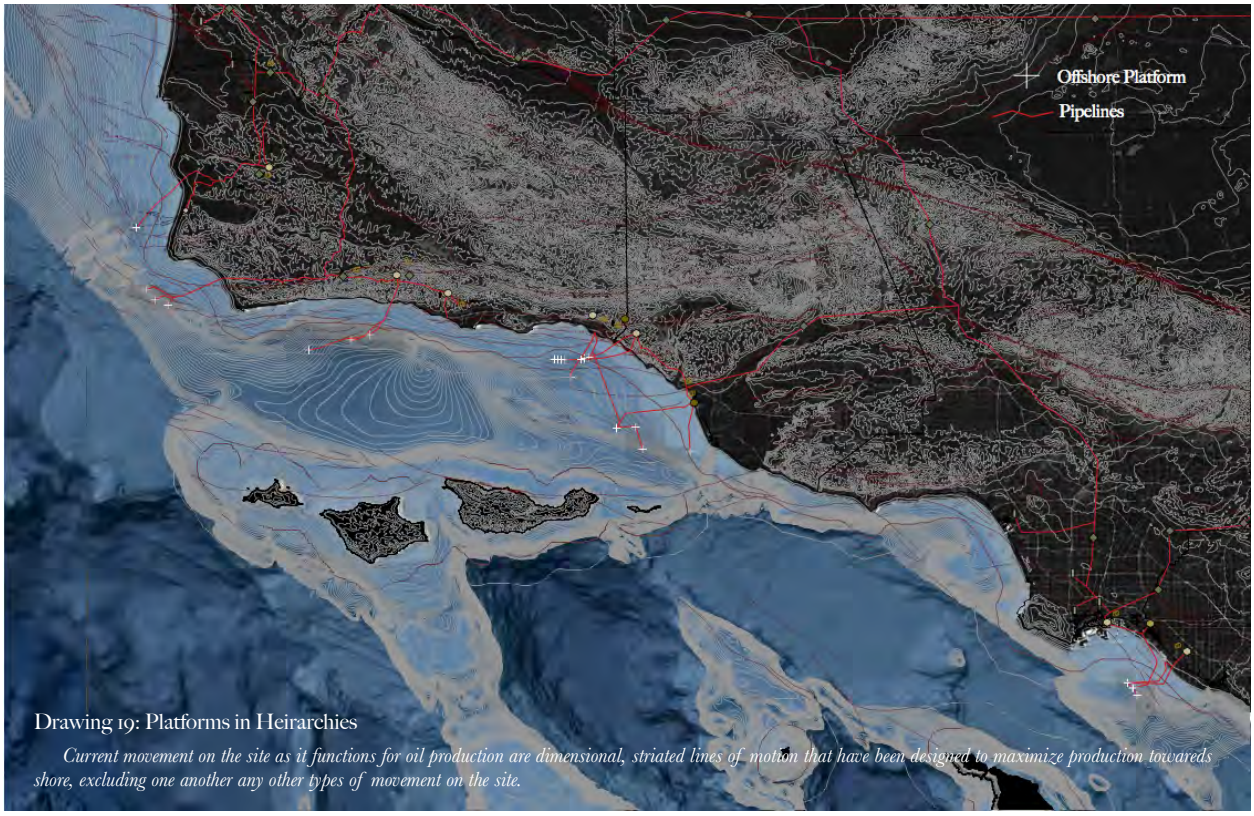
FROM HIERARCHIES TO NETWORKS

"But fiction has enabled us not merely to imagine things, but to do so collectively"
- Yuval Noah Harari

Inspired by Latour's spirit of inclusion and the move towards a dissolution of the borders of epistemology, the design proposes to seek the formation of a threshold that deploys the opposite: a vantage point of learning that is caught amongst the actions, relationships and changes in the site, such that there is at no point a complete break or 'rupture' between the sensory and intellectual ways of understanding the natural systems at play, and where all epistemological divisions are stripped of their divisions. It is only through this dissolution of borders that we can make way for a reassembly of the public in question - those who are engaging with the site on a daily basis. Through this reassembly, there can be a continued engagement that leads to a deeper and more reflexive understanding of the way things work.

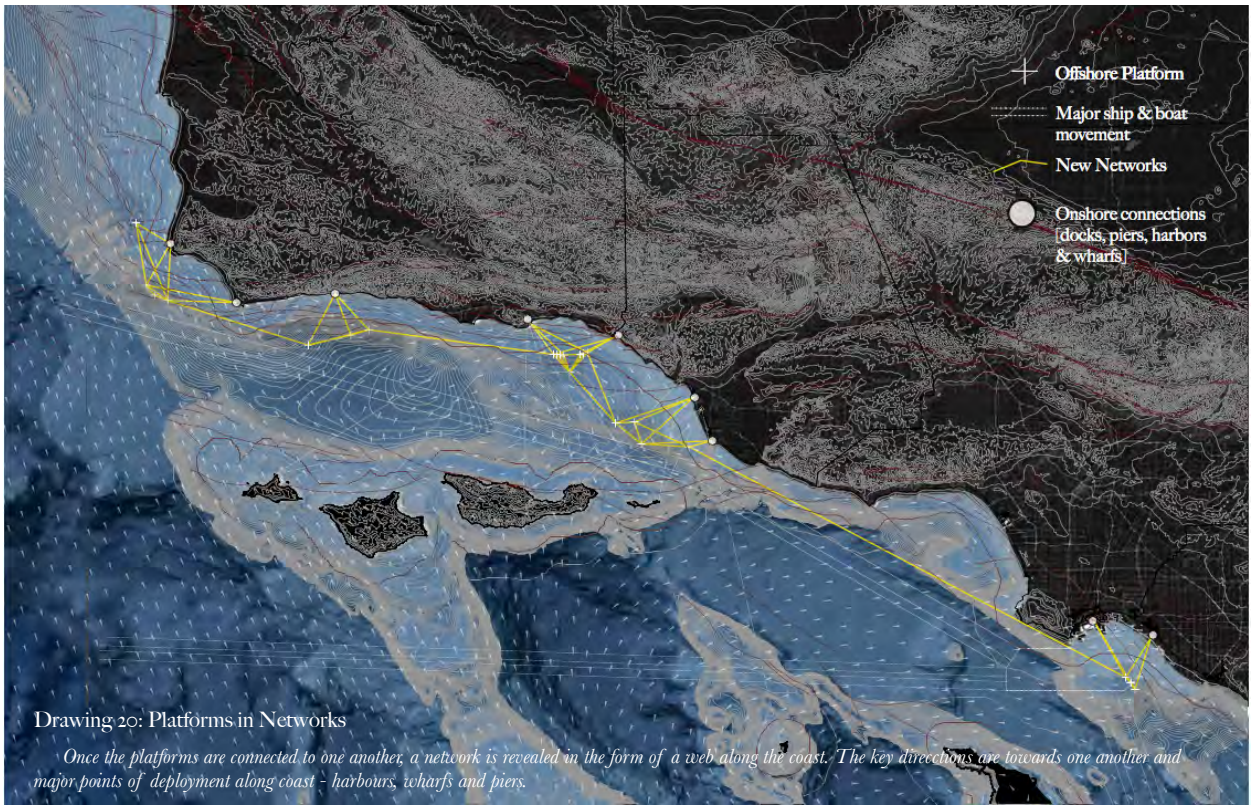
Currently, movement on the site dominantly services the agenda of oil. The platforms line the coast in their oil archipelagos, while pipelines and ships connect the platforms to facilities onshore. The logic of movement is structured economically, isolating each group of platforms [Dwg.19], maintaining a focus to facilities on the shore.

Separate from the movement of oil is the movement of people via ships and boats. There are both major ship routes [in and out of the



Drawing 19: Platforms in Heirarchies

Current movement on the site as it functions for oil production are dimensional, striated lines of motion that have been designed to maximize production towareds shore, excluding one another any other types of movement on the site.



Drawing 20: Platforms in Networks

Once the platforms are connected to one another, a network is revealed in the form of a web along the coast. The key directions are towards one another and major points of deployment along coast - harbours, wharfs and piers.

channel] and minor ship routes [mostly from the mainland to islands and back]. These routes ignore the platforms and therefore the movement of people is not integrated with the platform's presence.

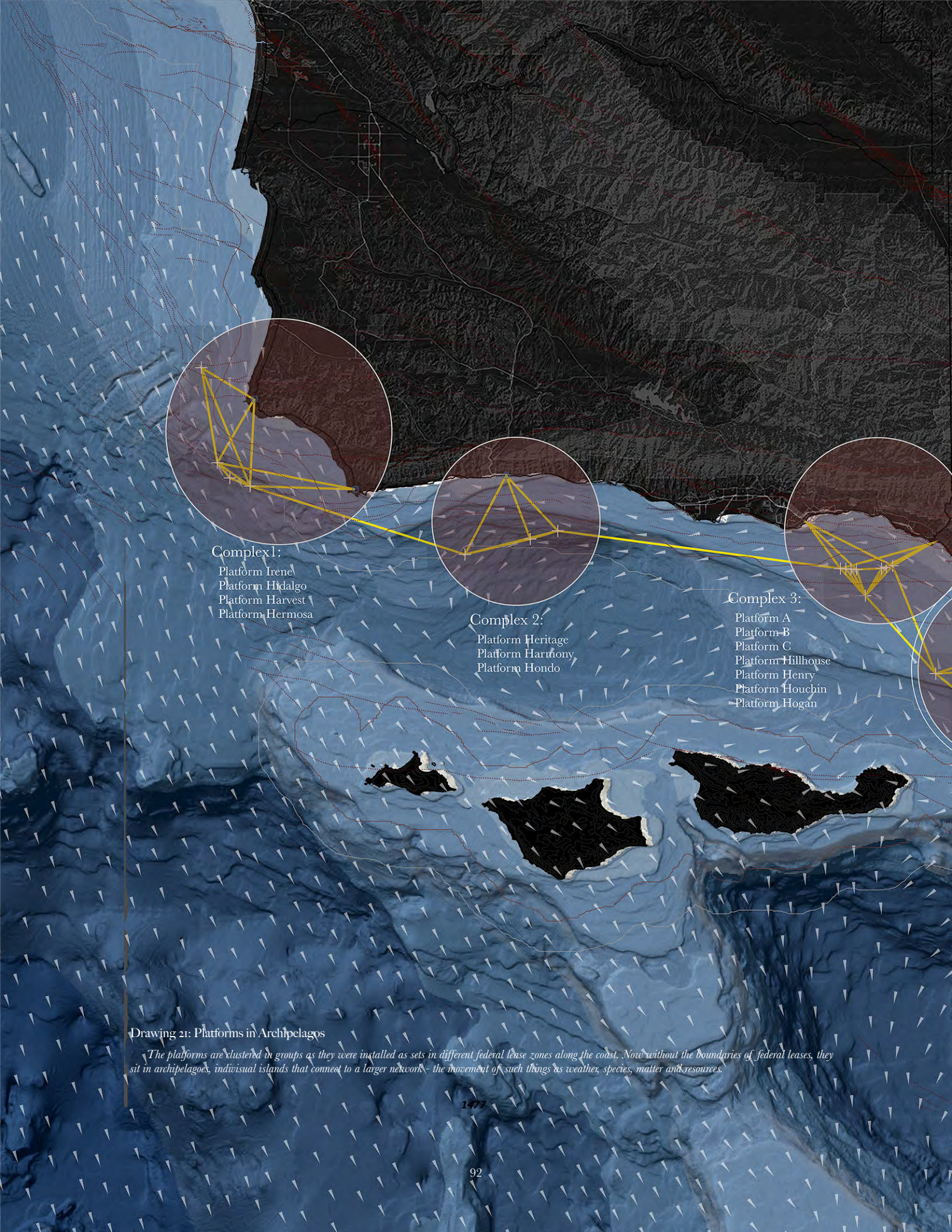
By simply connecting the platforms to one another and major public points on shore, a new network is revealed [Dwg.20]. This is a network of inclusion for the platforms, gaining them access into all other movement on site. Clustered in their groups, the plaforms sit in five distinct archipelagos, but a connective tissue of movement can begin to form along these lines.

The connections that tether the platforms together will be composed of the movements of various species, materials and energies that take part in their future. [Dwg.21]These networks will inform the design of access` to each platform as the design focuses into one archipelago of platforms off the coast of Ventura and Oxnard.

The archipelago consists of four platforms: Gail, Gina, Gilda and Grace [Dwg.22]. They are some of the most dispersed platforms from each other, with platform Gail lying in farther depths than the other three and boosting a more diverse ecosystem due to its variation in depth. Taking platform Gail as a model, we propose one platform in each archipelago to grow into a tower that gradually accomodates the gathering of our collective [Dwg.23]. This tower will contain a set of programs for scientific research, starting with facilities that enable field research and exploration, and then grow to include amenities for futher research and a larger population of scientists.

The remaining platforms are left as skeletons with voids, the only growth being that of the assembly of the forces of energy, matter and life; as they slowly become habitats, to the species of the site. These subtracted skeletons will be counterparts to the tower - similar to how the islands are to the coast - for us to be able to perceive the affects of our presence on the platform.

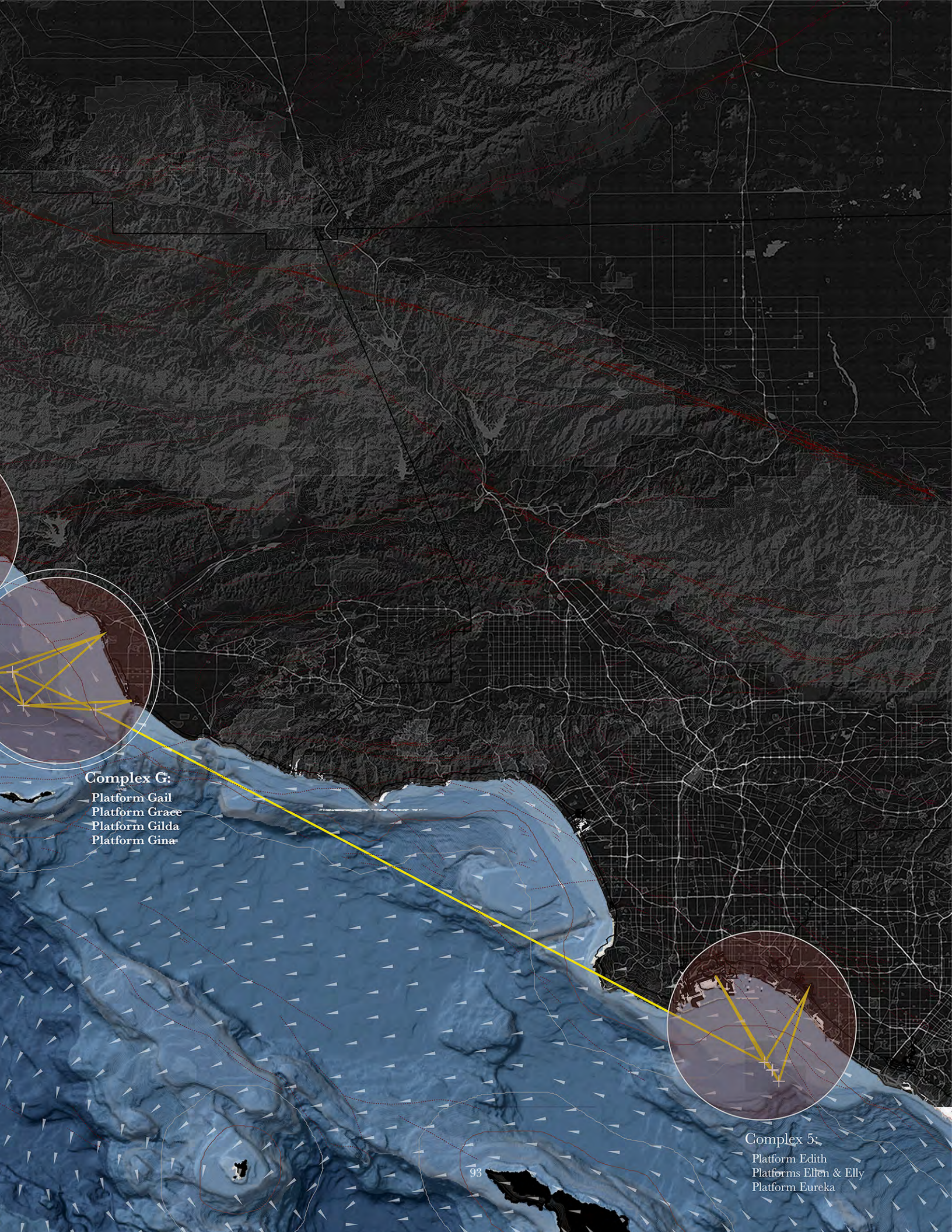
The platform grows in phases until the end of the metal structure's life - projected to be 250 to 300 years. Over this time, we hope to learn how to cohabitate, to build a future with great care towards our surrounding environment.



Drawing 21: Platforms in Archipelagos

The platforms are clustered in groups as they were installed as sets in different federal lease zones along the coast. Now without the boundaries of federal leases, they sit in archipelagoes, indivisual islands that connect to a larger network - the movement of such things as weather, species, matter and resources.

1477


Complex G:
Platform Gail
Platform Grace
Platform Gilda
Platform Gina
Complex 5:
Platform Edith
Platforms Ellen & Elly
Platform Eureka

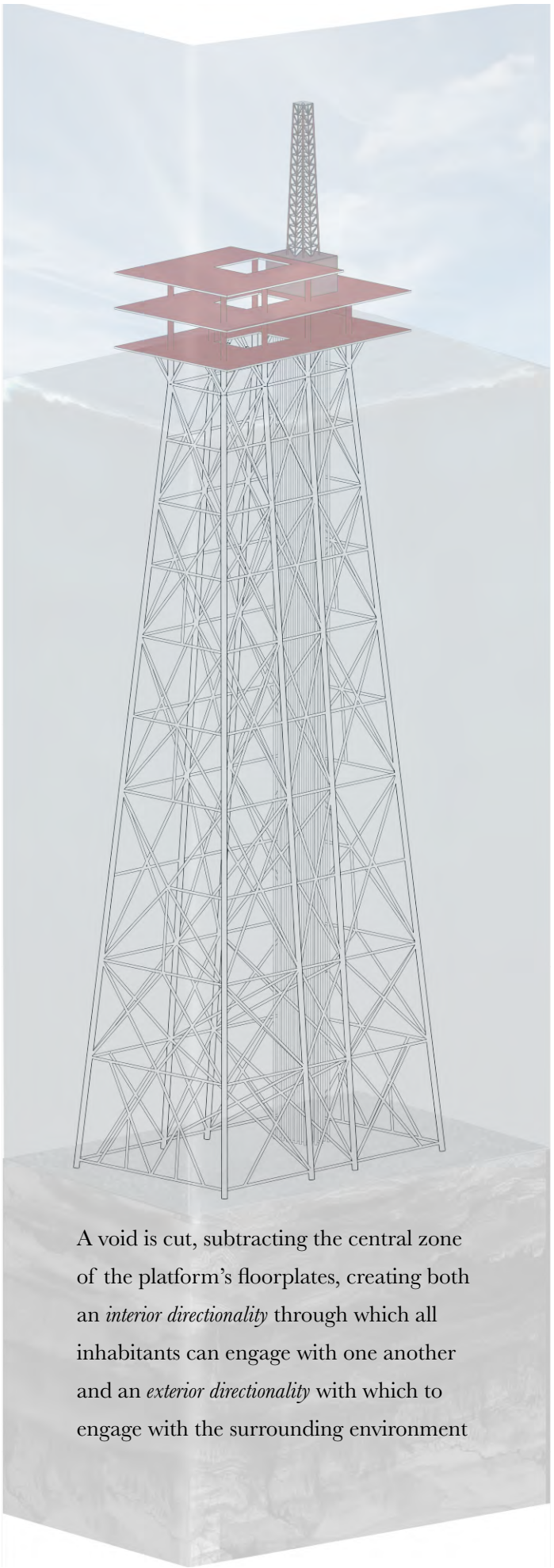
Drawing 22: Site Plan - Complex G: Platforms Gail, Gina, Gilda and Grace]

These four platforms form an archipelago offshore Oxnard and Ventura, primarily agricultural landscape that increases density along the coast where the Port Hueneme naval base and various housing developments sit. This part of the coast is has long running beaches and a strong recreational and commercial fishing culture.

By rerouting existing shipping paths to converge at the platform. Platform Gail, soon to be devolved into a tower of scientific research and exploration, becomes connected to three points along the shore, Anacapa and Santa Cruz island as well as the international shipping lanes.

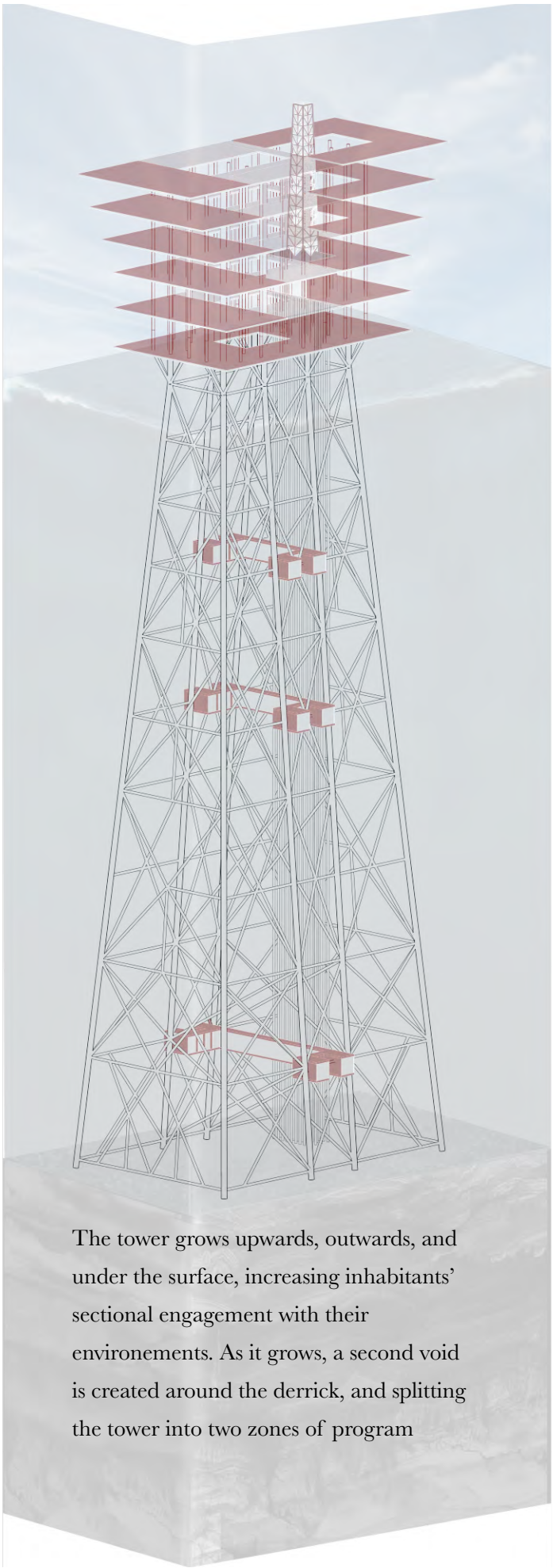

route to ventura pier
route to ventura pier
route to oxnard
route to oxnard
route to oxnard
route to oxnard
PLATFORM GINA
route to anacapa island
route to anacapa island
route to international shipping lanes

Existing Structure of Deck and Jacket



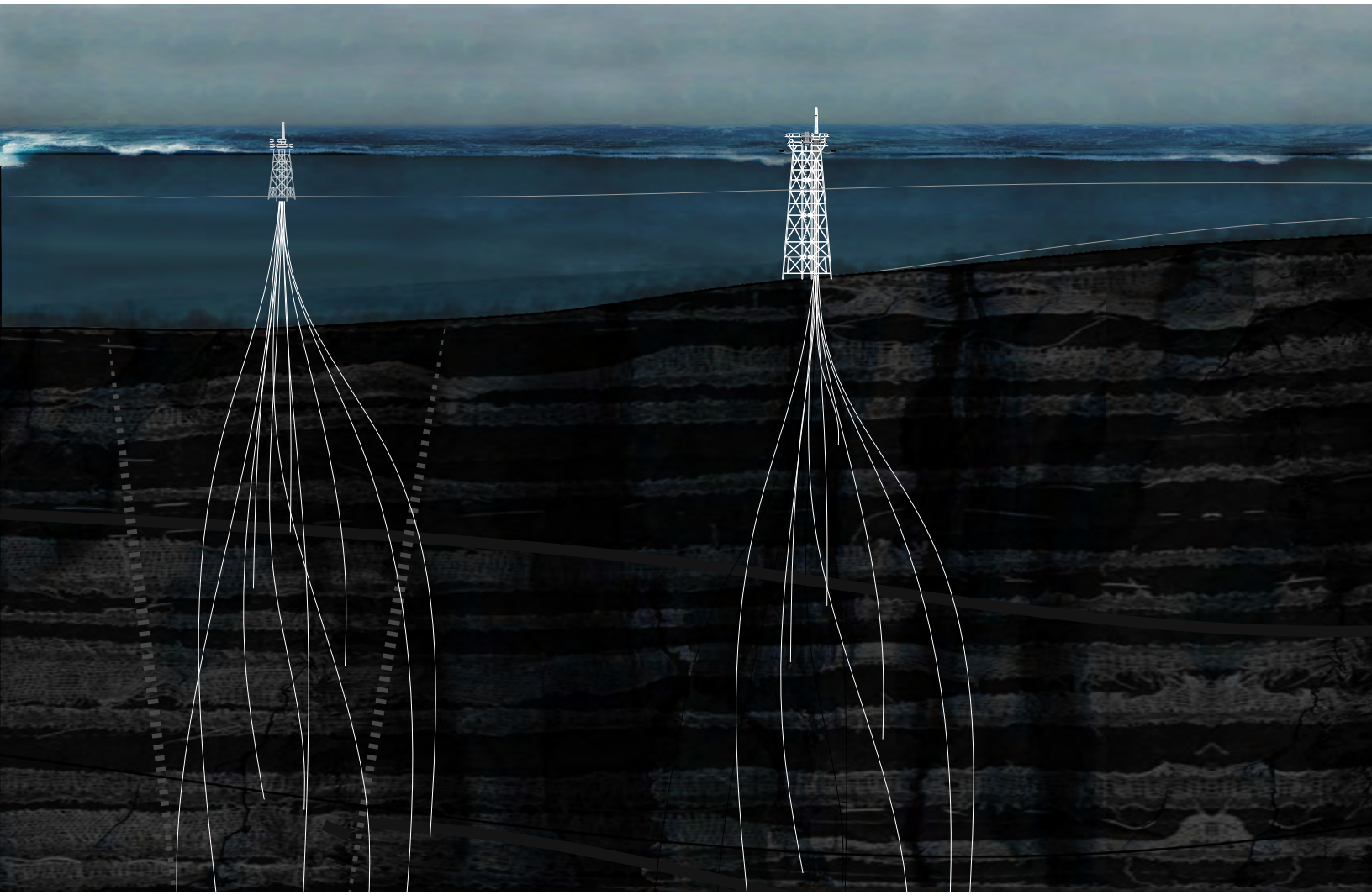
A void is cut, subtracting the central zone of the platform's floorplates, creating both an *interior directionality* through which all inhabitants can engage with one another and an *exterior directionality* with which to engage with the surrounding environment

Drawing 23: Growth of the Tower



The tower grows upwards, outwards, and under the surface, increasing inhabitants' sectional engagement with their environements. As it grows, a second void is created around the derrick, and splitting the tower into two zones of program

Zones of public (open) and private (closed) are created vertically, through layering two open levels (places of gathering, movement and living), and a closed private level (places of individual work, collective facilities and living)

