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Instructive Anholt: Denmark's Most Remote And Reflective Municipality

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Situated equidistantly between Denmark's Jutland peninsula and Sweden's west coast in the Kattegat Sea (figure 1, left), the island of Anholt (permanent population 145[1]) not only presents one of Denmark's most remote municipalities, but more implicitly operates as a reflection of Denmark's geological history, geopolitical situation, and environmental future: The island is a palimpsest towards an understanding of the forces that have shaped a country and simultaneously a live recording of its future. Visualizing these forces beyond the 1:1 is a critical process towards recognizing the power of place and proximity, and was at the heart of this studio-based investigation. What follows is a brief background on Anholt island, the methodologies of discovery undertaken by students to unlock information beyond the 1:1, and a reflection on the impact of process towards a better understanding of the influences found at the intersection of the proximate and the remote.

ANHOLT: ISLAND AND PROJECT BACKGROUND

Environment: Anholt island, an isolated sandbar of 8.6mi^2 is an environment in continual transition through both natural and man-made forces. Historically, its geography has been controlled by the impact of the Kattegat Sea (figure 1, middle), a turbulent body of water with continually changing currents that pushed and pulled on the islands perimeter in interior. Now, its character is being equally influenced (and perhaps challenged) by 21st century forces, including visits of 60,000 tourists in a 6-week period of summer per annum, its position as neighbor to the 4th largest windfarm in the world, and serving as an offshore resource towards infrastructural projects meant to better Denmark – all an impact to the very environment meant to be protected.

Tourism: Anholt island receives more than 60,000 visitors each year during the months of July and August. What was historically a self-sustaining colony of fishermen, hunters, and tradespeople has been transformed into a single-state economy, collecting 95% of yearly revenue in the six short weeks of the Scandinavian summer through tourism. Anholt's population swells each summer as people visit to reconnect with a form of nature that, while still proximate to their home, is an environment 'worlds away.' This tourism is critical towards Anholt's survival and financial sustainability, but brings into question its ecological and environmental sustainability – an ultimate impact towards tourism.

Wind Ecology and Infrastructure: Denmark has made multiple propositions to become carbon neutral in the 21st century. The city of Aarhus (and the region of Midtjylland) began promoting the idea of carbon neutrality in 2008, projecting that 'Carbon neutrality by 2030 is a goal for the city of Aarhus.[2]' The Kattegat Sea, with shallow depths and windy seas, was immediately identified as the perfect location to install – and showcase – a large wind farm to initiate this goal.

The Kattegat Windfarm (figure 1, right) has become just such a showcase project; a model of Danish environmental thinking and technology towards a sustainable future. Positioned equidistantly between the city of Grenaa on the east coast of Jutland and the island of Anholt, it's 111 wind turbines generate 4% of Denmark's daily energy needs and ALL of the power needed by the residents of Anholt island. This piece of infrastructure is visible from both city and island shorelines, making it an ever-present neighbor that consistently reminds its citizenry about Denmark's path to carbon neutrality.

And while this wind farm showcases efforts towards a sustainable future, there are many unanswered questions as to the wind farm's impact on the Kattegat Sea ecology, the island of Anholt itself, as well as end of lifecycle plans for the established infrastructure of the wind farm.

Task: As part of the 'Aarhus 2017: European Capitol of Culture' initiative, Master studios at Arkitektskolen Aarhus were requested to examine rural environments surrounding the city within the region of Midtjylland. Our studio chose to reflect on how conditions of adjacency (the proximate) impact the rural and how the rural can visualize issues of the greater environment.

Figure 1: Anholt island's location in the Kattegat Sea (left), the north shore of Anholt island (middle), and the Anholt Wind Farm (right).

ASSIGNMENT: INSTRUCTING THE ANHOLT ROSETTA STONES

As a creative practice, mapping precipitates its most productive effects through a finding that is also a founding; its agency lies in neither reproduction nor imposition but rather in uncovering realities previously unseen or unimagined, even across seemingly exhausted grounds.[3]

Inspiration: Discovered in 1799 (with its construction dating back to 196 BC), the Rosetta Stone recorded a decree issued on behalf of King Ptolemy V in Memphis, Egypt. The decree was transcribed in three languages: Egyptian Hieroglyphs, Demotic Script, and (Ancient) Greek. While the message of the decree, establishing the divine cult of the new ruler, carried historical value (the 1:1), more powerful was how the layering of text led to a more thorough understanding of Egyptian Hieroglyphs and even society. The ability to examine the syntax (character and position) of the Greek text in relationship to that of the Egyptian Hieroglyphs instigated in scholars a system of reference and referral that unlocked the hidden secrets of an extinct language. Through a process of visual layering of information, the Rosetta Stone has operated as a key to specificity in context; a tool that is continually referenced when questions arise towards meaning and direction.

Methodology: The logic of the original Rosetta Stone and its power towards visualizing complex and connective information became our methodology towards mapping-based recordings and reflections of Anholt beyond the 1:1. Our goal was for students to discover and visualize the tangible and intangible forces of Anholt island at the intersection of the quantitative and qualitative – To exploit data for all its merits (and pitfalls), and then manipulate and hone the data based on personal experience at varying scales and through varying media.

Initial mapping studies of Anholt island were choreographed at the intersection of the scalar philosophy made evident by Charles and Ray Eames Powers of Ten (that different scales visualize both 'continuity and change'[4]) and the organizational and classification strategies found in the Rem Koolhaas and Bruce Mau publication *S,M,L,XL* (that scales visualize levels of resolution in an idea). In examining the 'continuity and change[4]' at and through various scales, the students were able to employ their findings towards an informed and opinioned construction, that of a physical and Anholt-based Rosetta Stone.

The mapping studies of Anholt island and the resulting *Anholt Rosetta Stones* placed importance on investigation THROUGH the act of visualization and technique – that exploration and discovery should be guided by technique, making sure that 'the quality of the result is not pre-determined, but depends on the judgement, dexterity and care which the maker exercises as he works.[5]'

The mappings were broken down into four scales in five stages:

The XL Quantitative (1:15000): *An initial investigation into a singular force that has shaped Anholt Island. Undertaken prior to the site visit, teams researched information on conditions that have lent specificity to Anholt island as a holistic environment, from tides to winds to tourist 'hot spots,' employing a singular technique in computational drawing to visualize their findings.*

The L Quantitative (1:1000): *An examination of the initial XL drawings, zooming in on an assigned region of Anholt island (an area from which teams would eventually chose a site for a later studio project). Again, undertaken prior to the site visit, teams examined their initial XL mappings to explore the resulting patterns, tuning and adjusting the drawing patterns based on their gained knowledge of technique and