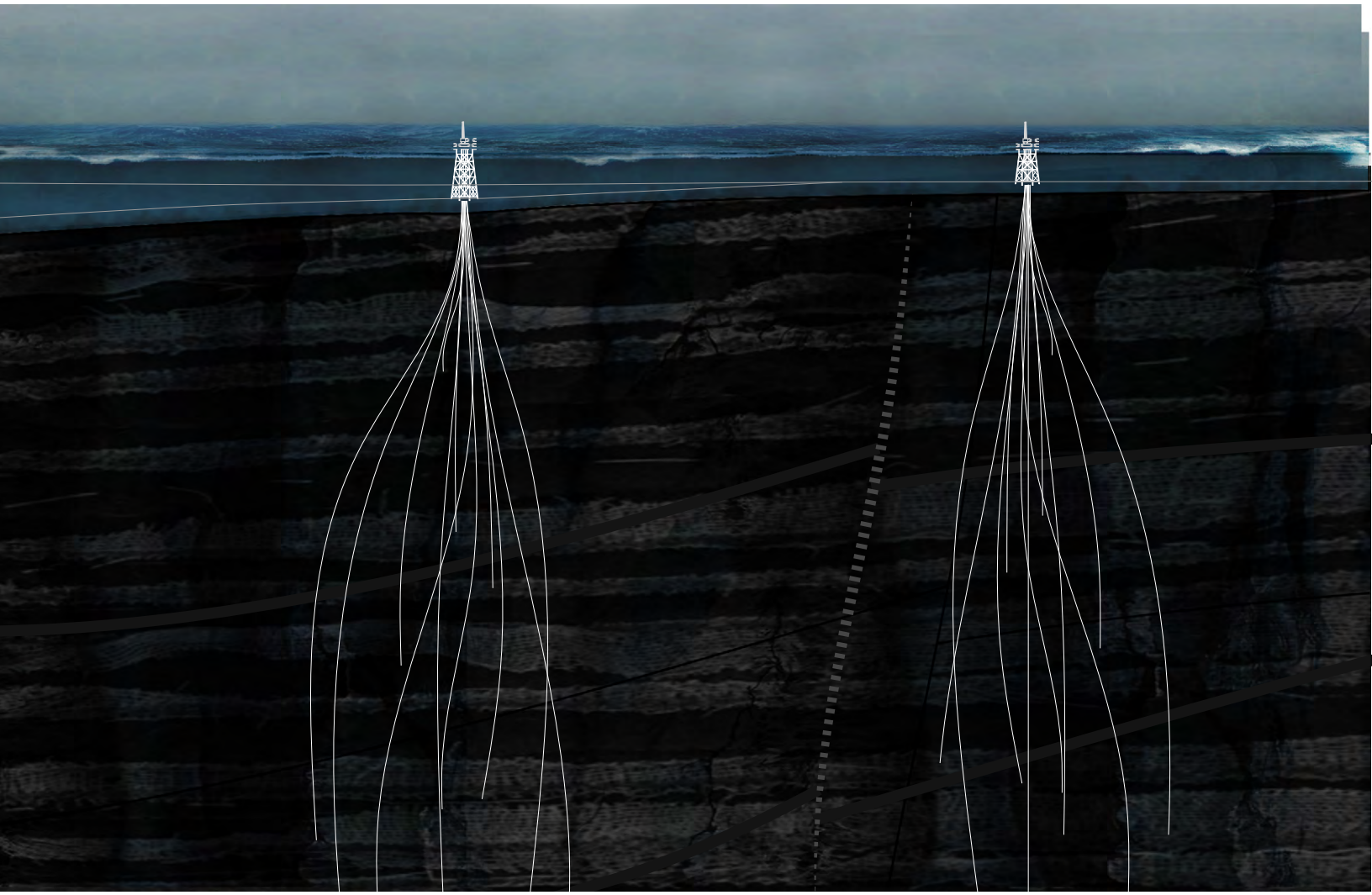


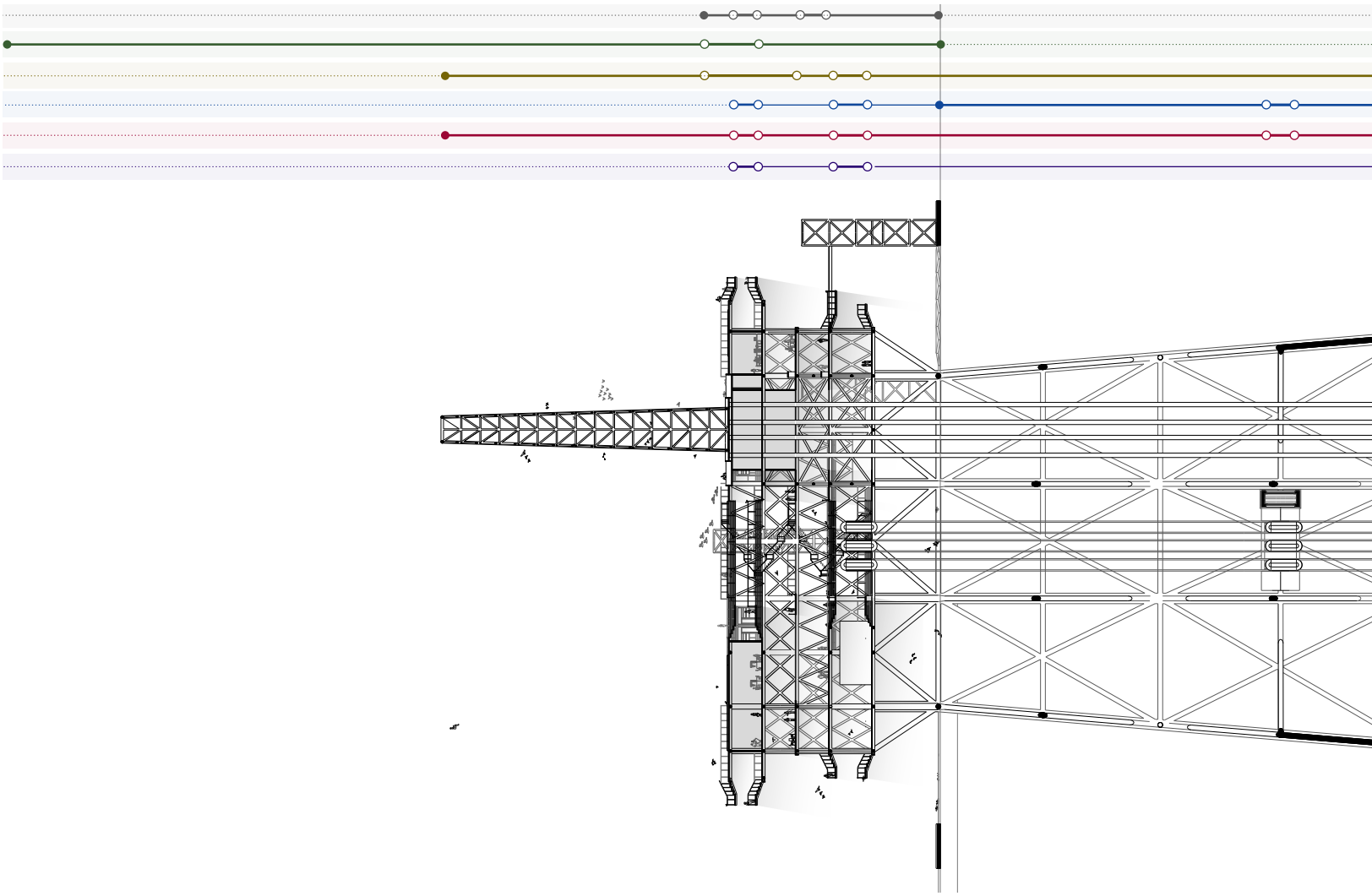
2050

Population max: 30

Sea Level rise: +0.5m [from 2000]

Drawing 24: 2050 Site Section

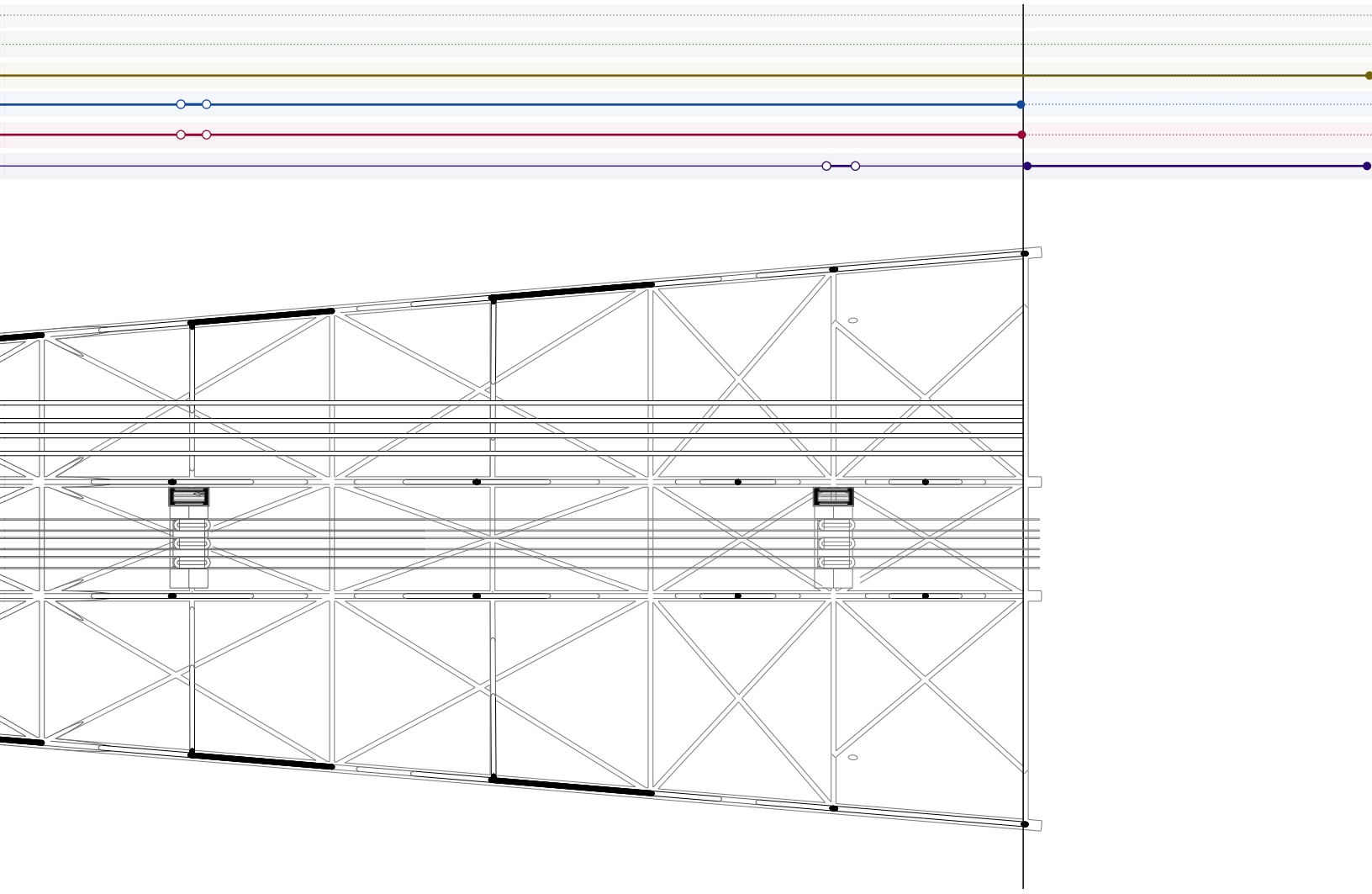




Drawing 25: 2050 Tower Gail Section

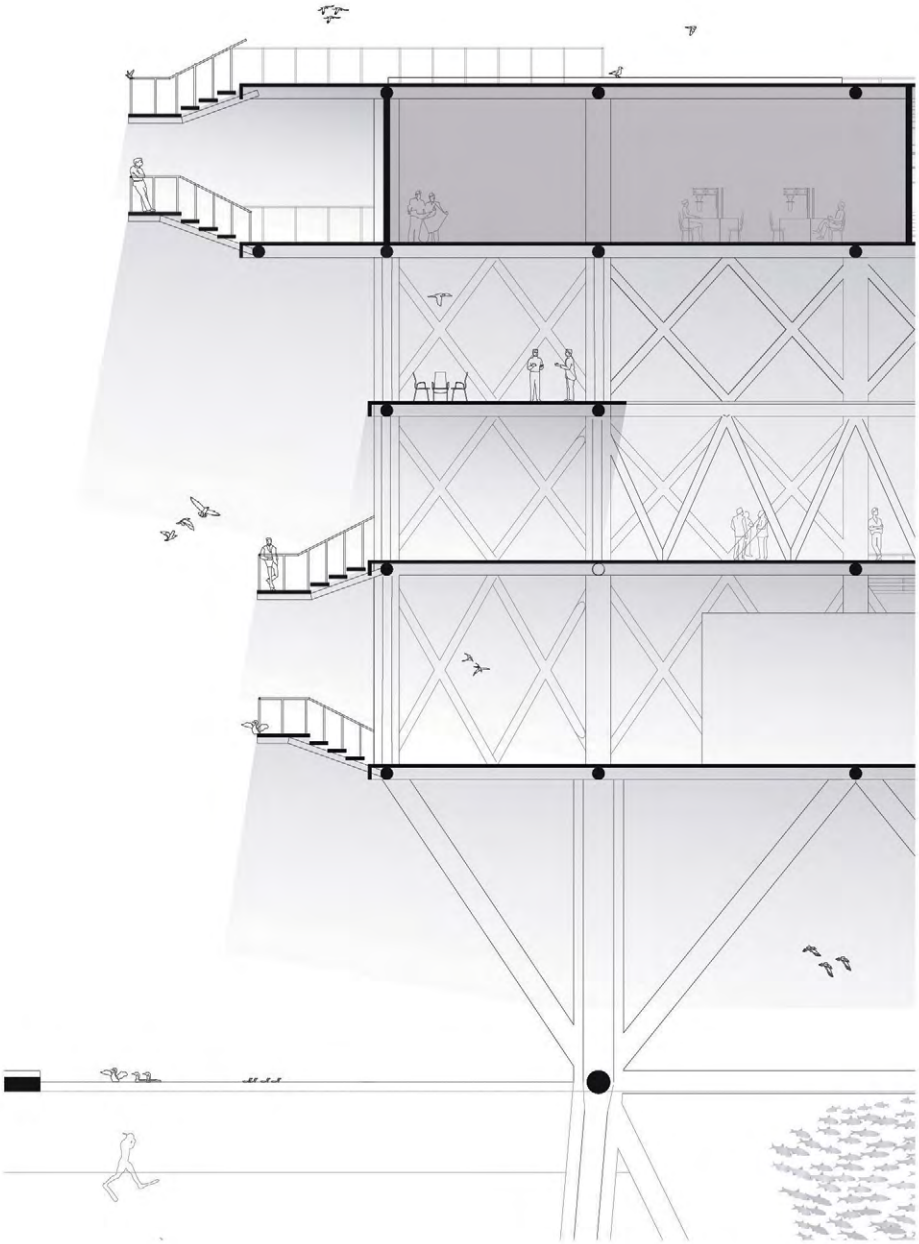
In 2050, the tower is modified through subtraction and infill, providing a cluster of public and private levels that account for zones of reserch, and synthesis of field work on the west half of the platform, and living and boarding on the right. Between them is the central void that deploys vertical and horizontal circulation.

The undersea levels are situated at -55m, -110m, -200m below sea level. The first undersea level is situated above the zone where oxygen toxicity is prevalant, allowing a point for rest, or change of gear. The second undersea level is situated above the zone where professional scuba diving ends and exosuits must be worn, also providing a place for rest and change of gear. The third undersea level is sitated at the threshold between the epipelagic and mesopelagic zones in the ocean, and where lights ceases to penetrate the water, and the nature of the ocean alters dramatically.



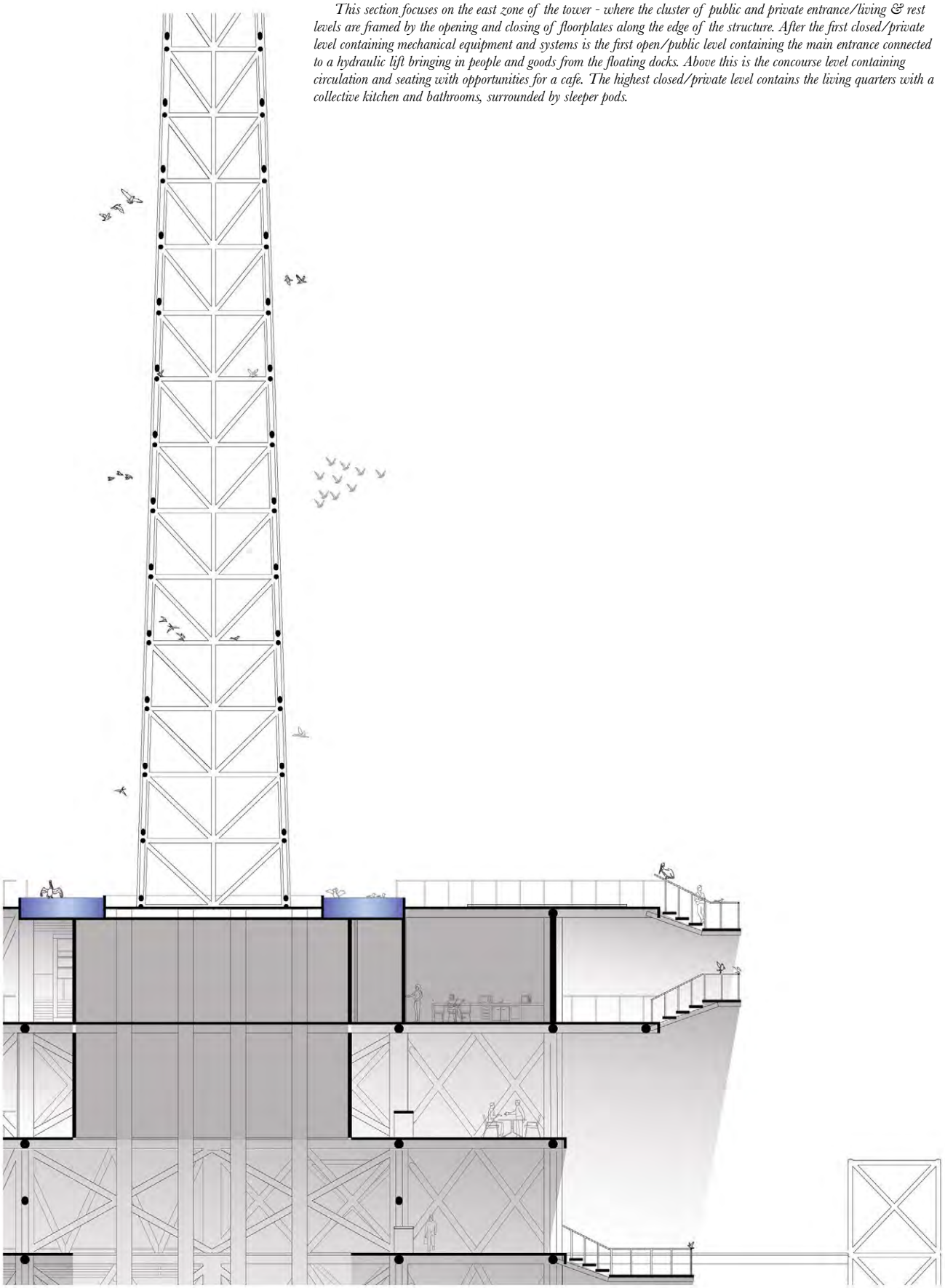
Drawing 26a: Partial section

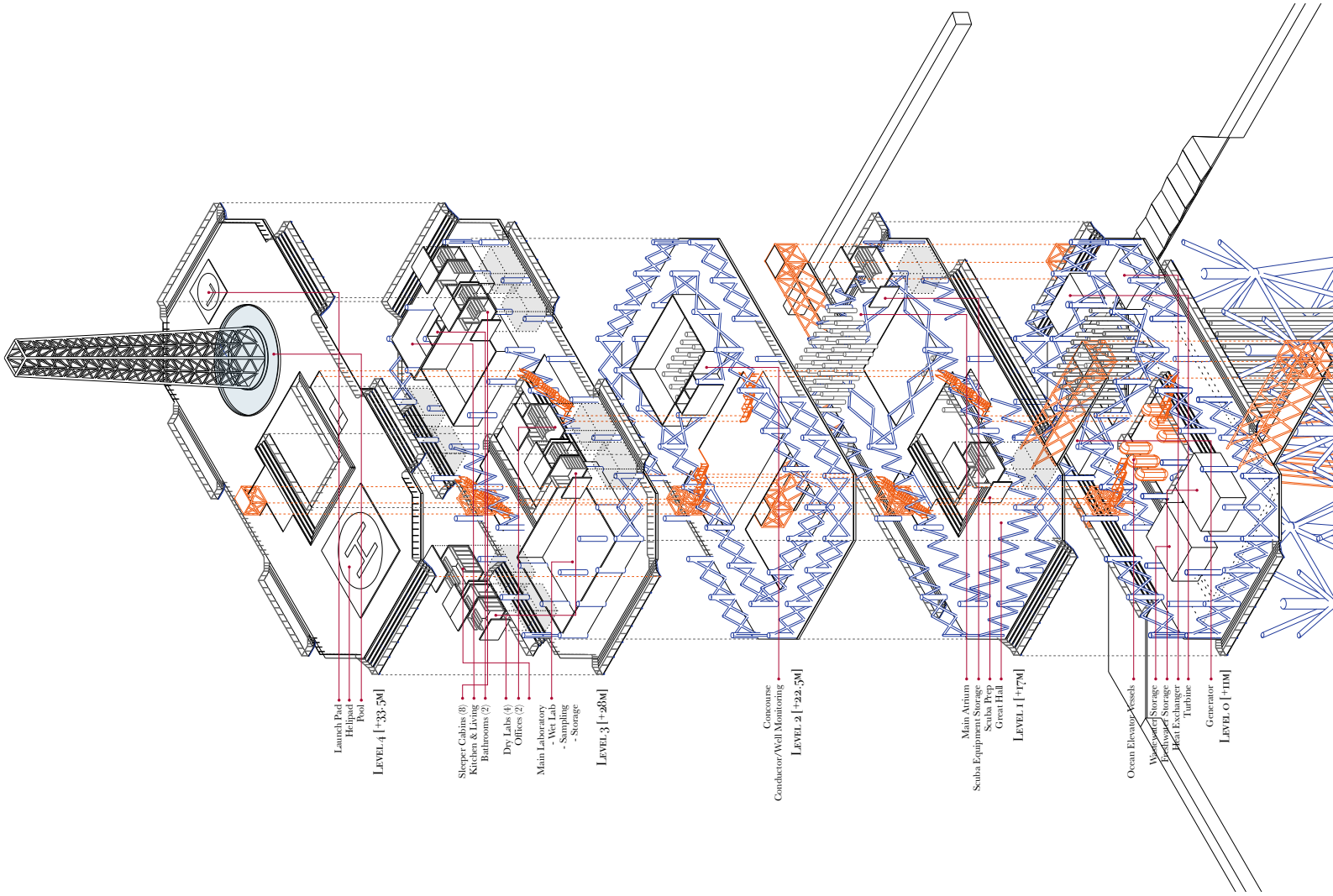
This section focuses on the west zone of the tower - where the cluster of public and private levels work/research levels are framed by the opening and closing of floorplates along the edge of the structure. The first closed/private level is the mechanical and systems level. Above that is the first open/public level containing the Great Hall and facilities for scuba diving. The public level is double height except along the concourse and circulation level above. The second closed private level contains the Main Laboratory with dry labs and offices surrounding it.



Drawing 26b: Partial section

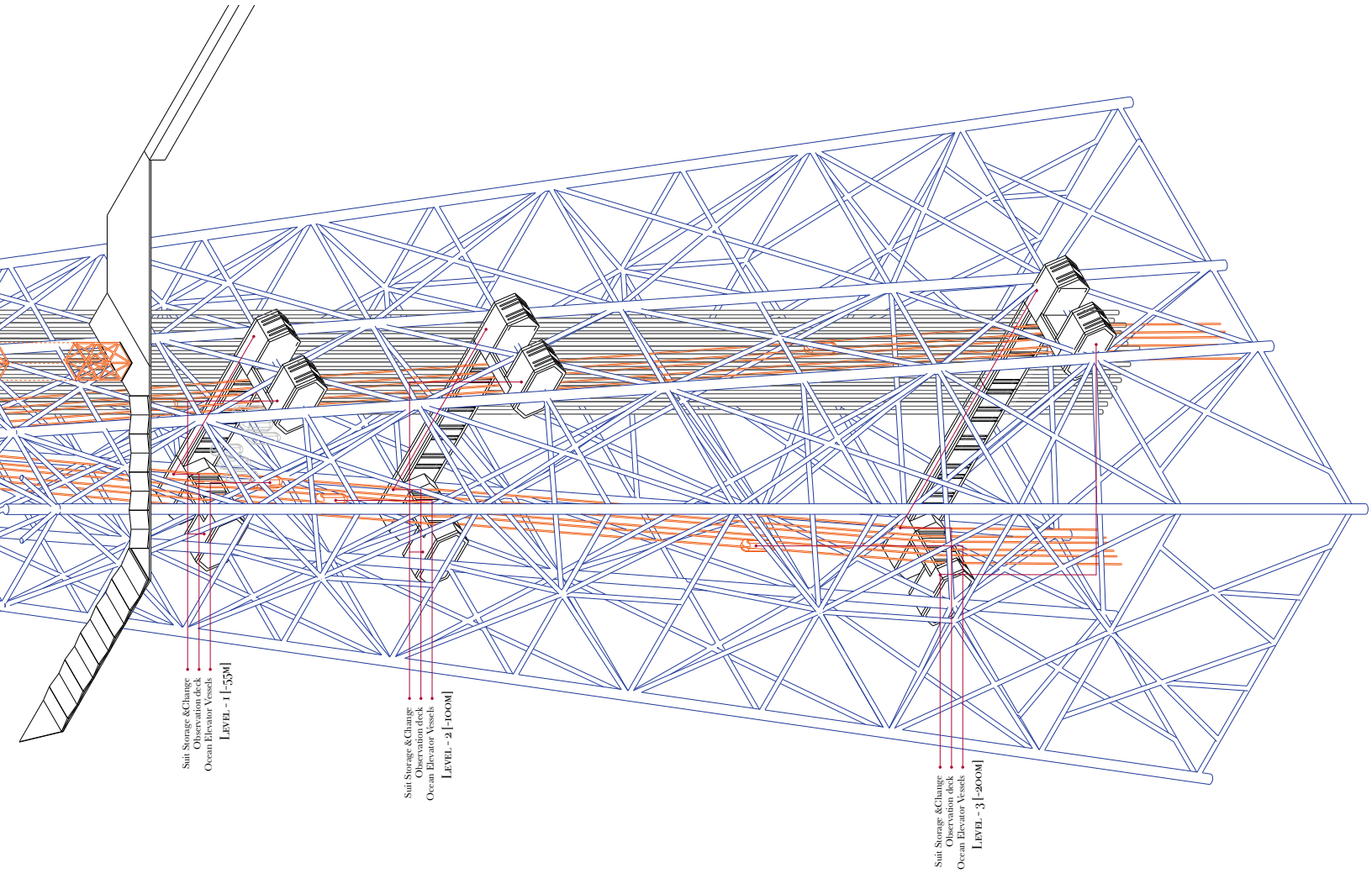
This section focuses on the east zone of the tower - where the cluster of public and private entrance/living & rest levels are framed by the opening and closing of floorplates along the edge of the structure. After the first closed/private level containing mechanical equipment and systems is the first open/public level containing the main entrance connected to a hydraulic lift bringing in people and goods from the floating docks. Above this is the concourse level containing circulation and seating with opportunities for a cafe. The highest closed/private level contains the living quarters with a collective kitchen and bathrooms, surrounded by sleeper pods.

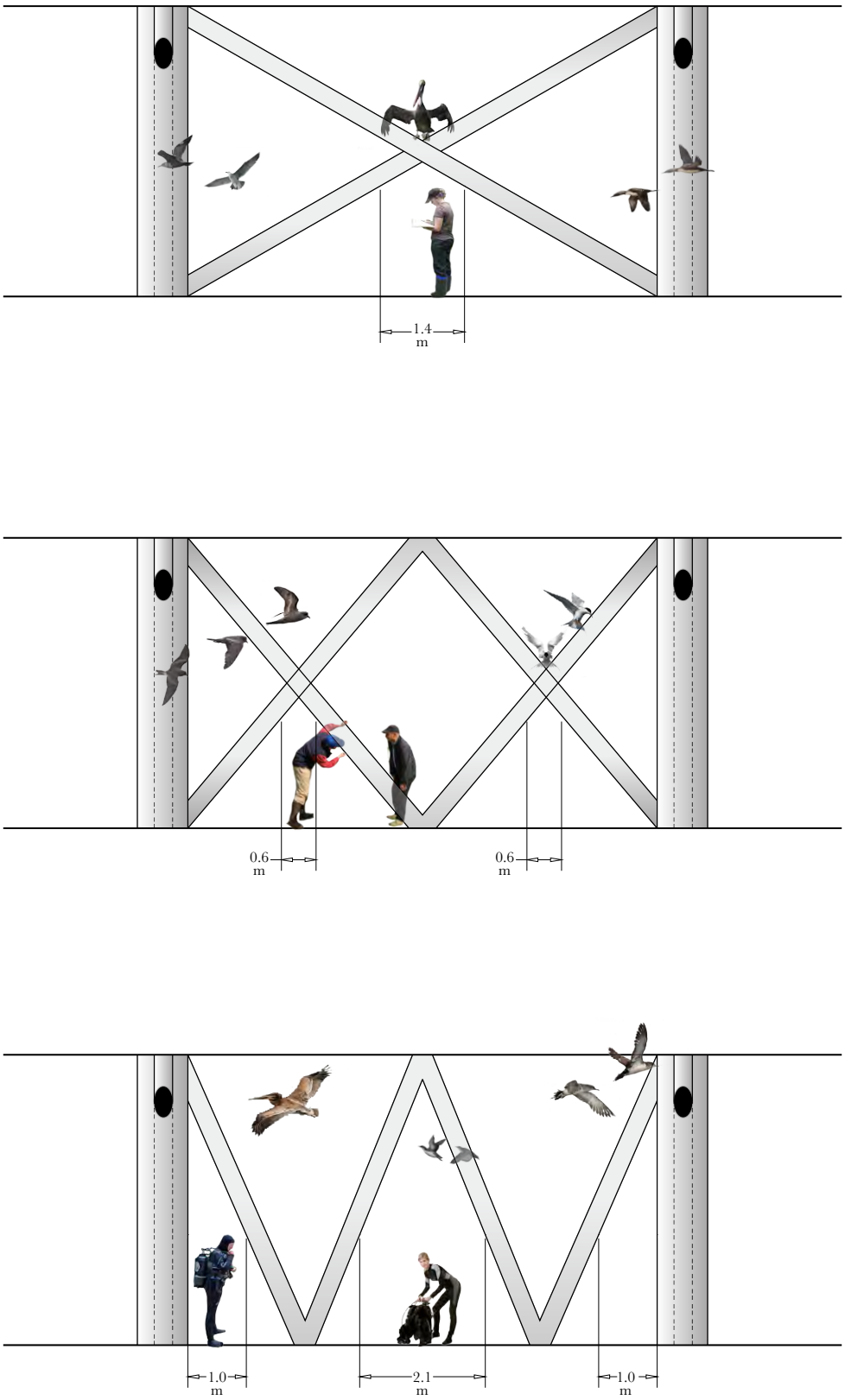




Drawing 27: 2050 Axonometric breakdown (program, circulation, structure) [foldout]

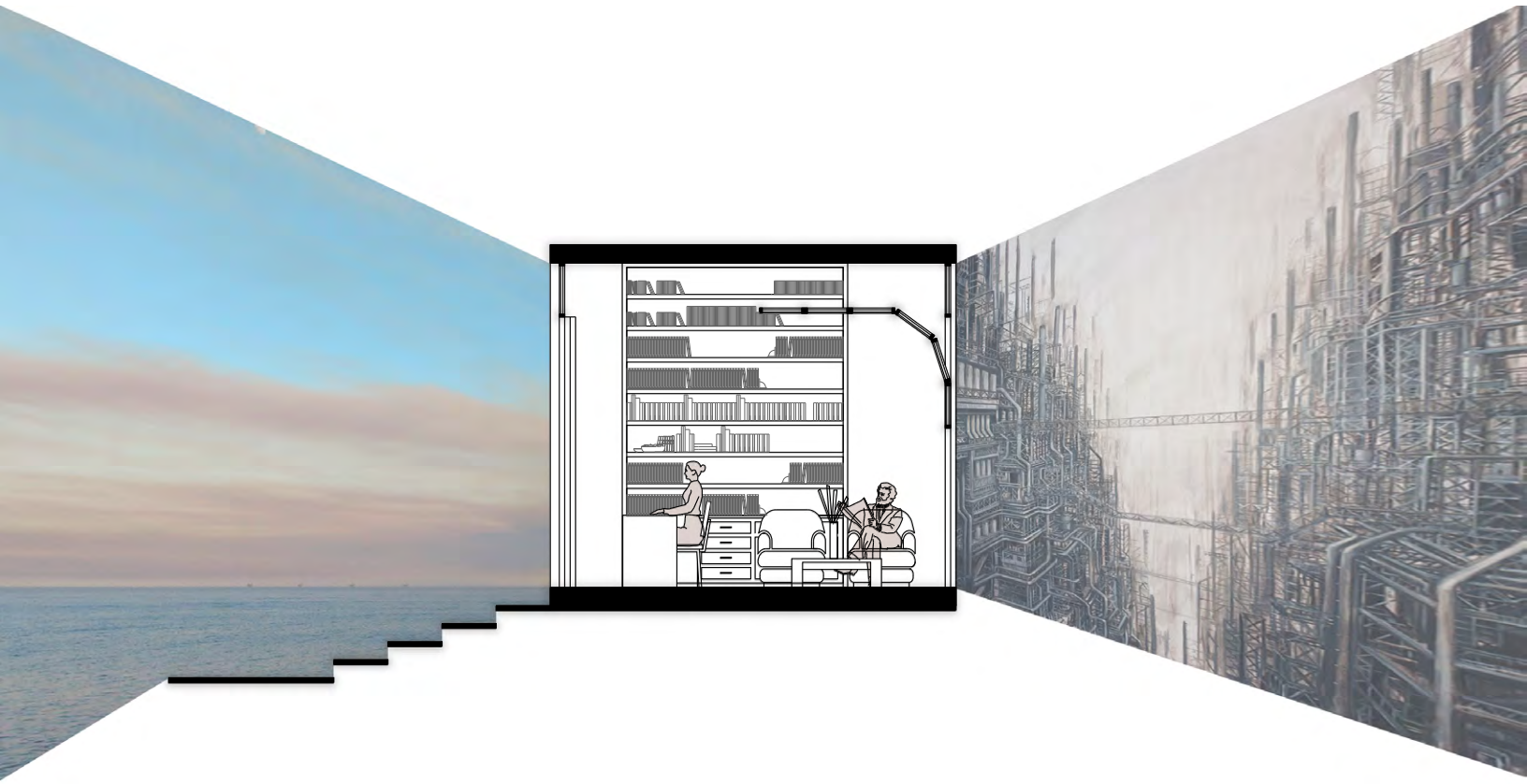
This drawing shows the breakdown of program in all the closed and open spaces on the platform. Orange designates circulatory elements and blue structural elements. Ocean vessels are deployed into the water from Level 0 (mechanical & systems) down to the undersea levels. The roof contains a Helipad for air access and two Launchpads for the deployment of scientific ballons. A pool is built around the derrick attracting passing birds, encouraging their perching and nesting habits.


Suit Storage &Change
Observation deck
Ocean Elevator Vessels
Level - 1 [-55m]
Suit Storage &Change
Observation deck
Ocean Elevator Vessels
Level - 2 [-100m]
Suit Storage &Change
Observation deck
Ocean Elevator Vessels
Level - 3 [-200m]



Drawing 28: Spatial studies of thresholds

The original platforms contained a logic of thresholds and barriers using various cross-bracing amongst the columns. Carrying that forward, there are three types of cross bracing used as structural support and types of thresholds between public, private and collective spaces. Each type of threshold has its own abilities of passing for different species and surrounding elements of weather. A grandness in scale and open space is called upon to evoke a sense of being within something greater than one self, affecting the inhabitant's sense of aesthetic compression with their surroundings.

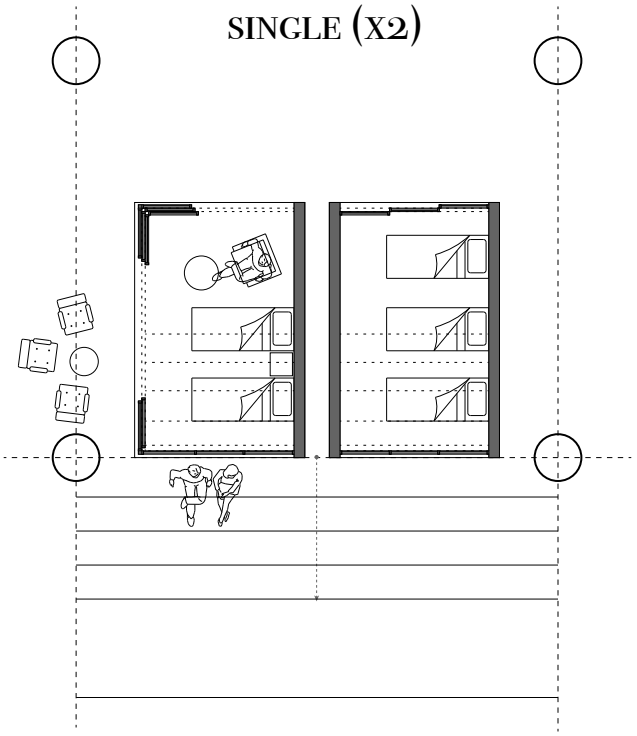


Drawing 29: Schematic for above water pods

Most private program (excepting the main lab, kitchens, bathrooms and mechanical) are situated in pods of modular dimensions assembled from shipping containers (pods are 3mx4.5mx4m or 6mx4.5mx4m). The north and south facades of the pods are glazed with operable partitions, giving the pod two faces: one to step out towards the open ocean and the other to step inwards towards the machine of the platform

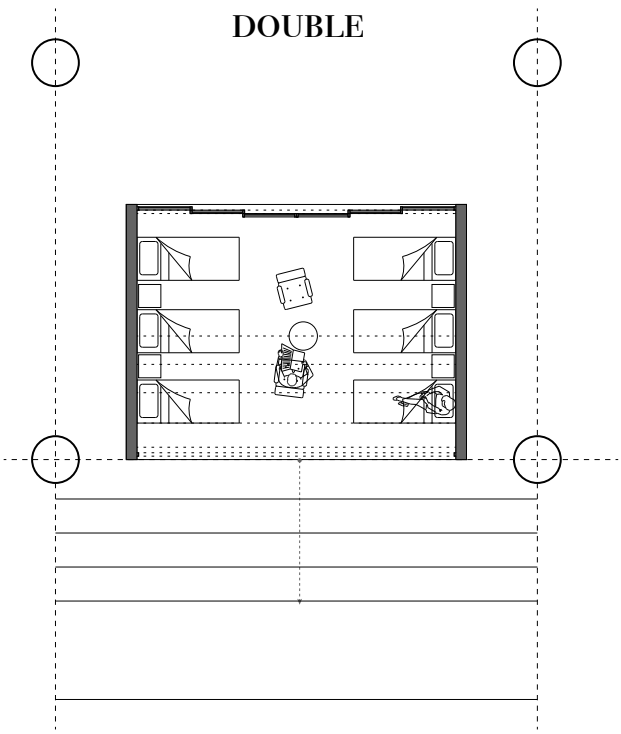
SHARED SLEEPERS

SINGLE (X2)



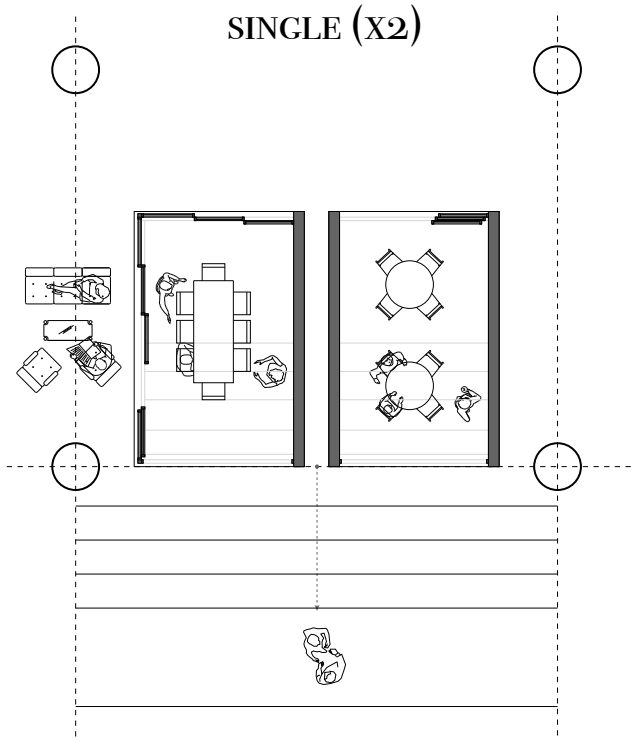
SHARED SLEEPERS

DOUBLE



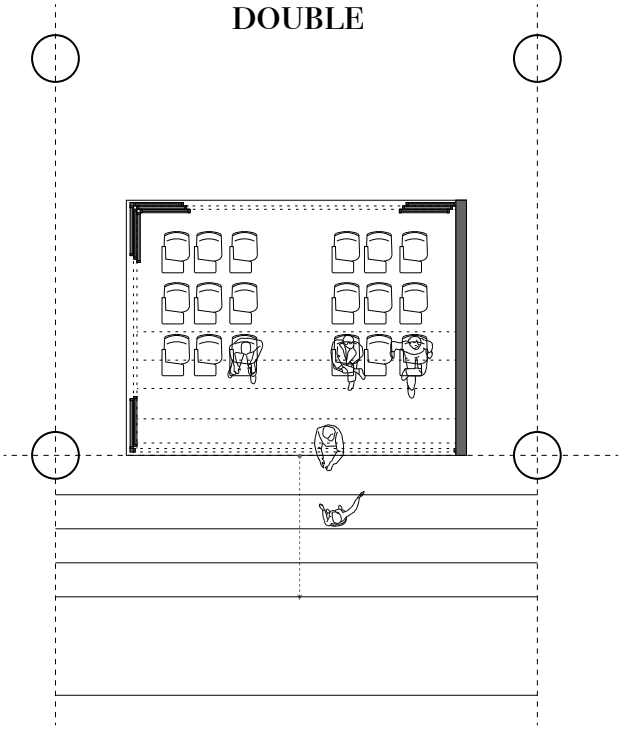
CLASSROOMS

SINGLE (X2)



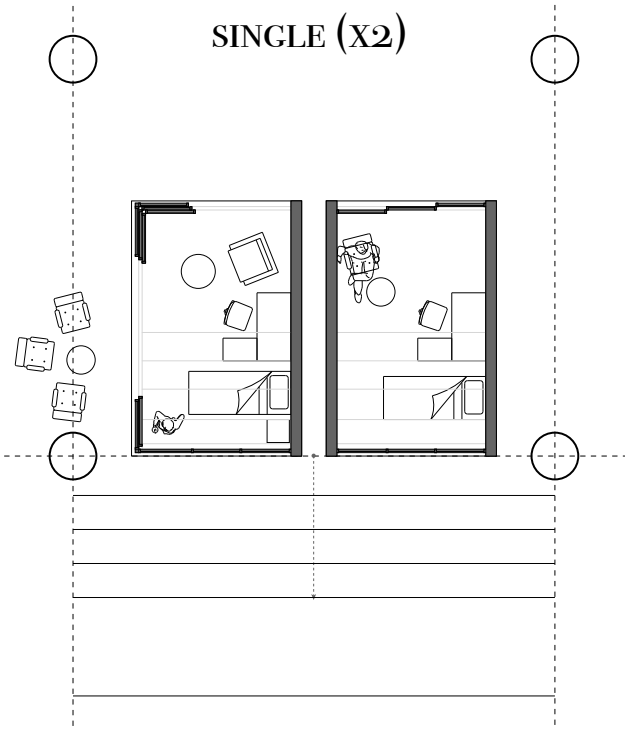
CLASROOMS

DOUBLE

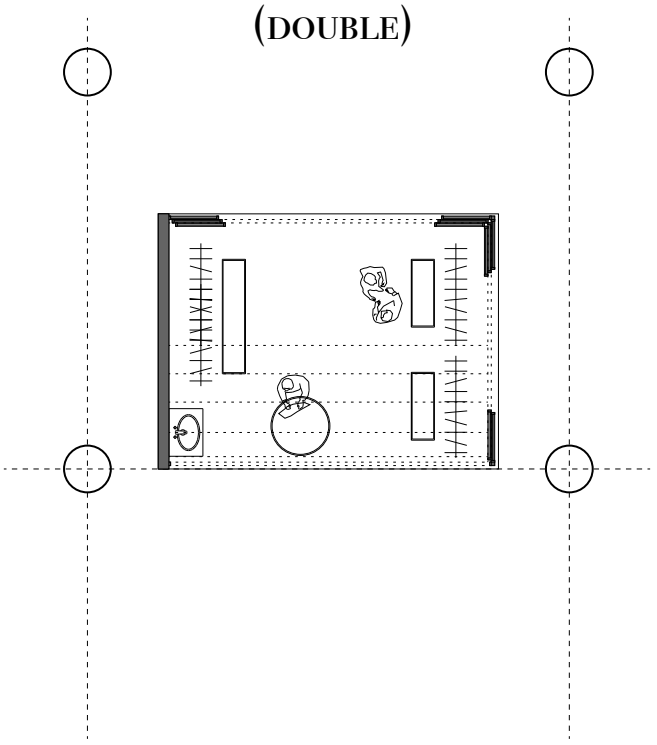


Drawing 30: Enlarged POD Plans for all programs

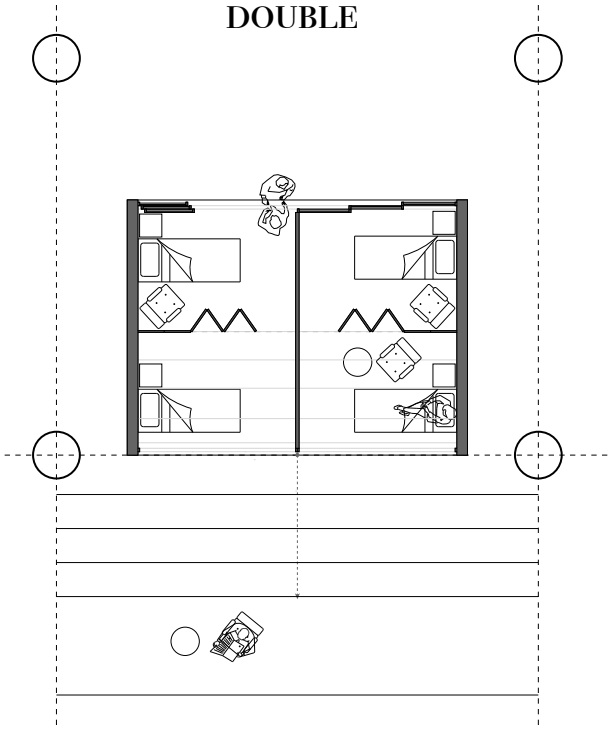
PRIVATE SLEEPERS
SINGLE (X2)



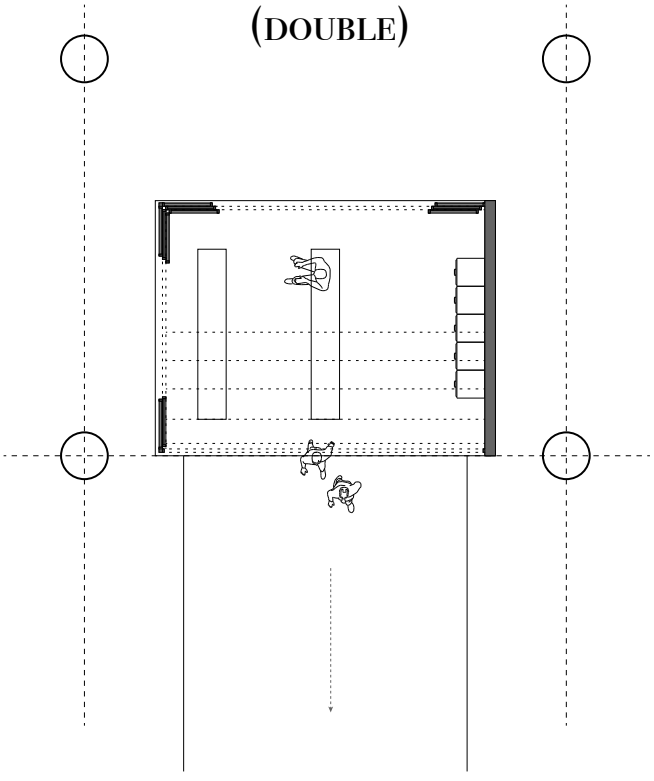
SCUBA STORAGE
(DOUBLE)



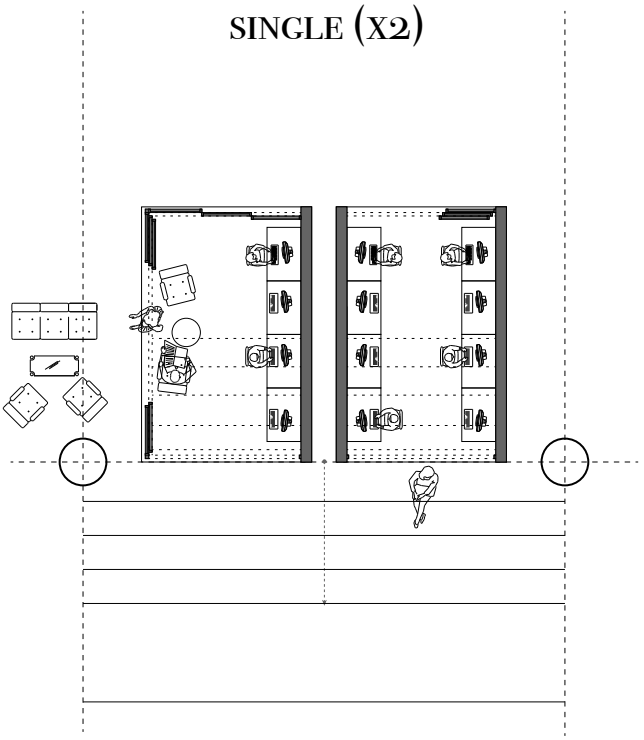
PRIVATE SLEEPERS
DOUBLE



SCUBA CHANGE
(DOUBLE)



OFFICES
SINGLE (X2)



OFFICES
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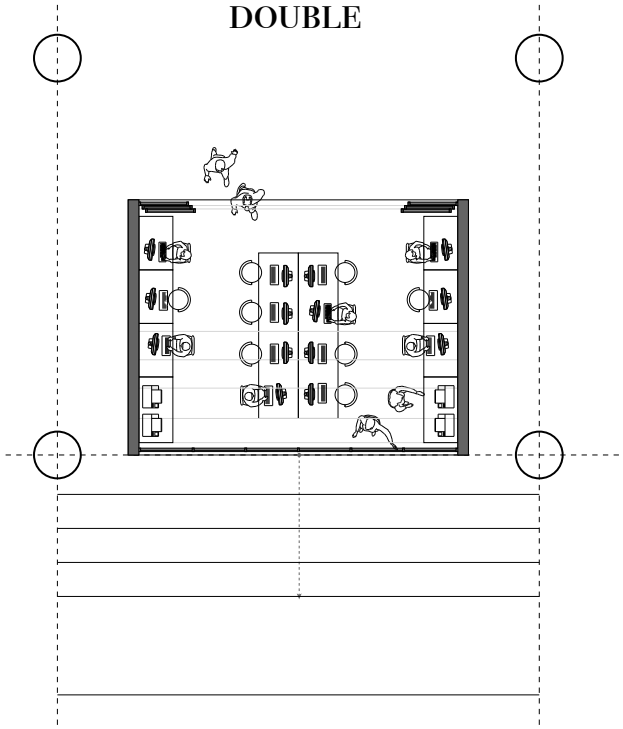
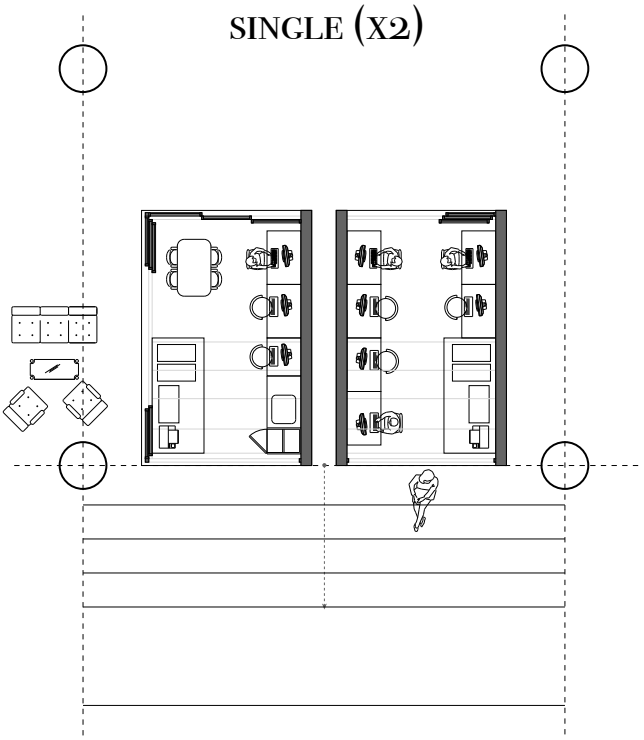
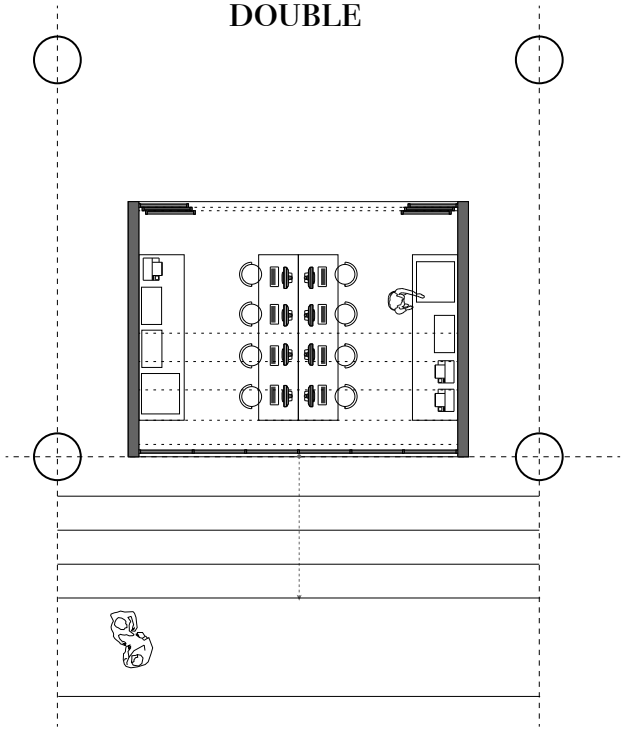


DRY LABS
SINGLE (X2)

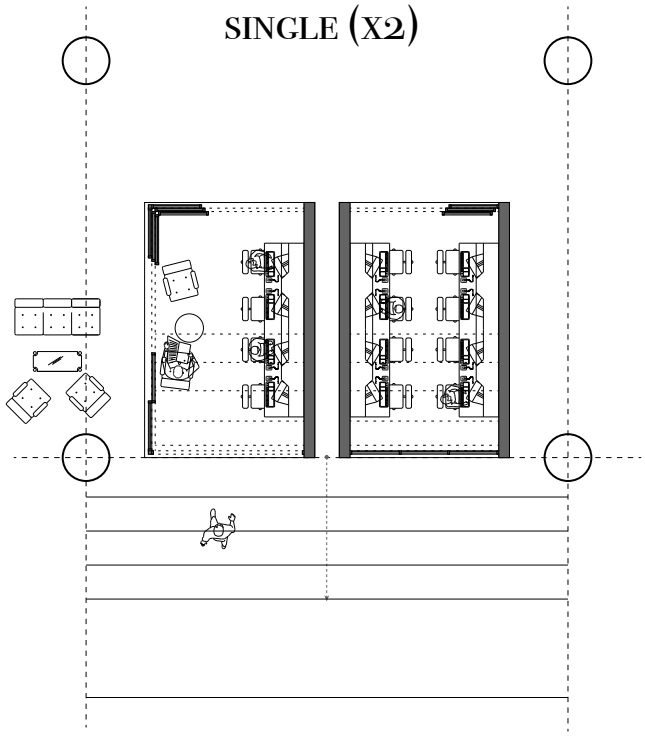


DRY LABS
DOUBLE



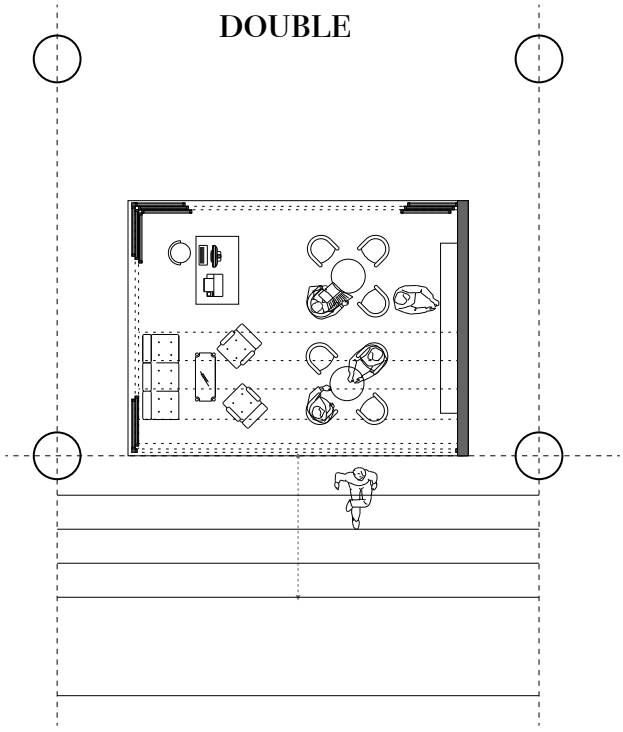
COMPUTER LAB

SINGLE (X2)



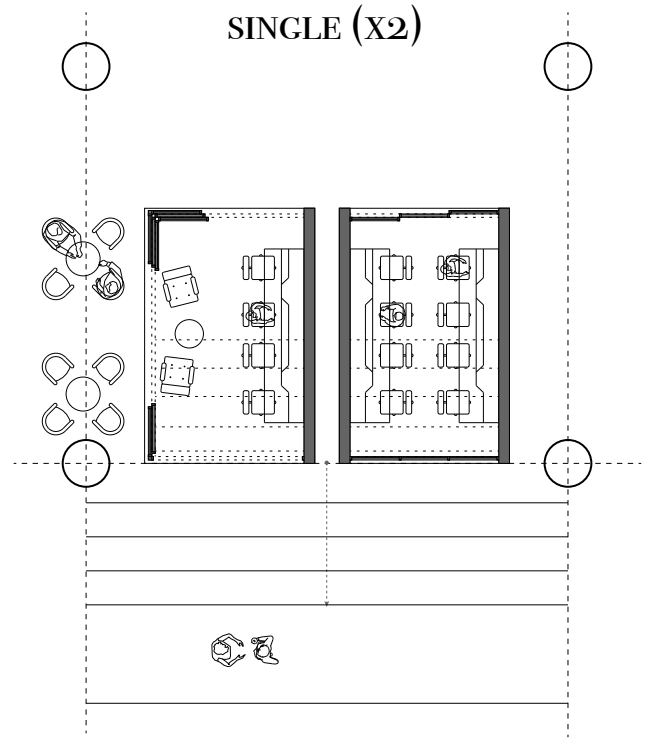
READING ROOM

DOUBLE



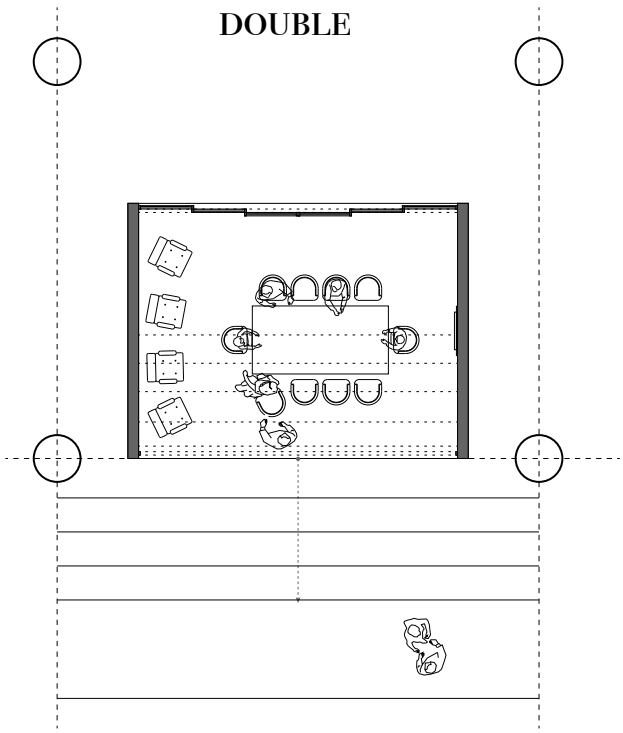
INDEPENDANT WORK/STUDY

SINGLE (X2)



MEETING ROOMS

DOUBLE



Drawing 31: Species List/Transverse Sectional Perspective

In the Politics of Nature, *Bruno Latour points out that the sciences exist in a two house collective of Nature - the assembly of things, and Society - the assembly of people, split and solidified to aid the production of absolute facts. Instead, he calls to remove this split, summoning and welcoming non-humans into the world of the collective in process of exploration. This new model brings forward a social world not as a prison, such as seen from Plato's cave, but a social world as association, one that forsakes the old distinctions between subject and object and instead opens a throughway of exchange between humans and non-humans.**

This drawing looks to situate the forces of life in a horizontal ontology amongst its fellow human and non-human forces of energy and matter by identifying all species

*Latour, Bruno. Politics of Nature : How to Bring the Sciences into Democracy. Cambridge, Mass. ; London: Harvard University Press, 2004, pp.37.

SEABIRDS

Black Vented Shearwater
(Puffinus opisthomelas)

Native to the site, this seabird is a colonial nester that is most common on the site during colder months. It comes closer to shore than other Shearwaters and generally prefers warmer waters. Spotted often in the fall, it flies with rapid wingbeats and short, low glides.
(eats small fish)

Wingspan: 89cm
Length: 38cm

Xantus (Scripps) Murrelet
(Synthliboramphus hypoleucus hypoleucus & Synthliboramphus hypoleucus scrippsi)

Native to the site, this is a small seabird that breeds on the Channel Islands, one of its largest colonies being on Santa Barbara Island. It feeds at sea, often with large pelagic fish, on larval fish. They are mostly observed in pairs, even during non-breeding seasons.
(eats anchovies, sardines, rockfish)

Length: 25cm
Wingspan: 40cm

Black Storm Petrel
(Oceanodroma melania)

Native to the site, this seabird breeds on the Channel Islands, and off the Baja Peninsula and Gulf of Mexico. It builds its colonies nocturnally to stay away from predatory birds. It usually forages alone, diving to 1m below the surface from flight or swim.
(feeds on planktonic crustaceans, lobster larvae, and small fish. Fed on by gulls and larger birds)

Wingspan: 51cm
Length: 23cm

Pacific Loon
(Gavia pacifica)

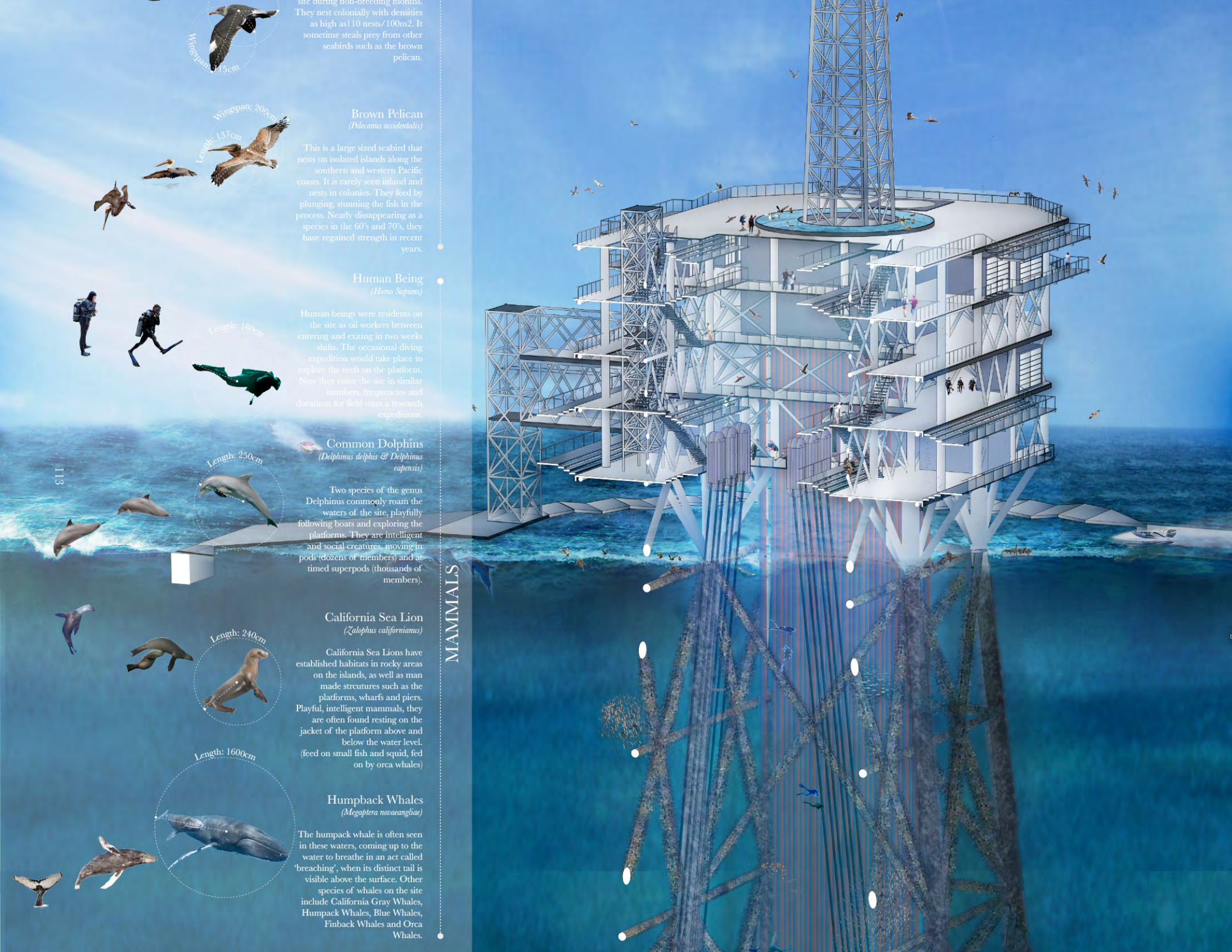
This is a medium sized seabird that spends its winters at sea on the site and returns to Arctic tundra lakes for three months in the summers to breed. It is an expert diver, catching its prey underwater. It requires 30-50m of open water to take flight and cannot take flight from land.
(feeds on fish and acquatic invertebrates)

Length: 74cm
Wingspan: 128cm

Heermanns Gull
(Larus heermanni)

This is a medium to large sized seabird that nests in the Gulf of California and are present on the

Length: 53cm



site during non-breeding months. They nest colonially with densities as high as110 nests/100m2. It sometime steals prey from other seabirds such as the brown pelican.

Brown Pelican
(Pelecanus occidentalis)

This is a large sized seabird that nests on isolated islands along the southern and western Pacific coasts. It is rarely seen inland and nests in colonies. They feed by plunging, stunning the fish in the process. Nearly dissappearing as a species in the 60's and 70's, they have regained strength in recent years.

Human Being
(Homo Sapiens)

Human beings were residents on the site as oil workers between entering and exiting in two weeks shifts. The occasional diving expedition would take place to explore the reefs on the platform. Now they enter the site in similar numbers, frequencies and durations for field stays a research expeditions.

Common Dolphins
(Delphinus delphis & Delphinus capensis)

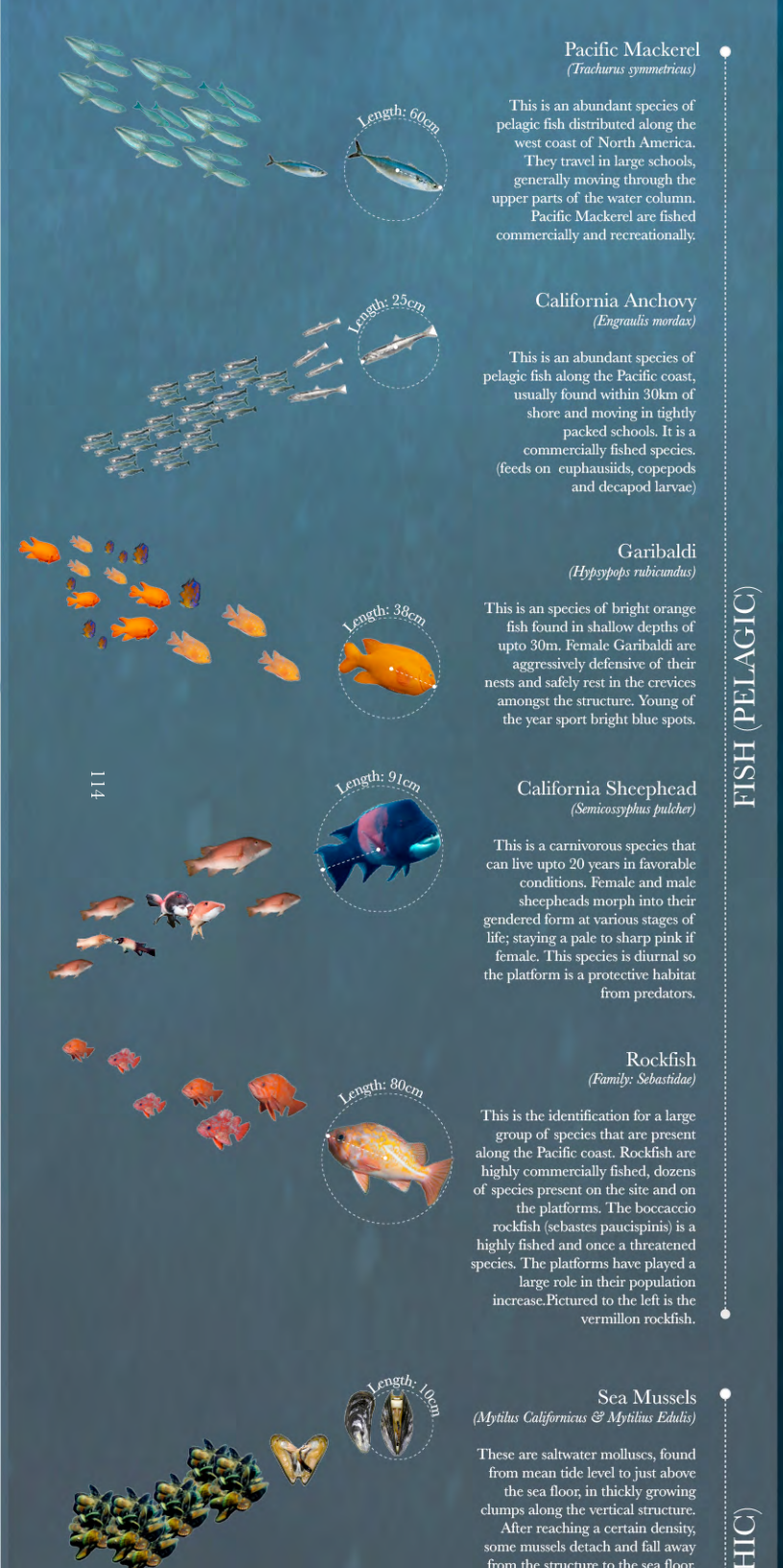
Two species of the genus Delphinus commonly roam the waters of the site, playfully following boats and exploring the platforms. They are intelligent and social creatures, moving in pods (dozens of members) and at timed superpods (thousands of members).

California Sea Lion
(Zalophus californianus)

California Sea Lions have established habitats in rocky areas on the islands, as well as man made strcutures such as the platforms, wharfs and piers. Playful, intelligent mammals, they are often found resting on the jacket of the platform above and below the water level. (feed on small fish and squid, fed on by orca whales)

Humpback Whales
(Megaptera novaeangliae)

The humpack whale is often seen in these waters, coming up to the water to breathe in an act called 'breaching', when its distinct tail is visible above the surface. Other species of whales on the site include California Gray Whales, Humpack Whales, Blue Whales, Finback Whales and Orca Whales.



Pacific Mackerel
(Trachurus symmetricus)

This is an abundant species of pelagic fish distributed along the west coast of North America. They travel in large schools, generally moving through the upper parts of the water column. Pacific Mackerel are fished commercially and recreationally.

California Anchovy
(Engraulis mordax)

This is an abundant species of pelagic fish along the Pacific coast, usually found within 30km of shore and moving in tightly packed schools. It is a commercially fished species. (feeds on euphausiids, copepods and decapod larvae)

Garibaldi
(Hypsypops rubicundus)

This is an species of bright orange fish found in shallow depths of upto 30m. Female Garibaldi are aggressively defensive of their nests and safely rest in the crevices amongst the structure. Young of the year sport bright blue spots.

California Sheephead
(Semicossyphus pulcher)

This is a carnivorous species that can live upto 20 years in favorable conditions. Female and male sheepheads morph into their gendered form at various stages of life; staying a pale to sharp pink if female. This species is diurnal so the platform is a protective habitat from predators.

Rockfish
(Family: Sebastidae)

This is the identification for a large group of species that are present along the Pacific coast. Rockfish are highly commercially fished, dozens of species present on the site and on the platforms. The boccaccio rockfish (sebastes paucispinis) is a highly fished and once a threatened species. The platforms have played a large role in their population increase.Pictured to the left is the vermillon rockfish.

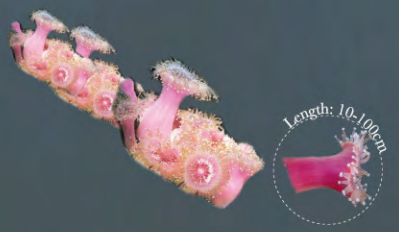
FISH (PELAGIC)

Sea Mussels
(Mytilus Californicus & Mytilius Edulis)

These are saltwater molluscs, found from mean tide level to just above the sea floor, in thickly growing clumps along the vertical structure. After reaching a certain density, some mussels detach and fall away from the structure to the sea floor

HIC)

feeding preying invertebrates like sea stars.

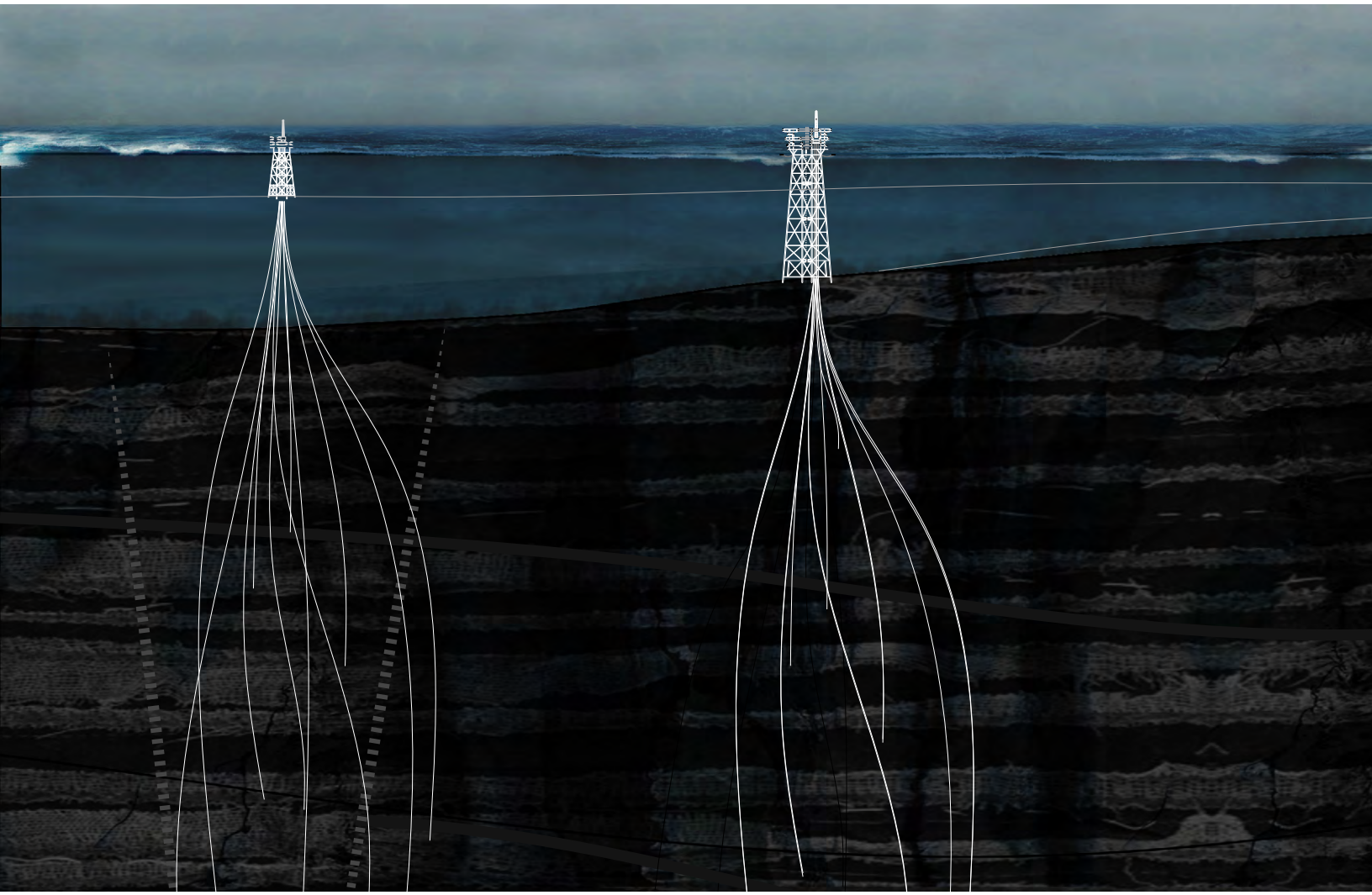


Sea Anemones
(Corynactis Californica)

Found at the bottoms of the structure, these stinging anemones are flexible invertebrates attached to the structure. They extend and retract their bodies out to catch prey like small fish.

Sea Stars
(Pisaster ochraceus & Pisaster giganteus)

Found at the bottom of the ocean, this species rests on rocky or sandy surfaces, forming the top layer of the shell mounds present around the platform. They feed on the falling sea mussls from above. (22cm)

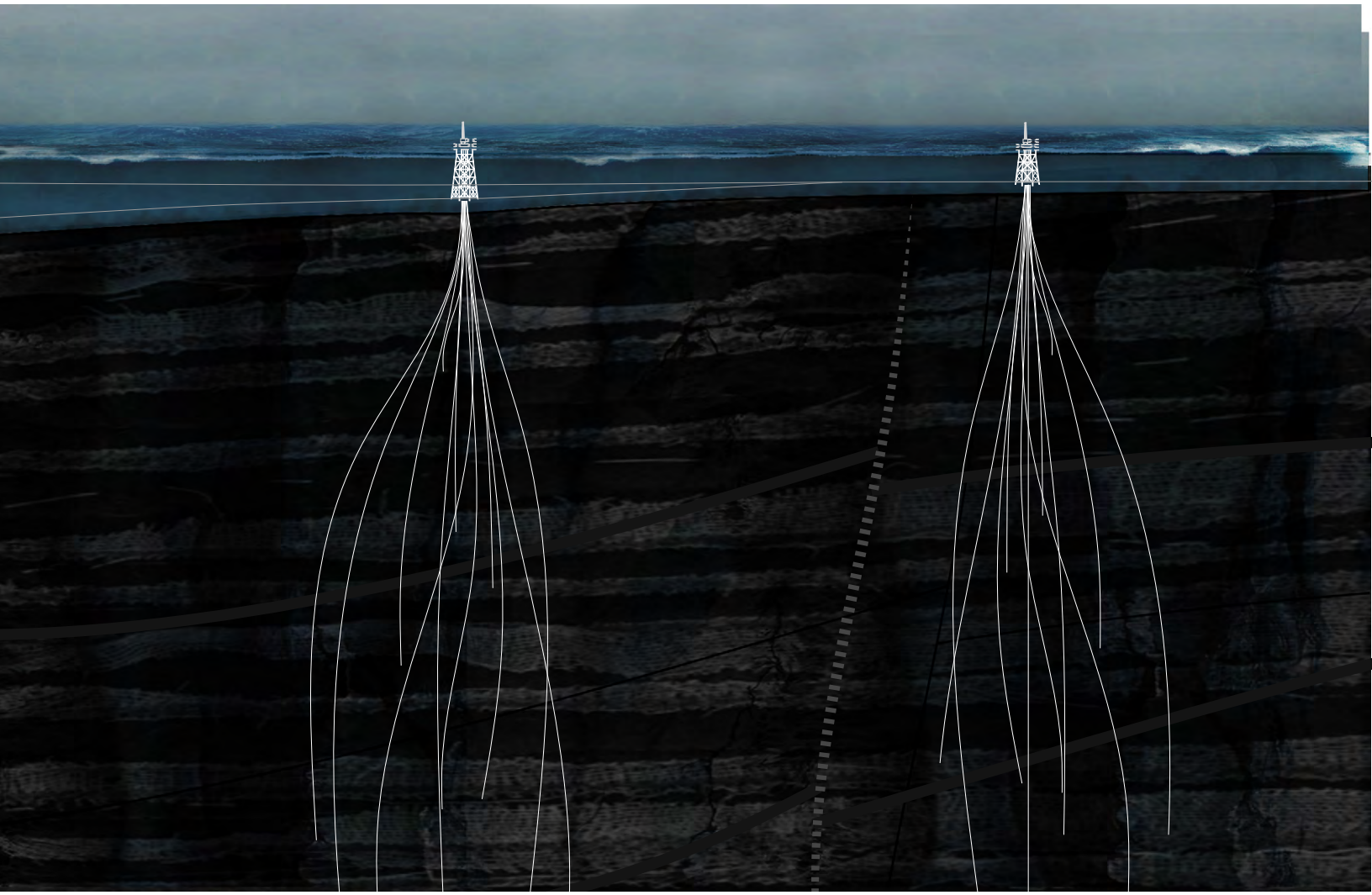


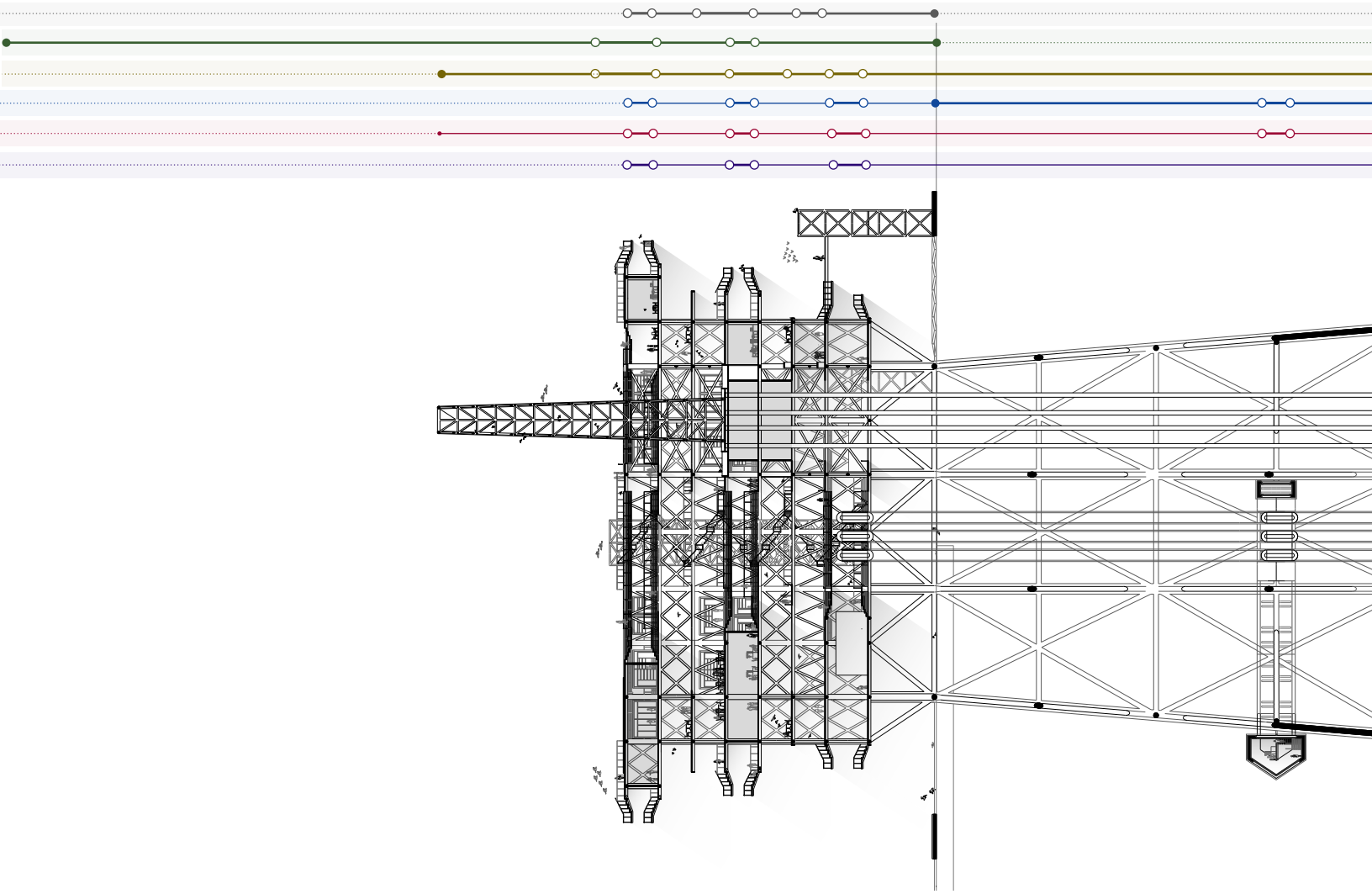
2100

Population: max. 60

Sea Level rise: +1m [from 2000]

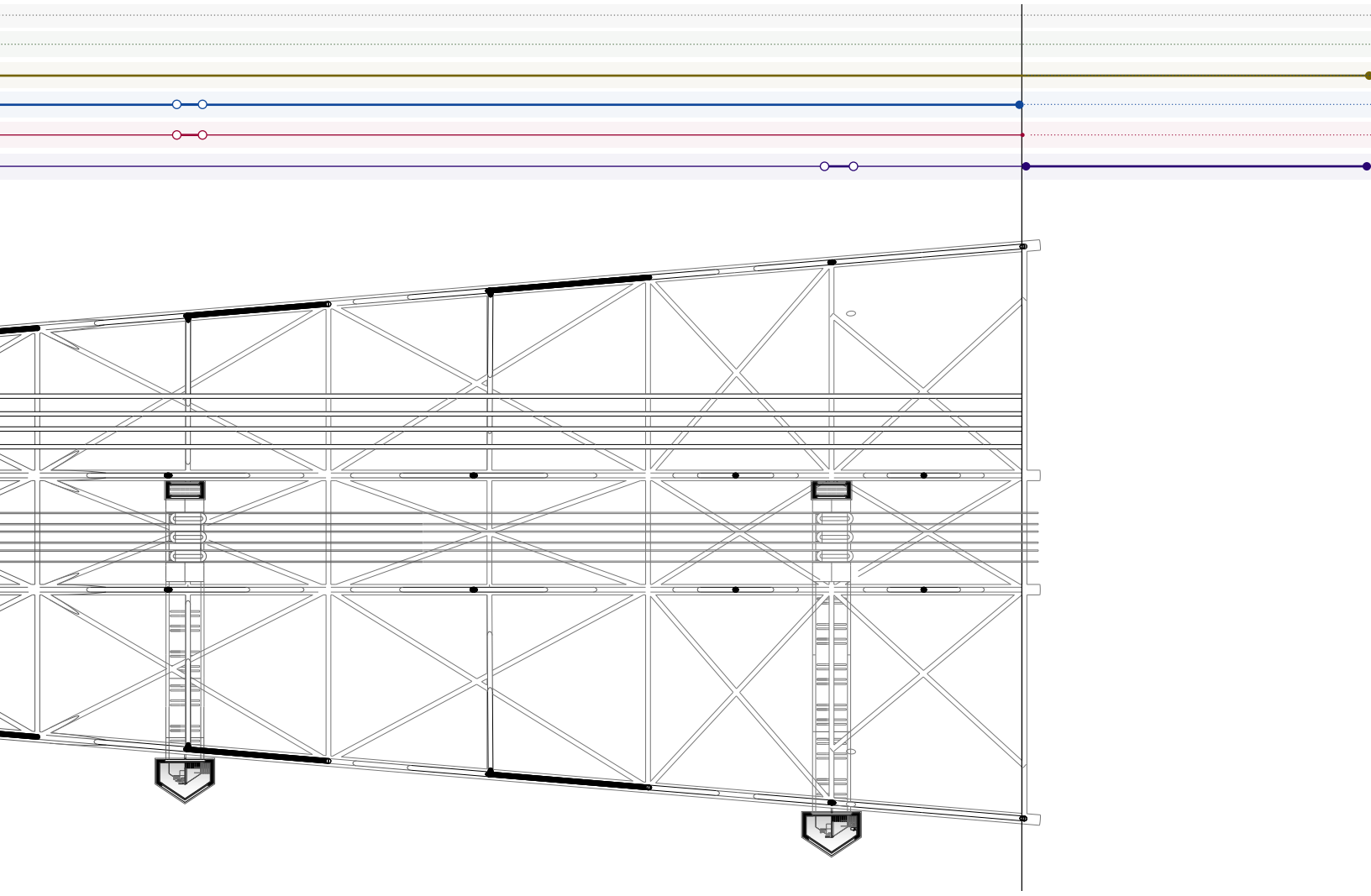
Drawing 32: 2100 Site Section





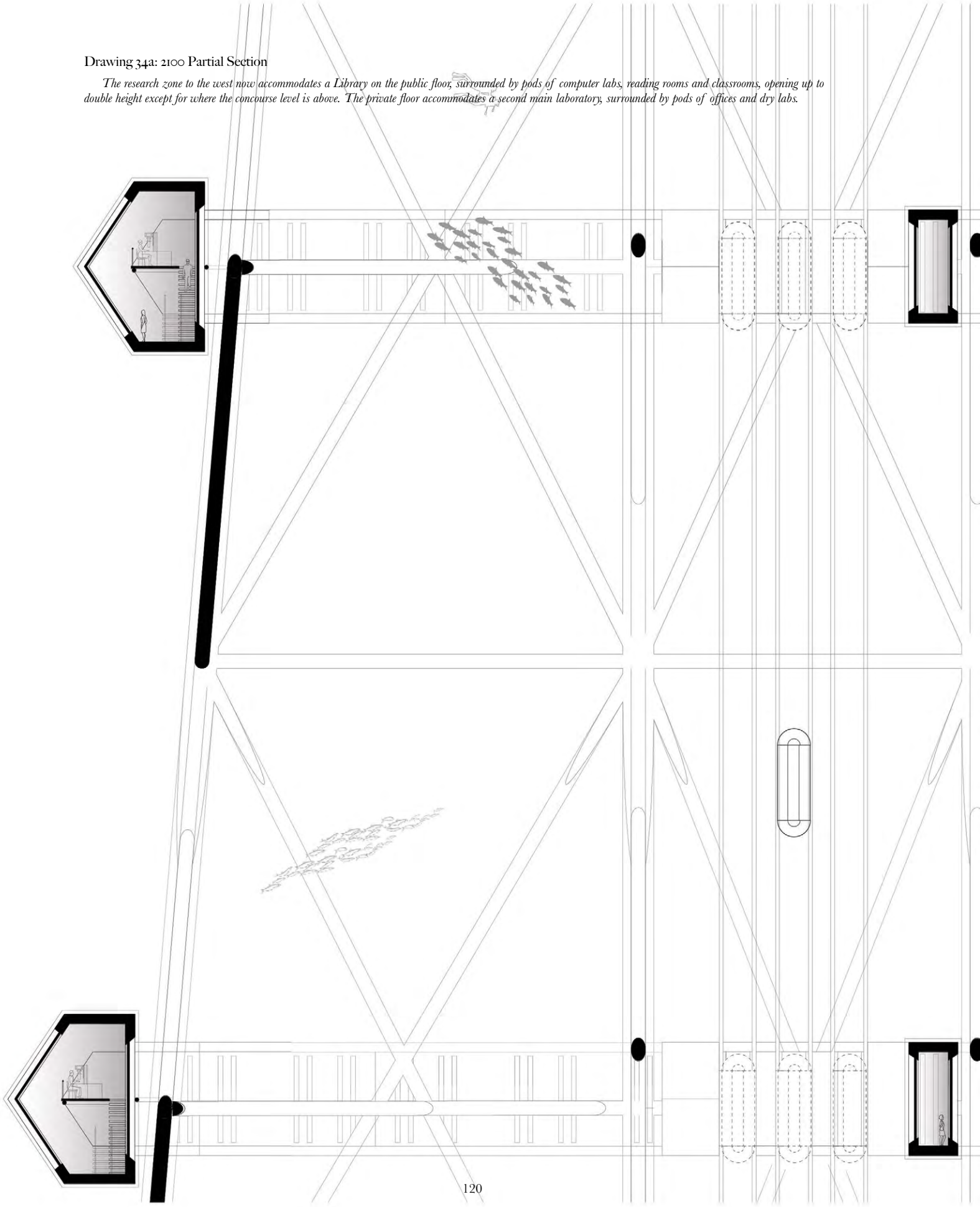
Drawing 33: 2100 Tower Gail Section (foldout)

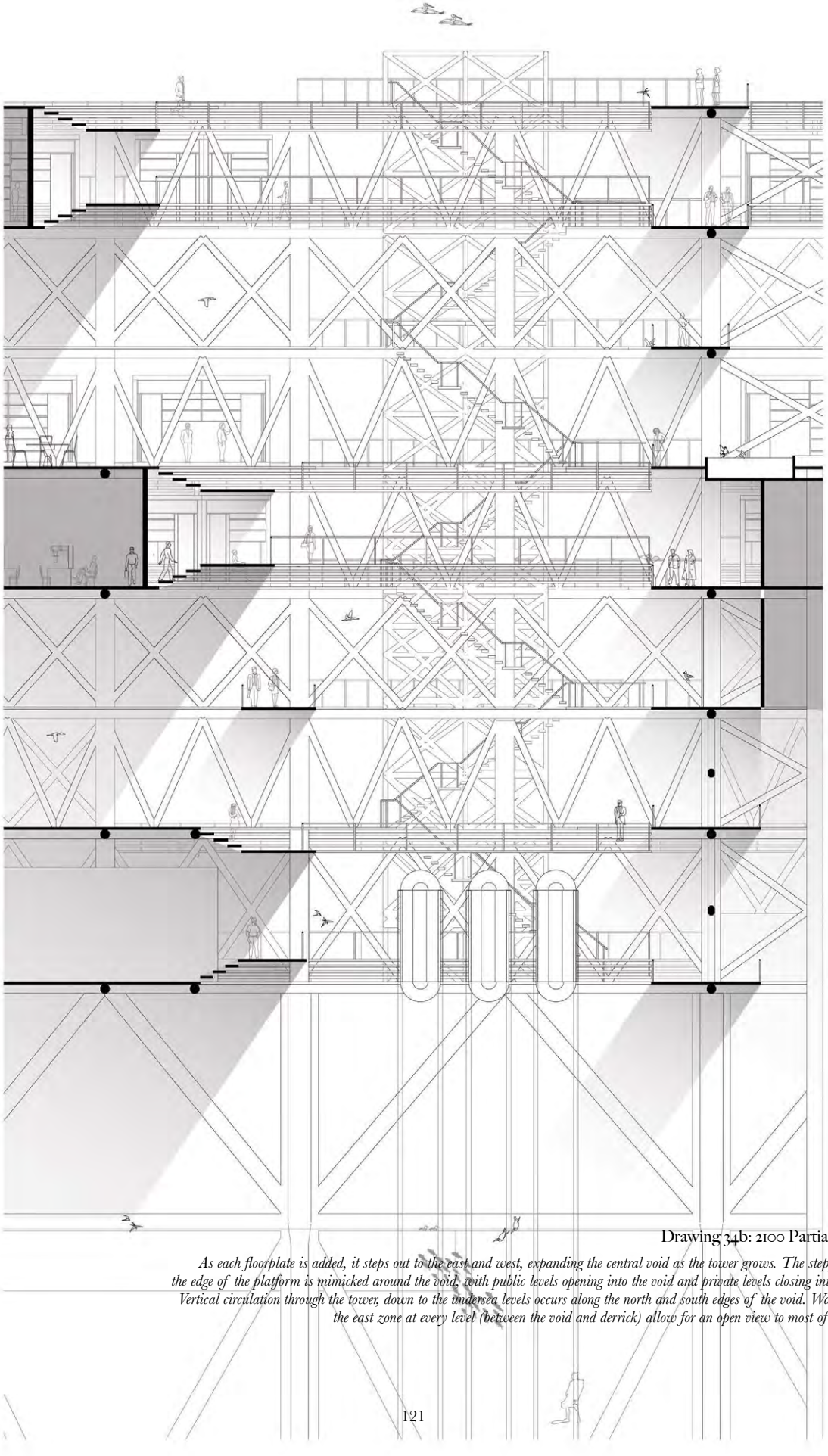
In 2100, the tower has grown past the base of the derrick to a roof height of 50m above sea level. The tower has expanded to accomodate another vertical cluster of open/public and closed/private levels, growing outwards around the expanding central void. A second void begins around the derrick as programs for living and boarding on the east zone wraps around it. Each undersea level receives a main labratory and another observation walkway that wrap around the structure, allowing lookouts to the inside and outside of the reefs. These levels are carefully designed to sit at the outside threshold of the structure, only occassionally entering the precious sheltered interior of the structure so as to not take away from existing habitats.



Drawing 34a: 2100 Partial Section

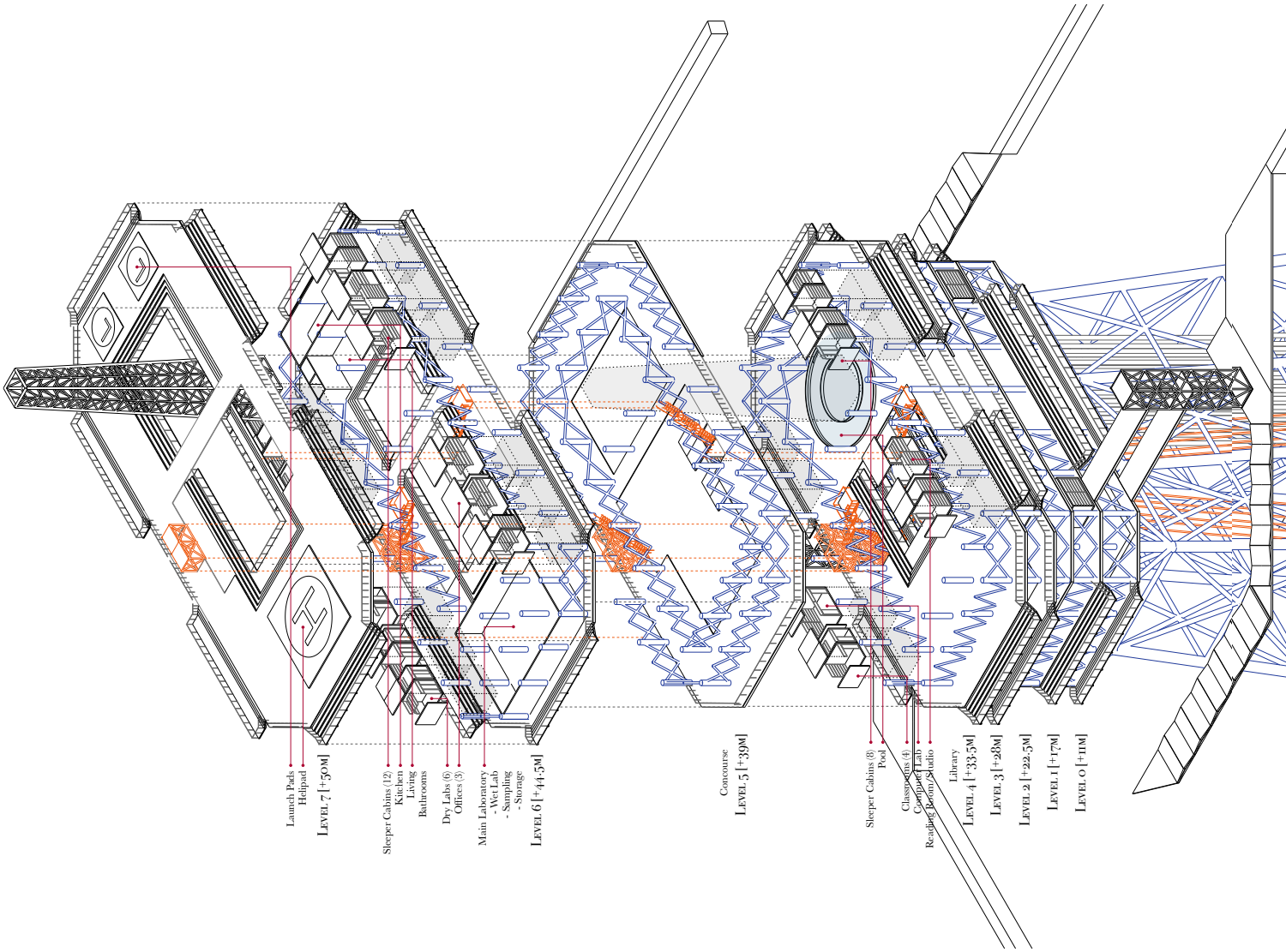
The research zone to the west now accommodates a Library on the public floor, surrounded by pods of computer labs, reading rooms and classrooms, opening up to double height except for where the concourse level is above. The private floor accommodates a second main laboratory, surrounded by pods of offices and dry labs.





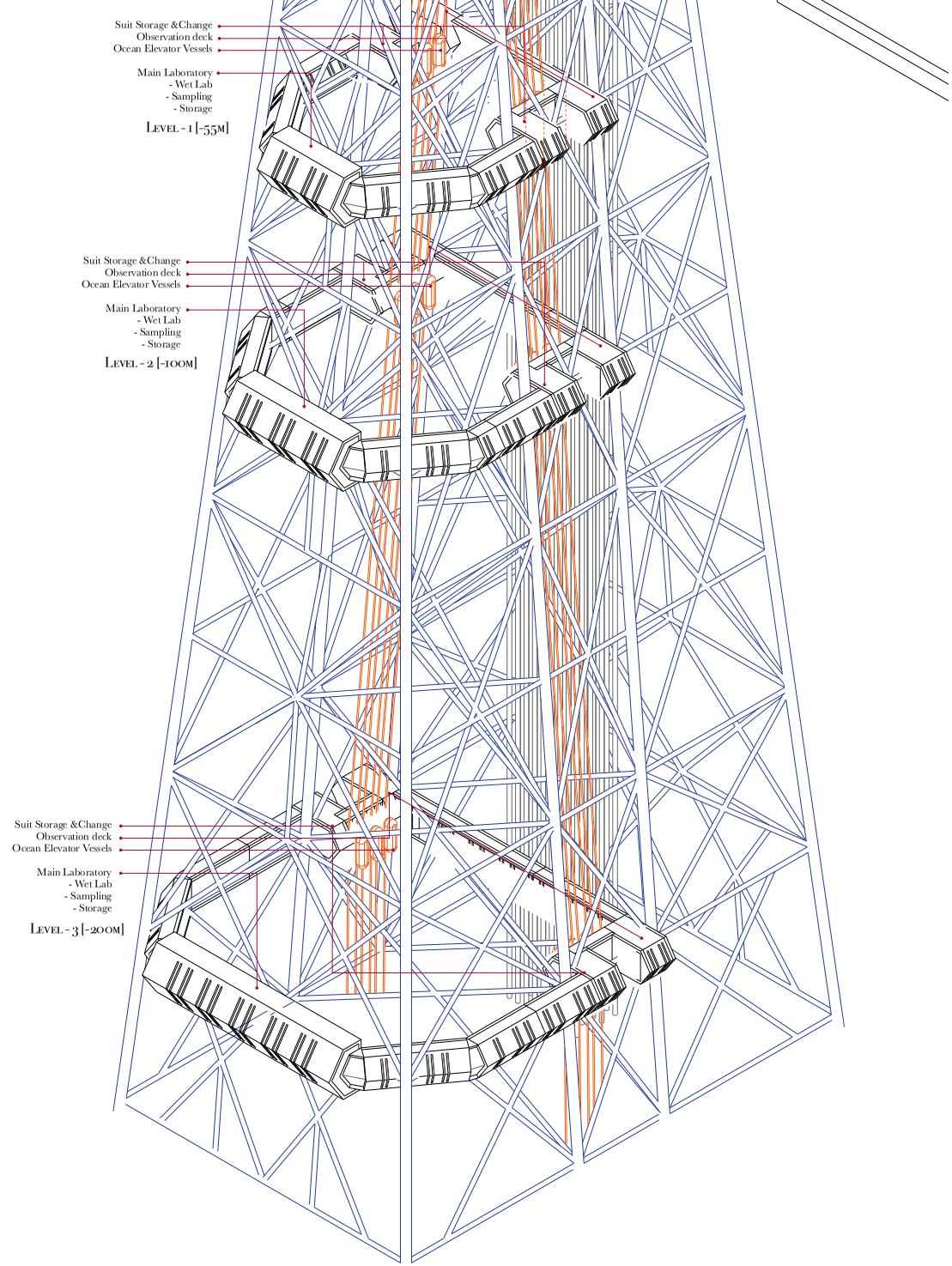
Drawing 34b: 2100 Partial Section

As each floorplate is added, it steps out to the east and west, expanding the central void as the tower grows. The stepping along the edge of the platform is mimicked around the void, with public levels opening into the void and private levels closing into the void. Vertical circulation through the tower, down to the undersea levels occurs along the north and south edges of the void. Walkways on the east zone at every level (between the void and derrick) allow for an open view to most of the tower.



Drawing 35: 2100 Axonometric breakdown (program, circulation, structure) [foldout]

This drawing shows the breakdown of program in all the closed and open spaces on the platform. Orange designates circulatory elements and blue structural elements. Ocean vessels are deployed into the water from Level 0 (mechanical & systems) down to the undersea levels. The roof contains a Helipad for air access and two Launchpads for the deployment of scientific ballons.

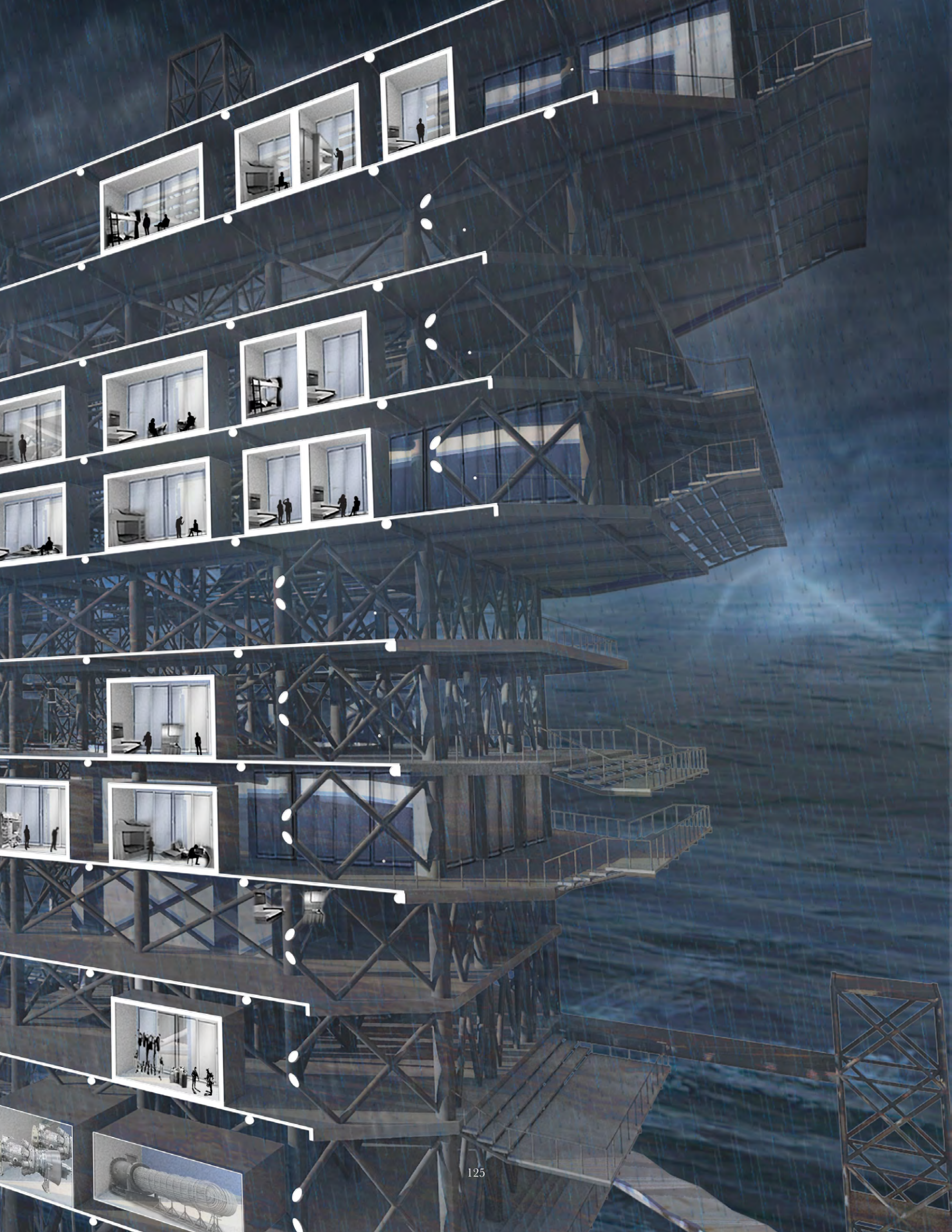

Suit Storage &Change
Observation deck
Ocean Elevator Vessels
Main Laboratory
- Wet Lab
- Sampling
- Storage
Level - 1 [-55m]
Suit Storage &Change
Observation deck
Ocean Elevator Vessels
Main Laboratory
- Wet Lab
- Sampling
- Storage
Level - 2 [-100m]
Suit Storage &Change
Observation deck
Ocean Elevator Vessels
Main Laboratory
- Wet Lab
- Sampling
- Storage
Level - 3 [-200m]

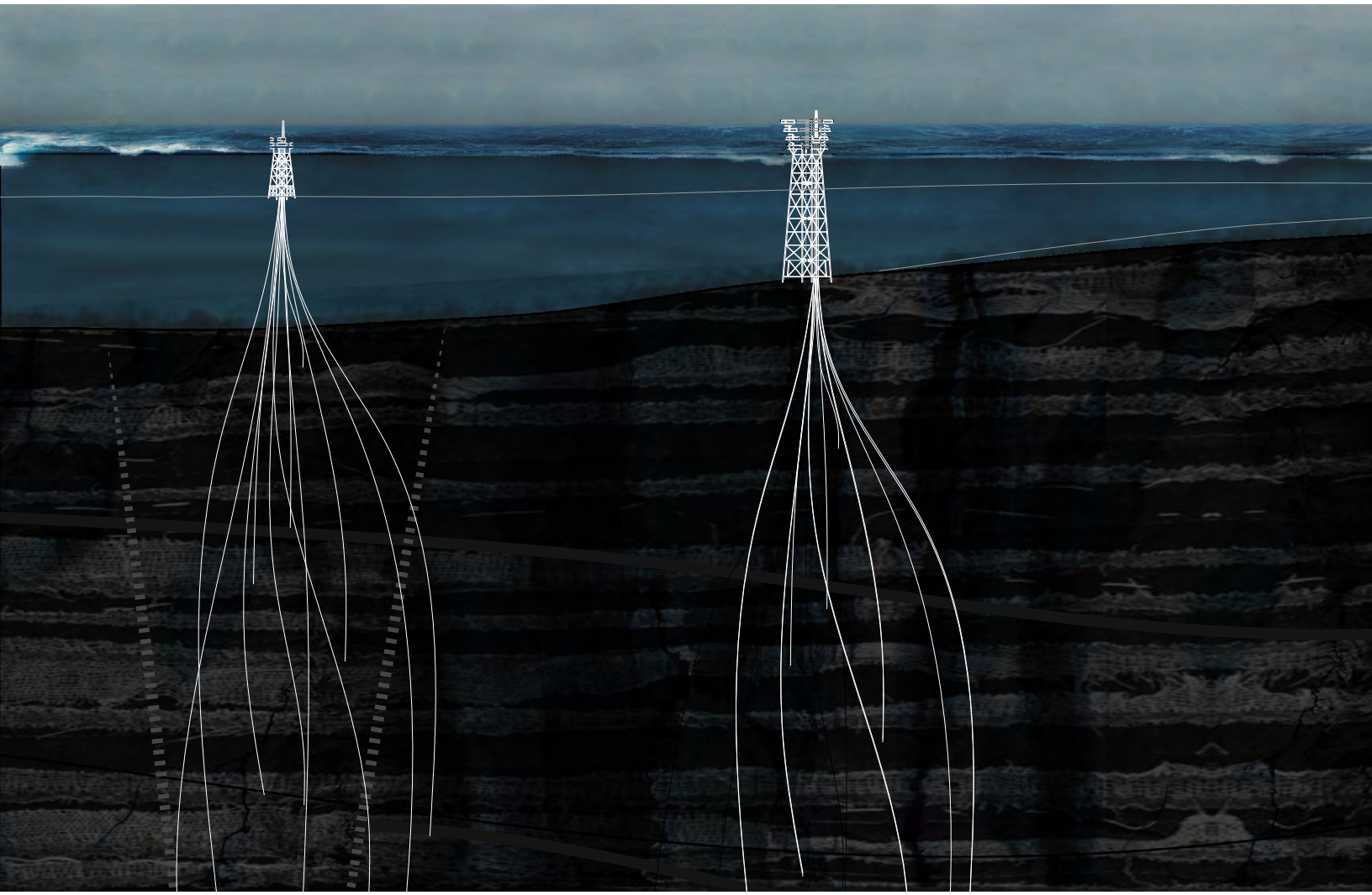
Drawing 36: Storm: Longitudinal Section cut through Pods

In the Politics of Nature, *Bruno Latour states that in Science's attempt at capturing and defining our external realities, we have placed a stopper on the internalization and unification of this external reality, as seen in the growing gap and lack of reflexivity between the production of facts and the matter of concerns they aim to capture. Once again, he calls to remove the division between internal and external, irrational and rational, subjective and objective so that no premature establishments can interrupt the proccess of assimilation and the gathering of multiplicity in our methods of learning.**

This drawing shows how the occupants of the structure are vulnerable to and surrounded by extreme naural events such as a storm by revealing how little of the platform is completely closed off from these conditions, heightening ones exposure to their external world. In this scenario, our internal, irrational, subjective selves are confronted with very external reality we choose to understand, in its full force, irreduced and unsimplified.

*Latour, Bruno. Politics of Nature : How to Bring the Sciences into Democracy. Cambridge, Mass. ; London: Harvard University Press, 2004, pp.92.



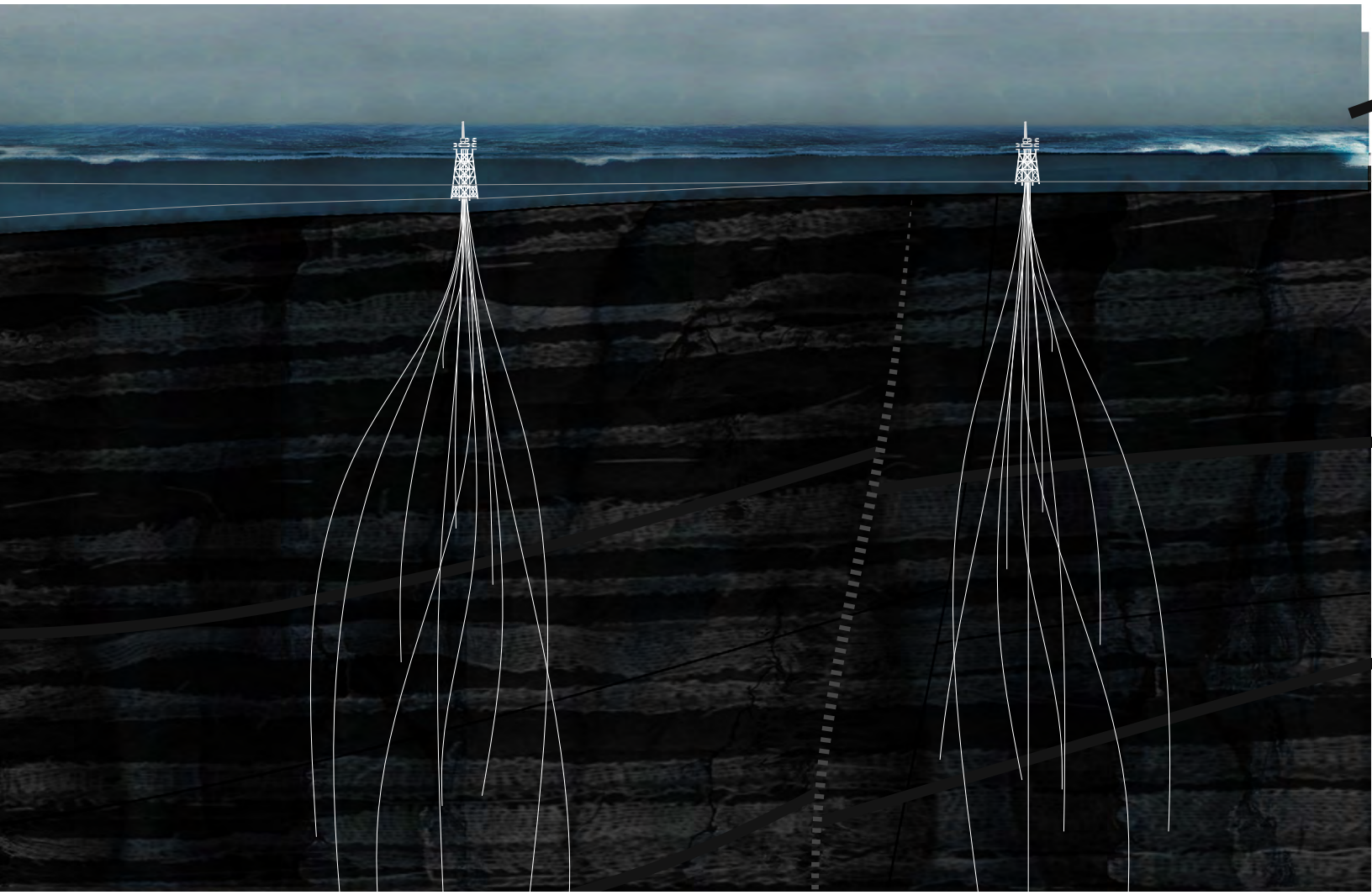


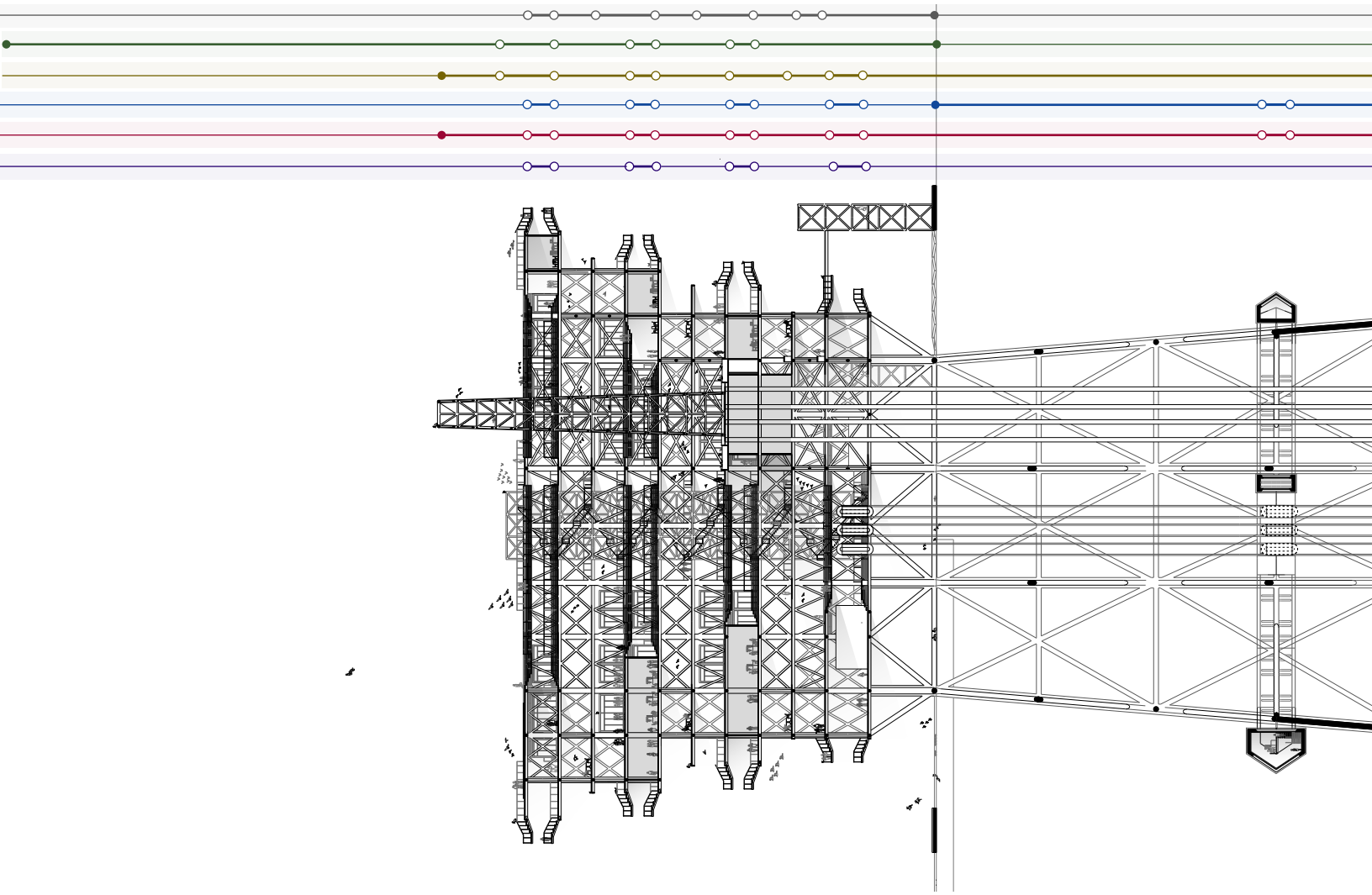
2200

Population: max. 120

Sea Level rise: +2m [from 2000]

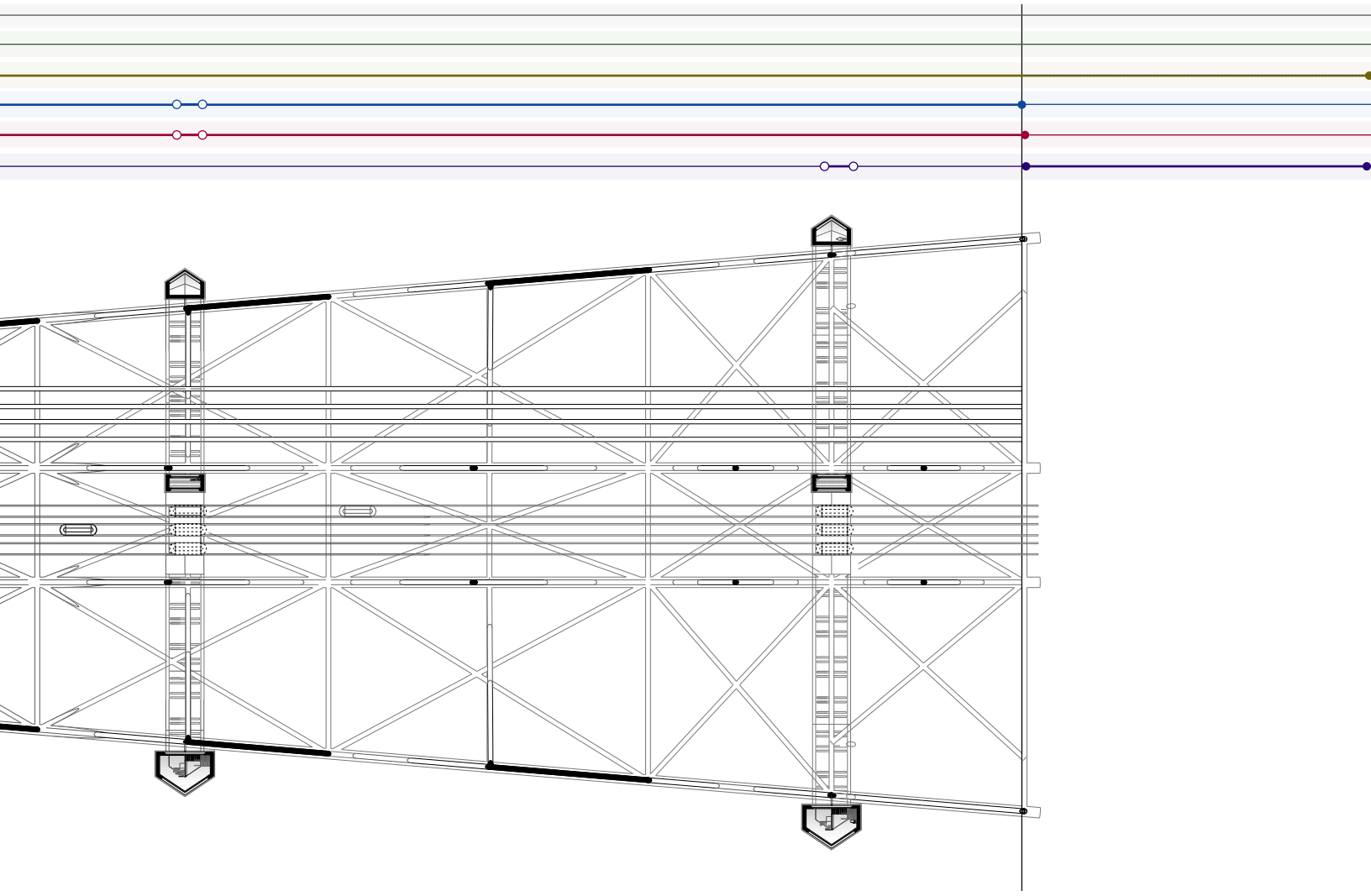
Drawing 37: 2200 Site Section

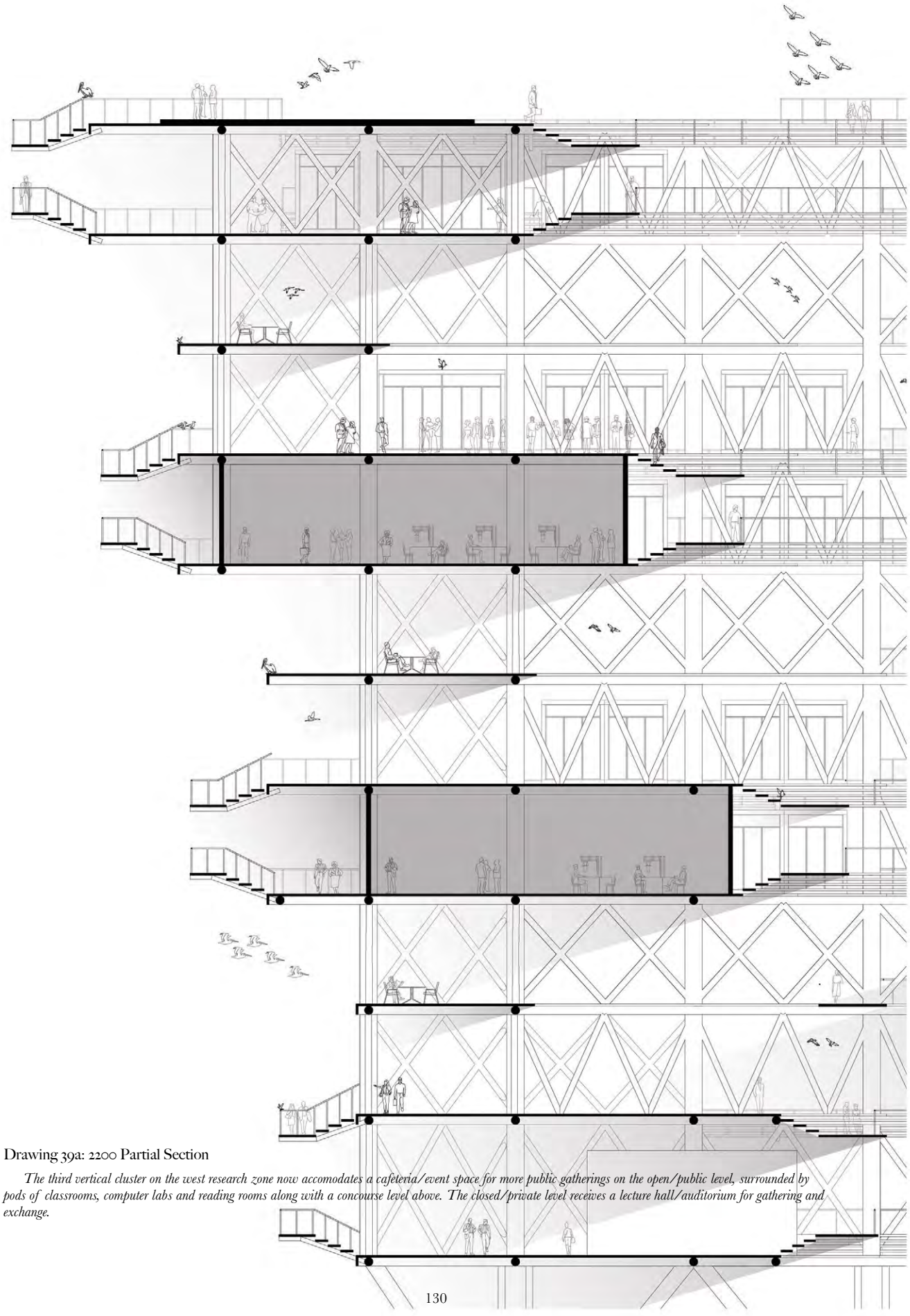




Drawing 38: 2200 Tower Gail Section

In 2200, the tower has reached a roof height of 66.5m above sea level. The tower has expanded to accomodate a third vertical cluster of open/public and closed/ private levels, further increasing the central void. The secondary void around the derrick grows in a similar manner, openning up to the east. The first undersea level receives an observation deck that wraps around the east half of the structure. The second undersea level receives an observation deck around the east zone and secondary pods for lab and collective space attached to the walkways on the west zone. The third undersea level receives an observation deck around the east zone, secondary lab and collective pods attached to the west zone as well as sleeping pods attached the the east zone.



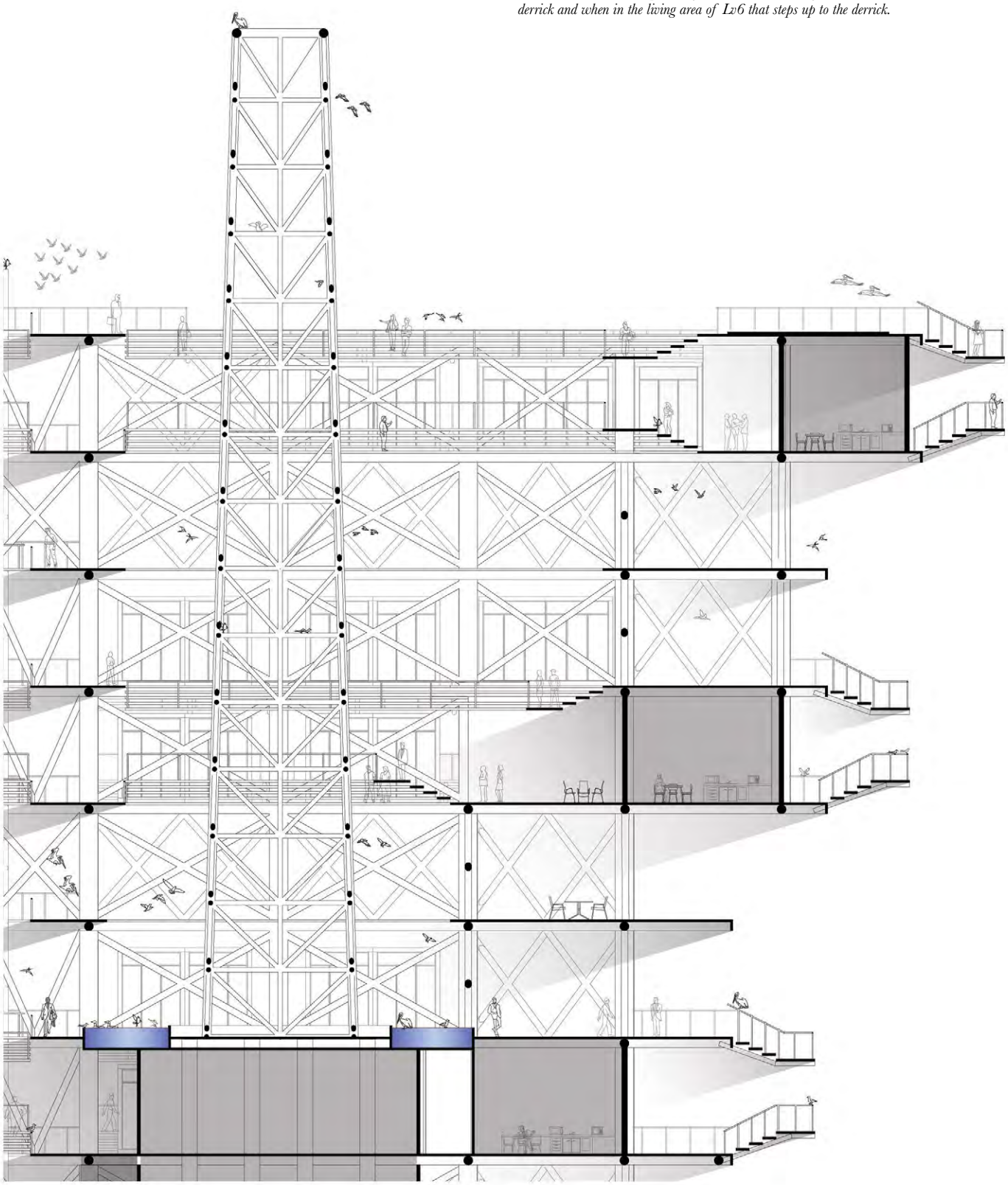


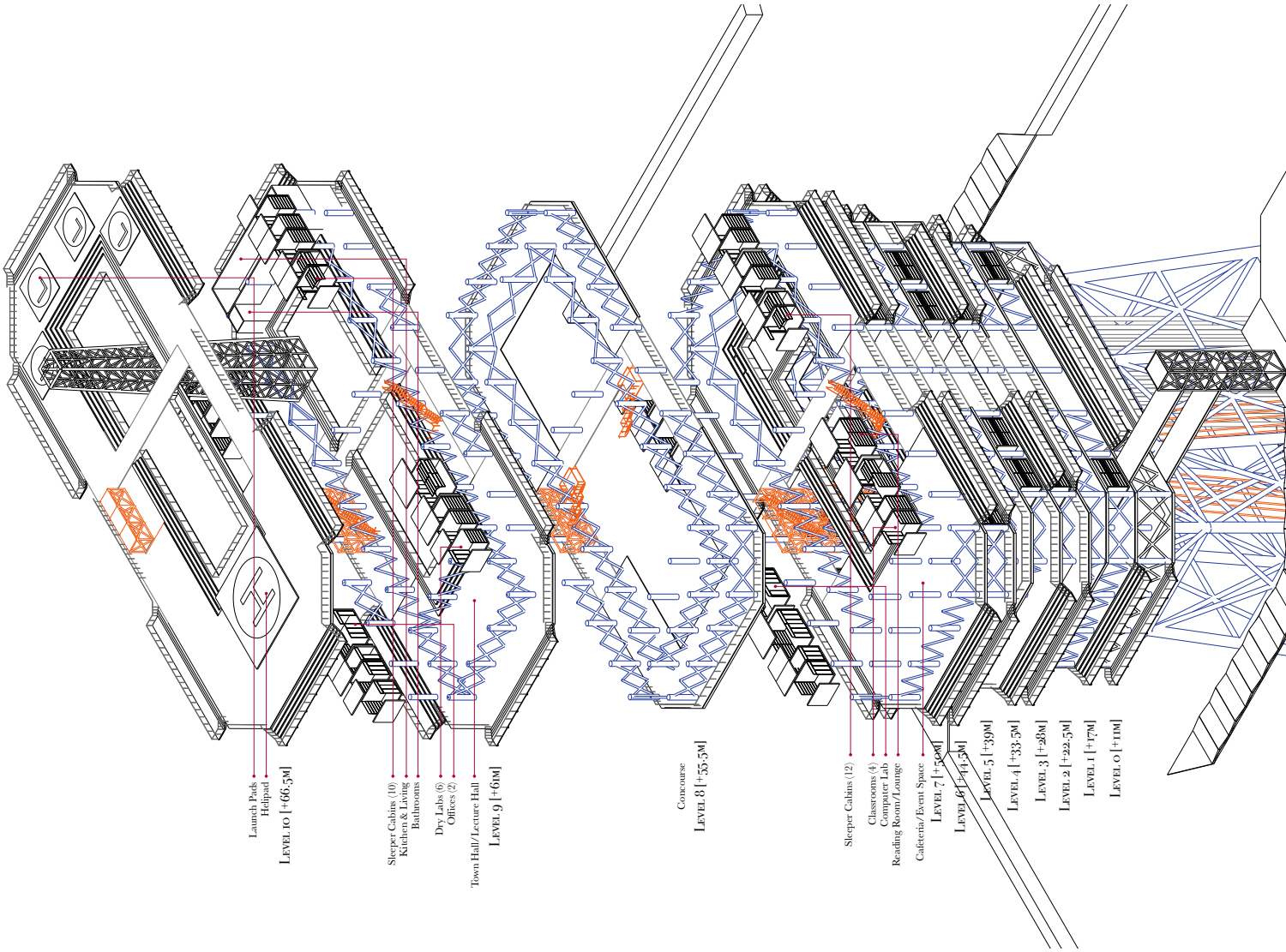
Drawing 39a: 2200 Partial Section

The third vertical cluster on the west research zone now accomodates a cafeteria/event space for more public gatherings on the open/public level, surrounded by pods of classrooms, computer labs and reading rooms along with a concourse level above. The closed/private level receives a lecture hall/auditorium for gathering and exchange.

Drawing 39b: 2200 Partial Section

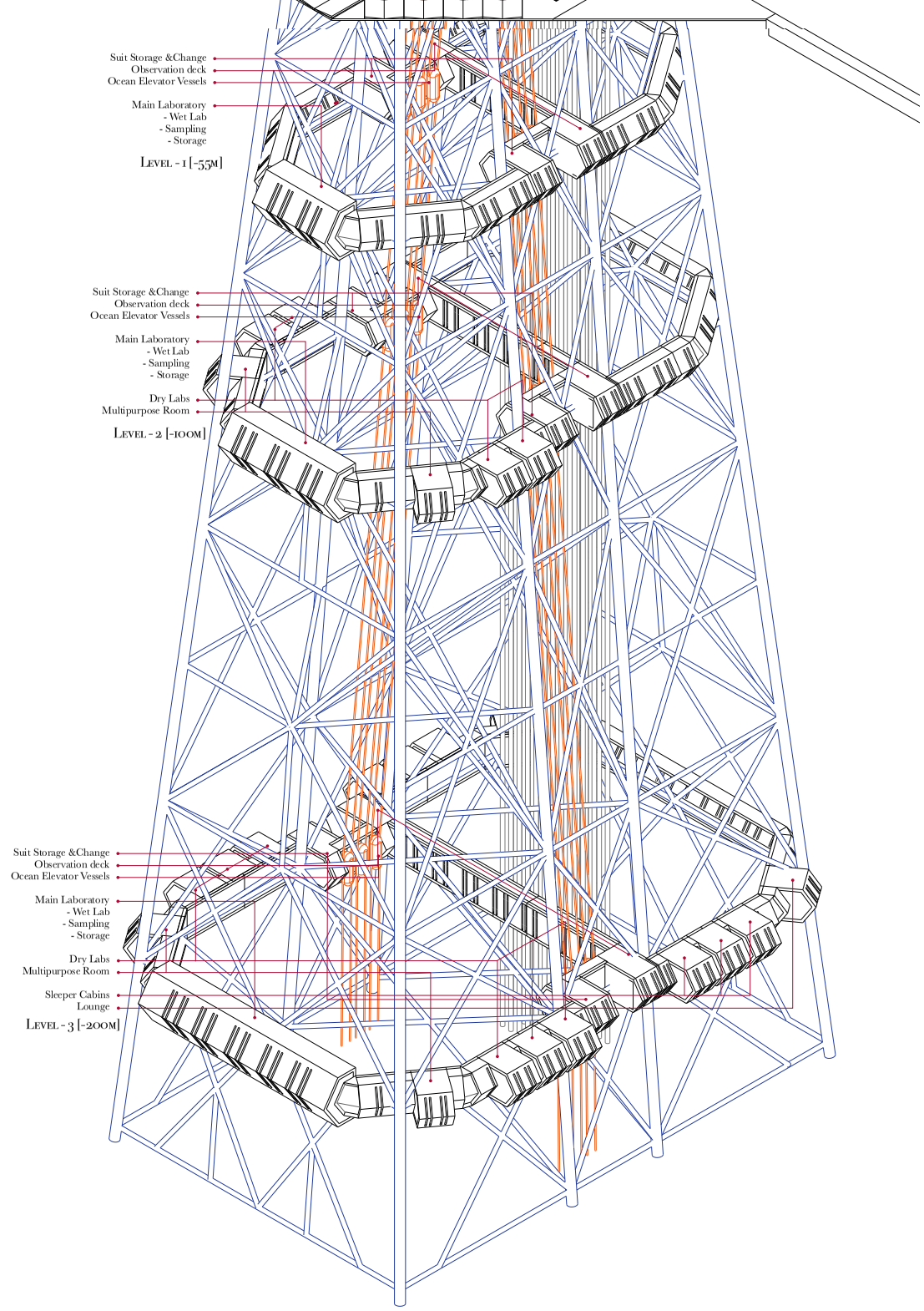
The void that grows around the derrick becomes the area where most seabirds gather, due to the complex structure of the derrick as well as the now shelterd pool at the base of it. Human beings gain direct visual presence to the derrick and are in closest proximity when on the walkways to the west of the derrick and when in the living area of Lv6 that steps up to the derrick.

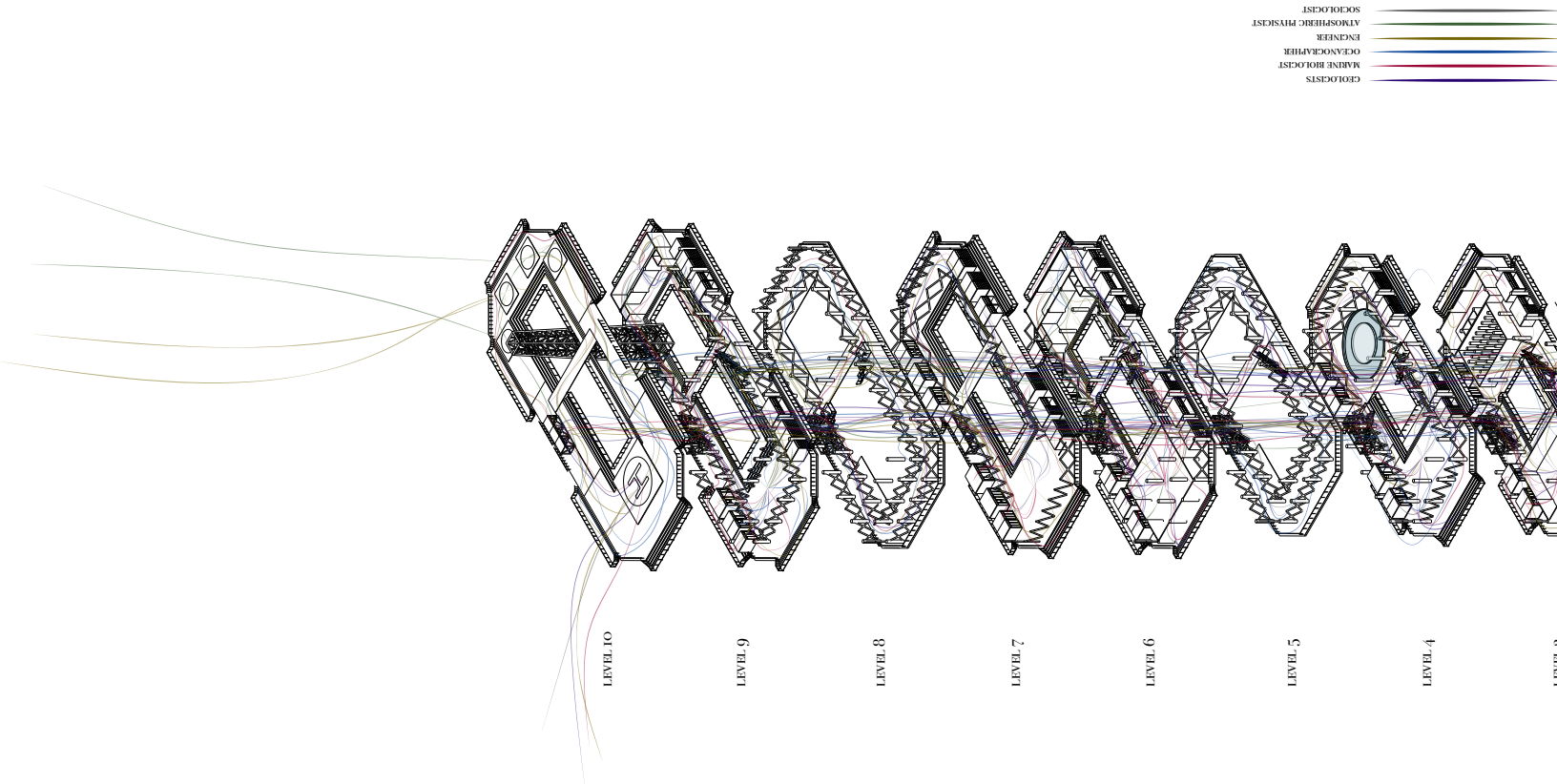




Drawing 40: 2200 Axonometric breakdown (program, circulation, structure) [foldout]

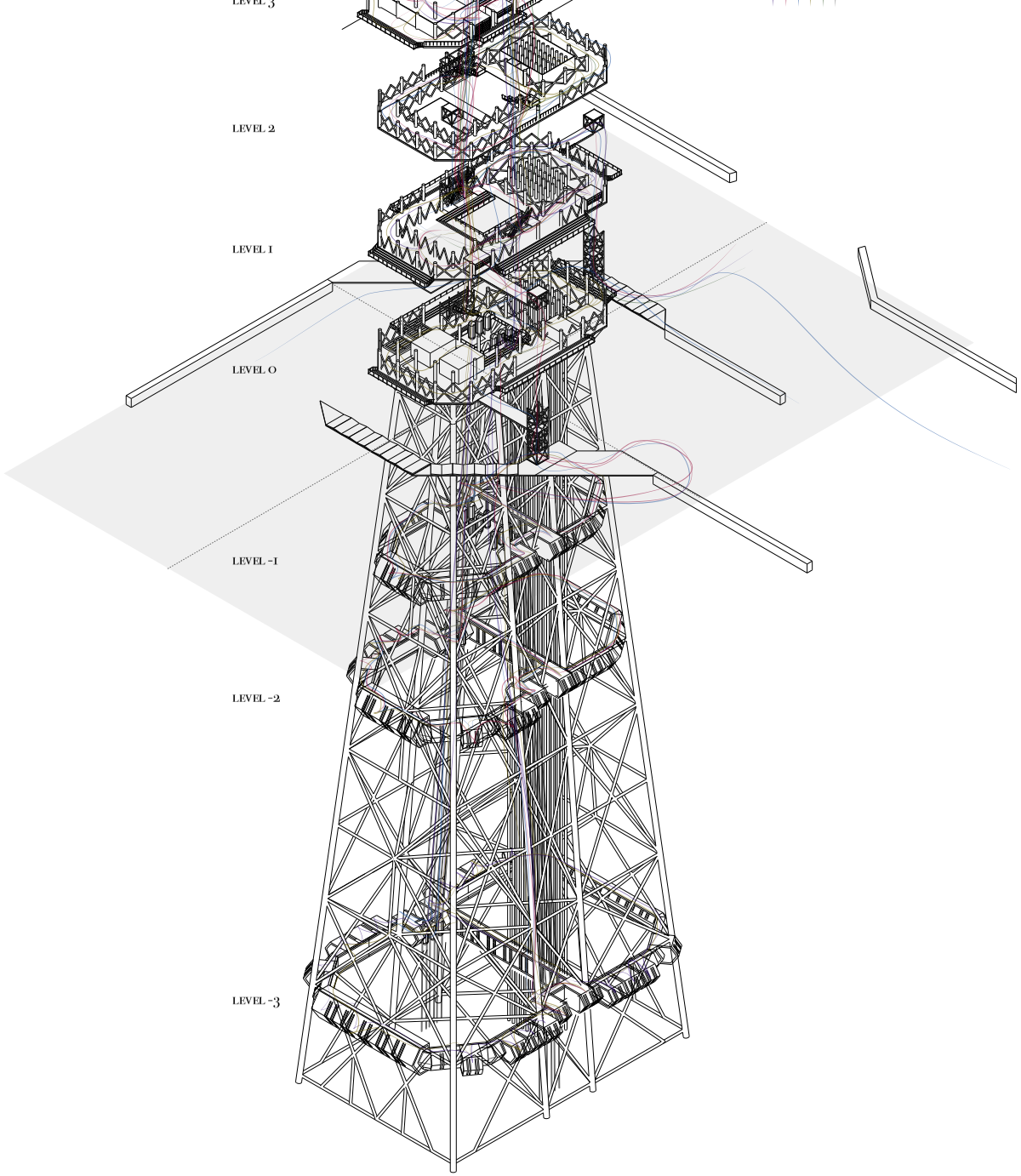
This drawing shows the breakdown of program in all the closed and open spaces on the platform. Orange designates circulatory elements and blue structural elements. Ocean vessels are deployed into the water from Level 0 (mechanical & systems) down to the undersea levels. The roof contains a Helipad for air access and two Launchpads for the deployment of scientific ballons.


Suit Storage &Change
Observation deck
Ocean Elevator Vessels
Main Laboratory
- Wet Lab
- Sampling
- Storage
Level - 1 [-55m]
Suit Storage &Change
Observation deck
Ocean Elevator Vessels
Main Laboratory
- Wet Lab
- Sampling
- Storage
Dry Labs
Multipurpose Room
Level - 2 [-100m]
Suit Storage &Change
Observation deck
Ocean Elevator Vessels
Main Laboratory
- Wet Lab
- Sampling
- Storage
Dry Labs
Multipurpose Room
Sleeper Cabins
Lounge
Level - 3 [-200m]

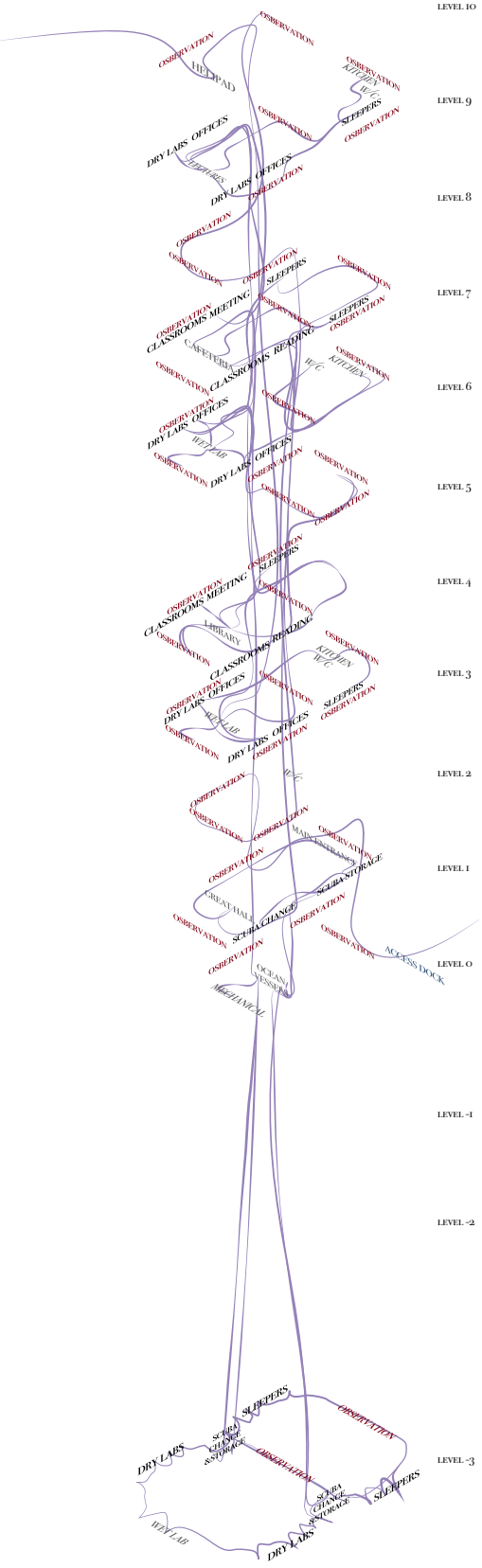


Drawing 43: Movement of all scientists through the platform

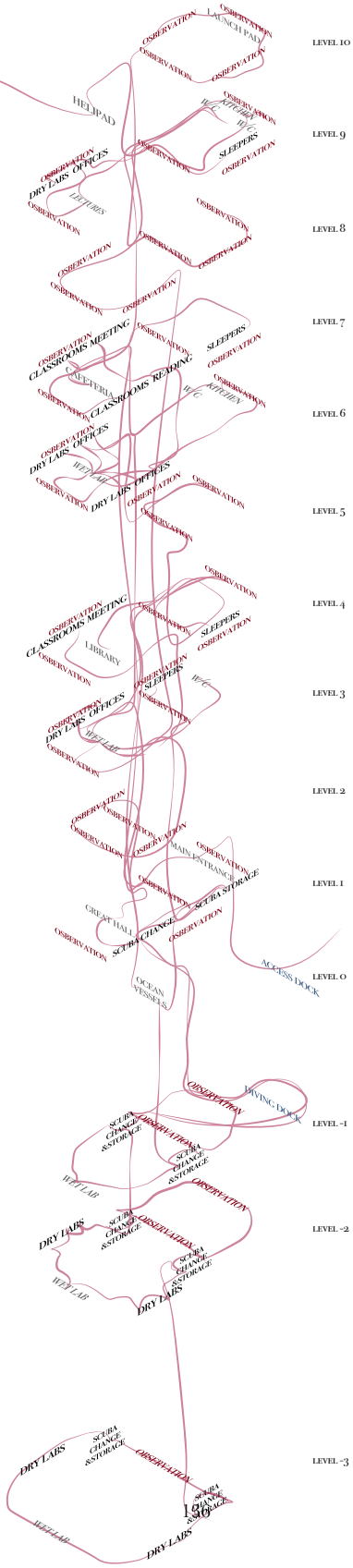
This diagram shows the movement of the six sciences through the structure, following them to typical spaces they would occupy. It shows the design's emphasis on circulation spaces weaving through the program both vertically and horizontally to enable meeting and exchange amongst the different scientists. Vertical circulation is focused in the void, from which horizontal circulation takes off, running around the edges of the structure. The most private pods are placed farthest east and west, encouraging movement past more public and collective spaces. Also seen are various points of deployment from the platform: access to and from the ocean via the main dock, scuba diving off the diving dock, ocean vessels to access undersea levels and explore the ocean, the helipad for access to and from the sky, and launchpads to explore the atmosphere.


LEVEL 3
LEVEL 2
LEVEL 1
LEVEL 0
LEVEL -1
LEVEL -2
LEVEL -3

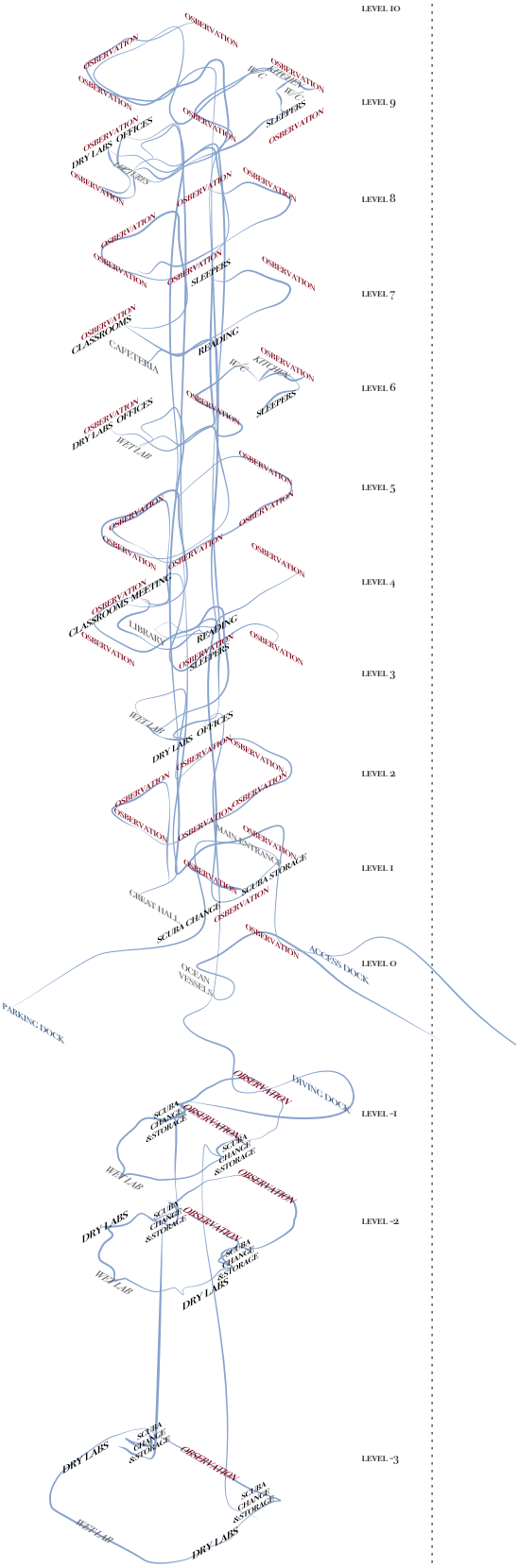
TYPICAL PATHS OF
A GEOLOGIST



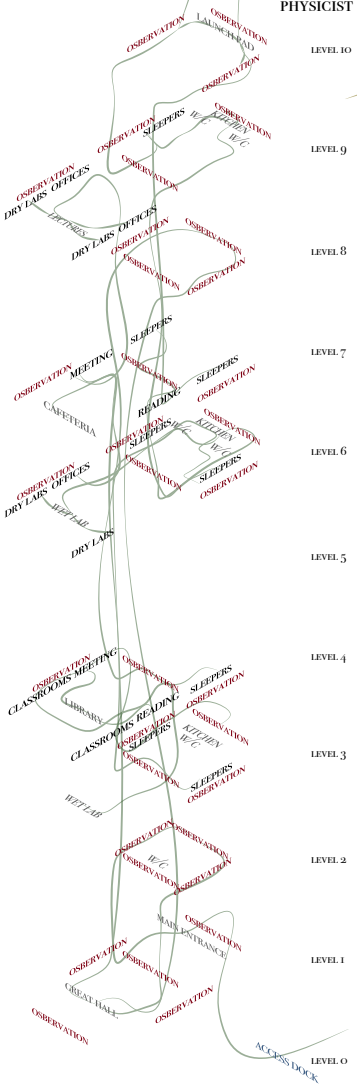
TYPICAL PATHS OF A
MARINE BIOLOGIST



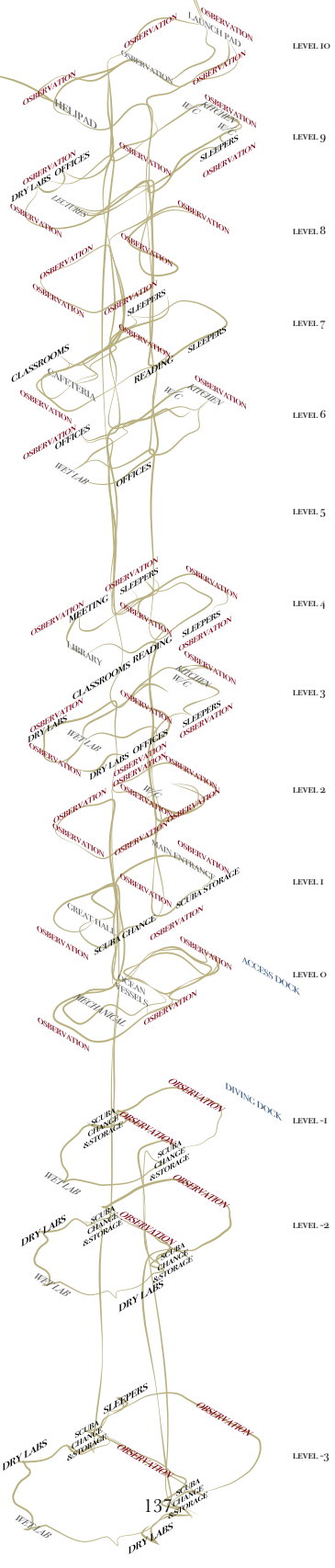
TYPICAL PATHS OF
AN OCEANOGRAPHER



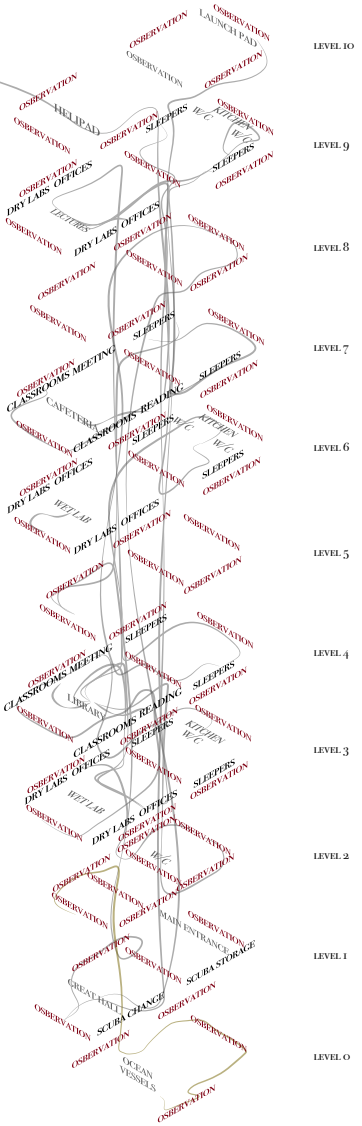
TYPICAL PATHS OF
AN ATMOSPHERIC
PHYSICIST

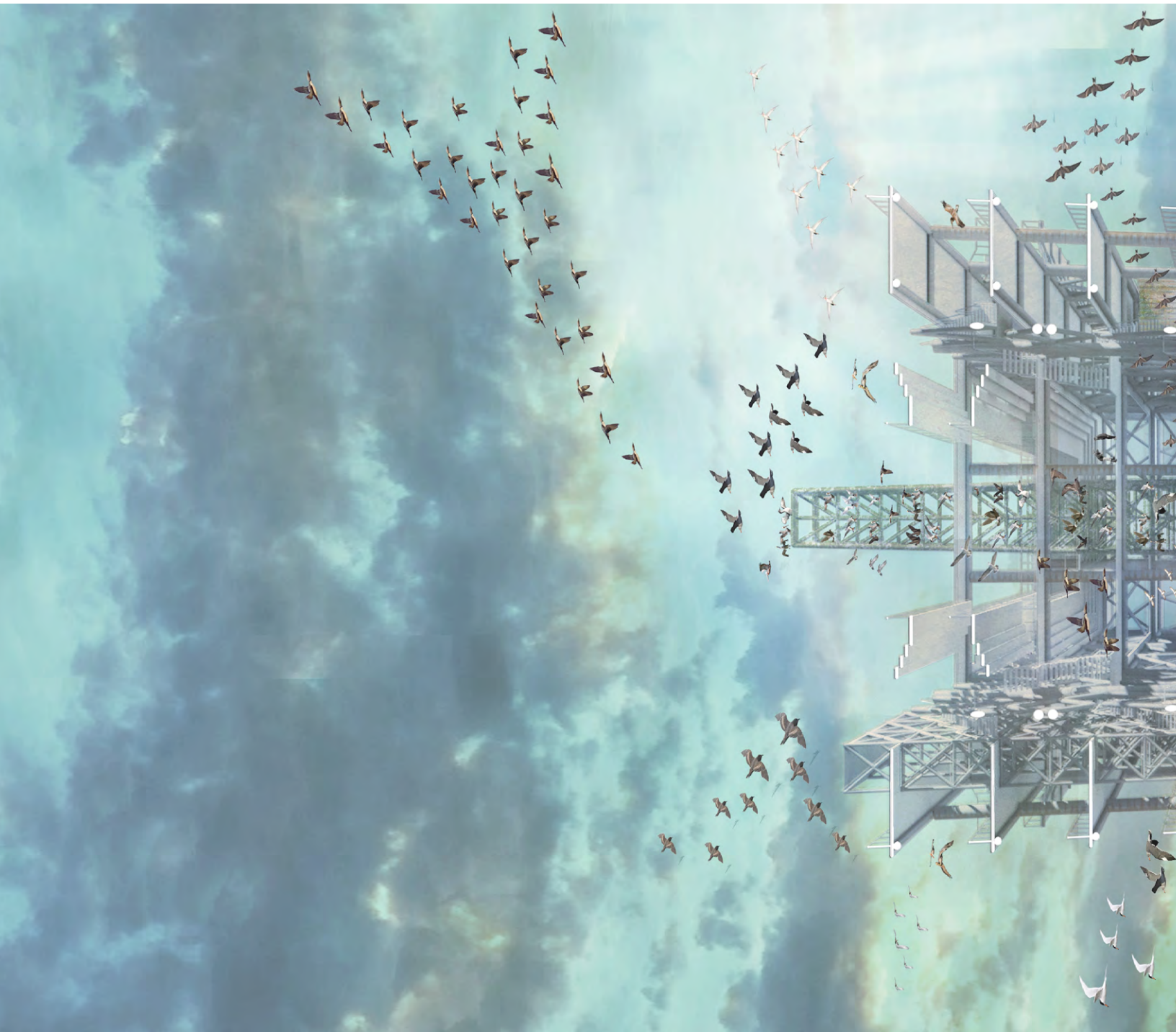


TYPICAL PATHS OF
AN ENGINEER



TYPICAL PATHS OF
A SOCIOLOGIST





Drawing 42: Migration: Transverse Section cut through central void [foldout]

In the Critique of Pure Reason, *Kant distinguishes between aesthetic and mathematical comprehension. A mathematical comprehension is dimensional, that is, it makes use of the concept of 'number' as a constant measurement of space-time (eg: units of measurement). However, aesthetic comprehension comes from our intuitive sense of place and the manner in which we embody our being-in-the-world.**

This drawing looks to demonstrate what this more sensory and qualitative measure of understanding space-time that occurs can feel like in an event such as Migration. How will our sense of embodiment, and in extension, the way in which we learn, intensify through the intersection of events that might occur at the time of migration, when life is present on the platform in large numbers, nesting, resting, perching, feeding, or passing through?

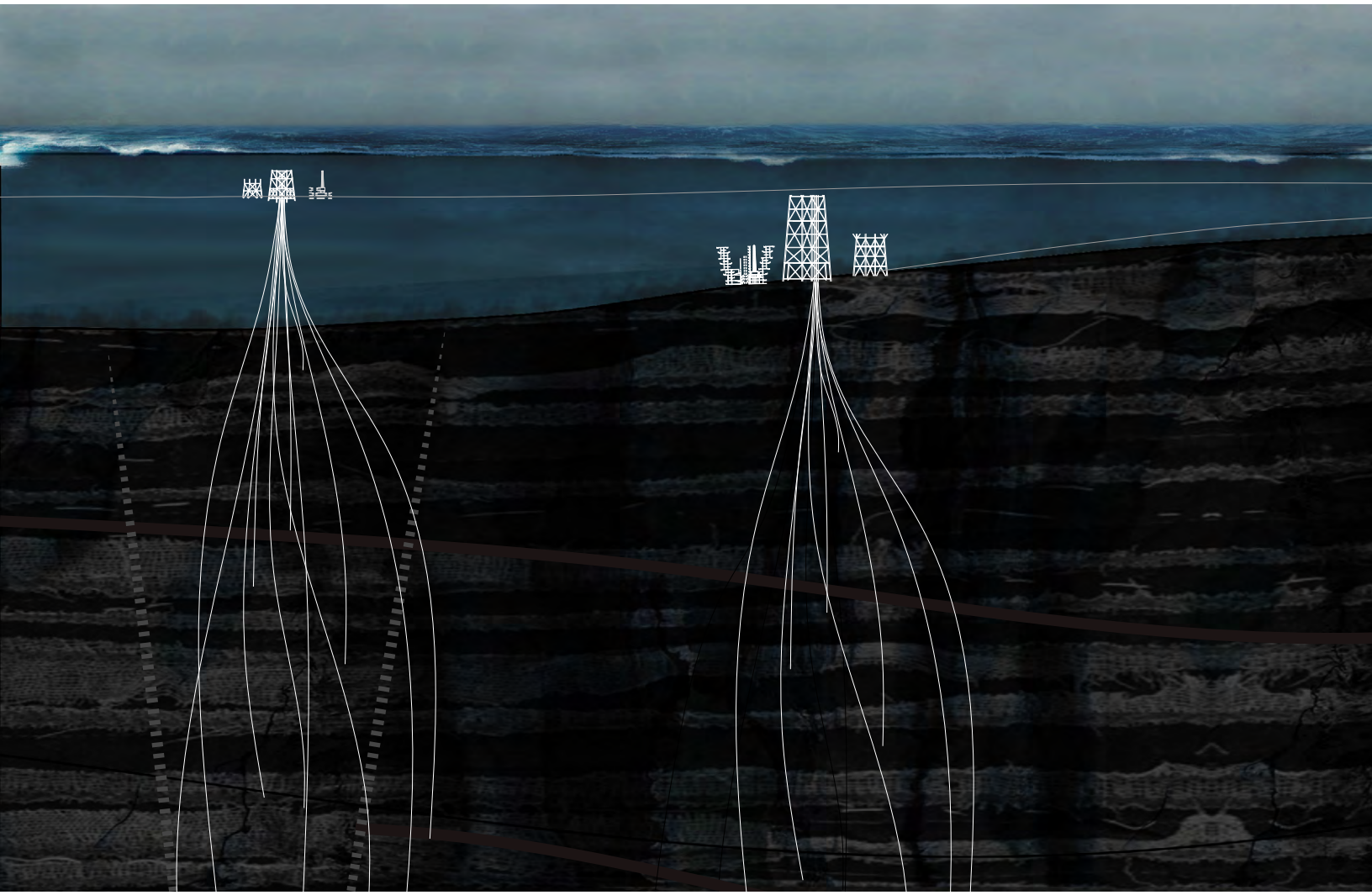
*Deleuze, Gilles. "Translater's Introduction." Translated by Daniel W. Smith. In Francis Bacon - The Logic of Sensation, Xvii-viii. Mineapolis: University of Minnesota Press , 2003.

Figure 42 : A platform being decommissioned

Epilogue

The estimated structural life of the metal is close to 300 years. Its life is extended from the initally assumed 75 years due to the protective coat of reefs, forming a layer of life half a meter thick around all structural members submerged in the water.

The decommissioning of the platform takes place when the metal can no longer hold itself up. The decks are removed and either sunk to the bottom or transported to shore to be recycled. The jackets are cut 80ft below the surface and the top half is sunk to the bottom. The structure is left to the will of the water. The structures are overtaken by the growth of further reefs and human beings exit the setting as permanent residents.

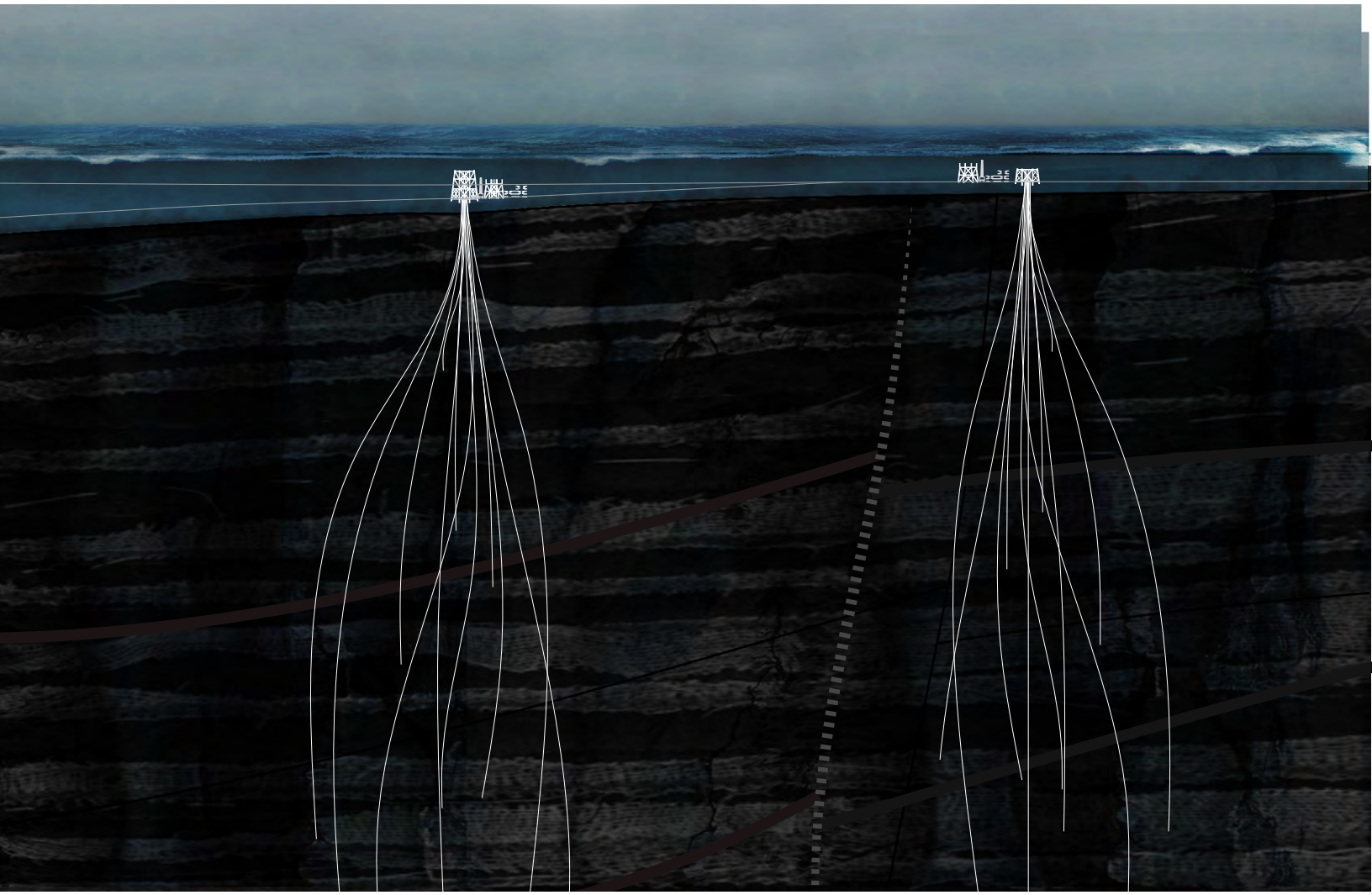


2300

Population (at demise): max. 180

Sea Level rise: +3m [from 2000]

Drawing 43: 2300 Site Section



Drawing 44: 2300 Tower Gail sunken

In his book Sapiens, *Yuval Noah Harari points to two aspects of the human brain that evolved sometime between 70,000 to 30,000 years ago, beginning our species's cognitive evolution: the ability to imagine and the ability to extensively communicate these imaginations. Brought together, this gives our species the power of fiction, and soon, we developed the abilities to bring those fictions into our reality. This ability holds us together as a collective, catalyzing a third inherent character - that of human curiousity.*

This drawing is the last of an imagination of a world in which we continuously choose to satiate our curiousities and develop our understandings, with care that we are but a part of a whole whose sum is greater than its parts.

*Harari, Yuval N, *Sapiens : A Brief History of Humankind*. Cloth edition. ed. Toronto, Ontario]: Signal ; McClelland & Stewart, 2014.

Figure 40 : A sunset on the plane ride back home

Bibliography

Agamben, Giorgio. "What is the Contemporary?" *The Stones* (2008).

All Watched Over by Machines of Loving Grace - Episode 2 - the use and Abuse of Vegetational Concepts. Film. Directed by Curtis, Adam. The Collective Intelligence Research Institute, 2013.

As U.S. Congress Lags, California Leads Push to Divest from Fossil Fuels Linked to Climate Change. broadcast. Directed by Goodman, Amy. Democracy Now!, 2015.

Brenner, Neil and Christian Schmid. "Towards a New Epistemology of the Urban?" City 19, no. 2-3 (05/04, 2015): 151-182.

C. Ellis, Erle"Ecologies of the Anthropocene: Global Upscaling of Social- Ecological Infrastructures." In New Geographies, edited by Daniel Ibañez and Nikos Katsikis, 021. 06th ed. Vol. Grounding Metabolism. Cambridge, Massachusetts: Harvard University Press, 2014.

Clément, Gilles. *Manifeste Du Tiers Paysage*. Montreuil: Sujet-Objet, 2004.

Crutzen, J. Paul and Christian Schwägerl. "Living in the Anthropocene: Toward a New Global

Ethos." (24th January 2011, 2011): October 13th 2015.

Cosmos: A Spacetime Odyssey. Film. Directed by Pope, Bill. Cosmos Studios, 2014.

Dailey, Murray D., Donald J. Reish, and Jack W. Anderson. *Ecology of the Southern California Bight: A Synthesis and Interpretation*. Berkeley: University of California Press, 1993.

Deleuze, Gilles. "Translater's Introduction." Translated by Daniel W. Smith. In *Francis Bacon - The Logic of Sensation*, Xvii-viii. Mineapolis: University of Minnesota Press , 2003.

Deleuze, Gilles,1925-1995, author. *Negotiations*, 1972-1990. New York: Columbia University Press, 1995.

Dolphijn, Rick and Iris Tuin. ""Matter Feels, Converses, Suffers, Desires, Yearns and Remembers"." *New Materialism: Interviews & Cartographies*: November 15th 2016.

Gissen, David. *Subnature: Architecture's Other Environments*, Introduction. New York: Princeton Architectural, 2009. Print.

Haeckel,Ernst Heinrich Philipp August, 1834-1919. *The Riddle of the Universe at the Close of the Nineteenth Century.* New York and London: Harper & brothers, c1900], 1900, pp.18.

Harari, Yuval N, *Sapiens : A Brief History of Humankind*. Cloth edition. ed. Toronto, Ontario]: Signal ; McClelland & Stewart, 2014.

Harman, Graham, 1968-. *Prince of Networks : Bruno Latour and Metaphysics*. Melbourne: Re.press, 2009.

Hoover, Kelly. "A Deep Dive that Changed History : Dan Wilson Remembered on 50th Anniversary." *Santa Barbara News-Press*, November 4, 2012, 2012.

Latour, Bruno. *Politics of Nature : How to Bring the Sciences into Democracy*. Cambridge, Mass.; London: Harvard University Press, 2004.

"Native American Uses of Asphaltum." US Geological Survey. Accessed 10 October 2016, . http://walrus.wr.usgs.gov/seeps/native_uses.html.

Negarestani, Reza. "Bacterial Archeology." In *Cyclonopedia: Complicity with Anonymous Materials*, 17: Re.Press, 2008.

Pararas-Carayannis, George. Turtle: A Revolutionary Submarine. Sea Frontiers, Vol 22, No. 4, pp. 234, July-August, 1976

Piccard, Auguste, 1884. *Earth, Sky and Sea*. Translated by Christina Stead ed. New York, Oxford University Press, 1956: 1965.

R. W. Hahn and A. Layne-Farra, "An Economic Analysis of a Rigs to Reefs Program for the California Continental Shelf," National Economics Research Associates, 2003.

Rosa, Hartmut, *Social Acceleration: A New Theory of Modernity*, 6-10. New York: Columbia UP, 2013. Print.

Schroeder, D. M. and Love, M. S. "Ecological and political issues surrounding decommissioning of offshore oil facilities in the Southern California Bight," Ocean and Coastal Management, no. 47, pp. 21-48, 2004.

Segee, Brian P., and Elise O. Dea. Dirty Water - Fracking Offshore California, 04. Report. Santa Barbara: Environmental Defence Center, 2013.

Steinhart, Carol E. "Oil and Santa Barbara, Partners in History." In *Blowout : A Case Study of the Santa Barbara Oil Spill*, edited by Steinhart, John S., 18. North Scituate, Mass; North Scituate, Mass., Duxbury Press c1972: Duxbury Press, 1972.

Song, Hajoon, Arthur J. Miller, Bruce D. Cornuelle, and Emanuele Di Lorenzo. "Changes in Upwelling and Its Water Sources in the California Current System Driven by Different Wind Forcing." Vol. 52. 2011. Accessed January 02, 2016. Dynamics of Atmospheres and Oceans.

The Ecology of the Southern California Bight: Implications for Water Quality Management. Los Angeles: SCCWRP, 1972.

UNFCCC COP 21 Paris France. Accessed December 13, 2015. http://www.cop21paris.org/about/cop21.

W.Moore, Jason. "Part 1: On the Nature & Origins of Our Ecological Crisis." In *The Capitalocene*, 01-02. Binghamton, NY: Binghamton University, 2014.

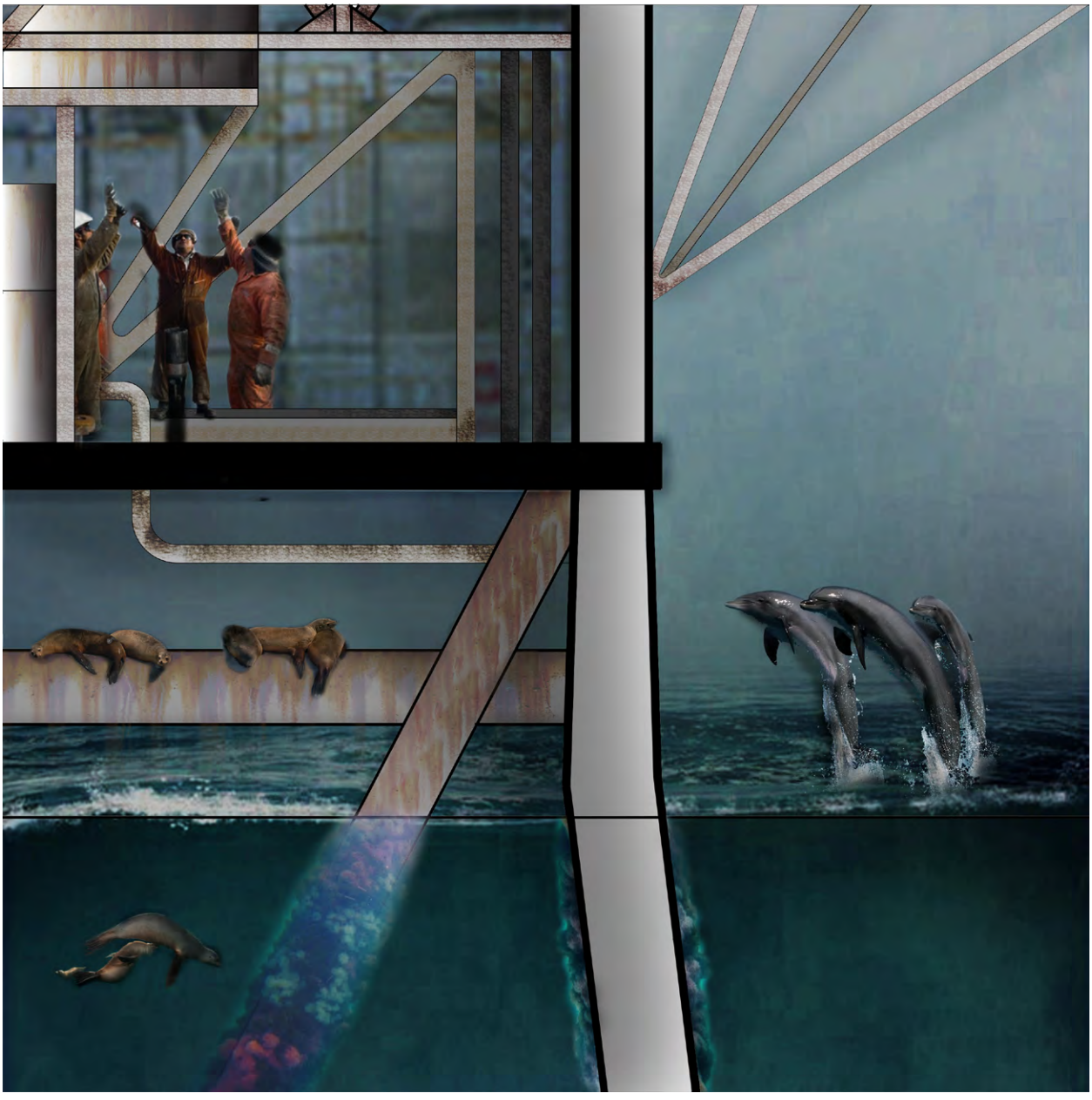
"Water Conditions: Declaration." California Department of Water Resources. Accessed December 5, 2015. http://www.water.ca.gov/waterconditions/declaration.cfm.

Wolfson, A, and Parr, T. (1975) The marine life of offshore oil drilling platform EVA. Marine Ecological Consultants of southern California. Tech. Rep. No. 75-11

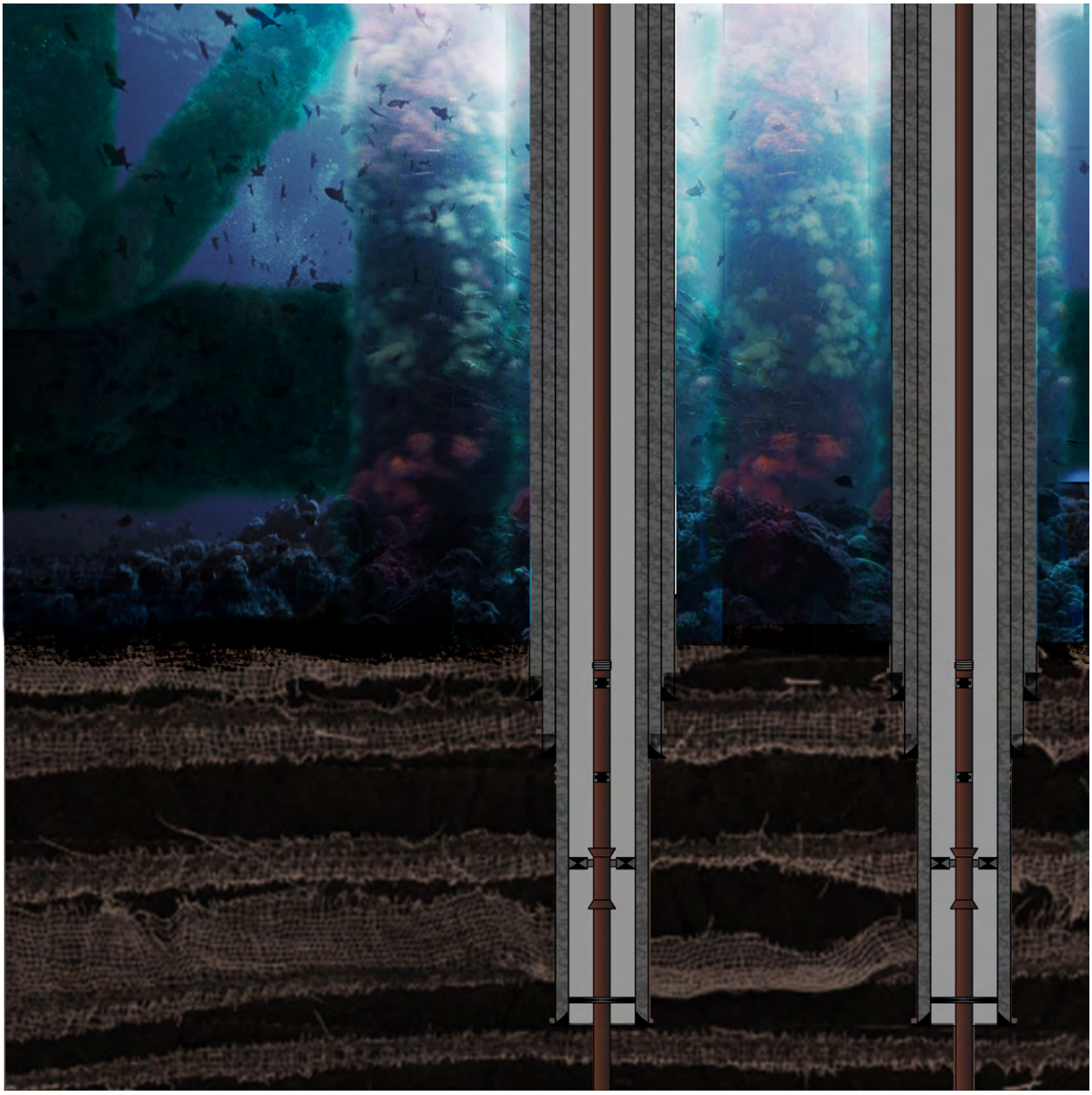
Wolfson, A., G. Van Blaricom, N. Davis, and G.S. Lewbel. "The Marine Life of an Offshore Oil Platform." Marine Ecology.

Appendix

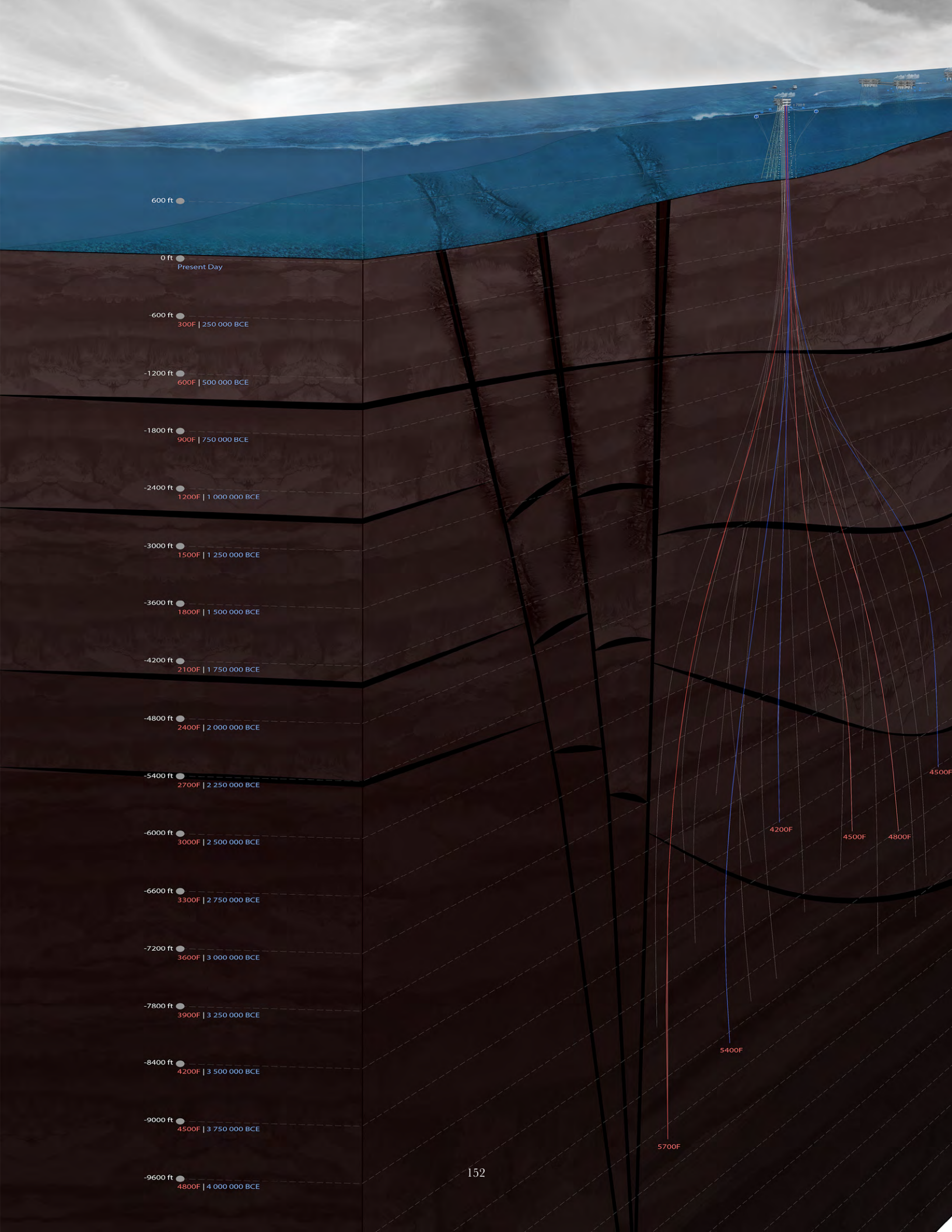
ADDITIONAL DRAWINGS



The surface of the water is a horizon filled with intense activity of energy, matter and life. This point sees the passing of species from air and water, a high degree of rusting and subnatural accumulation on the platform's structure above water and the dense packing of machinery on the lower mechanical level. This is also the zone where waves are at their highest point of unrest, where surface surge can pull anything away.

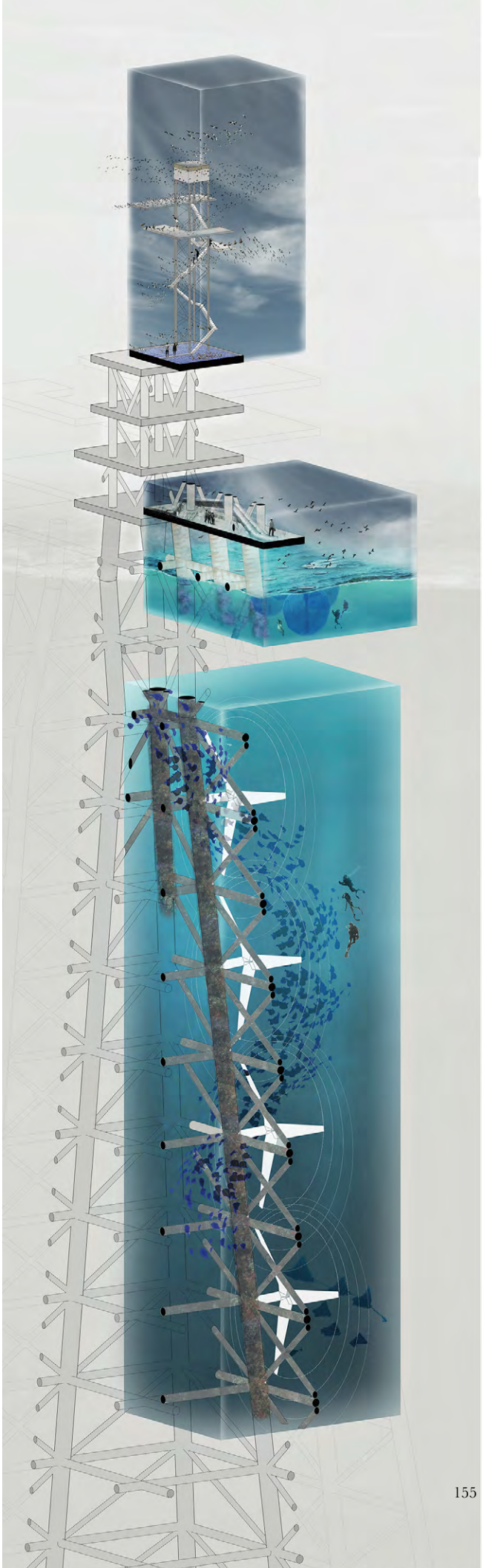


As the conductors meet the earth, its surrounding layers of concrete casing slowly disappear, revealing the thin diameter of the actual well (usually a few inches wide). The ocean floor has a higher density of life and sea floor mound accumulation at this point as the conductors form a dense forest of vertical elements intersecting the ocean floor.


600 ft
0 ft
Present Day
-600 ft
300F | 250 000 BCE
-1200 ft
600F | 500 000 BCE
-1800 ft
900F | 750 000 BCE
-2400 ft
1200F | 1 000 000 BCE
-3000 ft
1500F | 1 250 000 BCE
-3600 ft
1800F | 1 500 000 BCE
-4200 ft
2100F | 1 750 000 BCE
-4800 ft
2400F | 2 000 000 BCE
-5400 ft
2700F | 2 250 000 BCE
-6000 ft
3000F | 2 500 000 BCE
-6600 ft
3300F | 2 750 000 BCE
-7200 ft
3600F | 3 000 000 BCE
-7800 ft
3900F | 3 250 000 BCE
-8400 ft
4200F | 3 500 000 BCE
-9000 ft
4500F | 3 750 000 BCE
-9600 ft
4800F | 4 000 000 BCE
4500F
4200F
4500F
4800F
5400F
5700F

From pressure data recorded offshore Long Beach, this drawing shows the potential of enhanced offshore geothermal energy extraction by repurposing the platform's wells. This method is being tested in pilot projects with offshore platforms in the North Sea by engineer George Lockett. While this area of the continental shelf contains some of the hottest temperatures in the world, offshore geothermal energy is not a priority for California, which is yet to take advantage of onshore geothermal resources.

Platforms Hidalgo, Harvest and Hermosa in the Pt. Arguello Unit lie in high wind speed zones of 17.9mph to 19.0mph and serve as a case study for harnessing offshore wind energy. Taking precedent from SeaEnergy Renewables, a company that is testing crossbreeds of wind turbines on oil platforms in Scotland's offshore waters, these platforms are speculated as wind platforms.



Examining three points along the platform, these drawings look to imagine the envounters between forces of energy, matter and life, either already present or initiated through a future use.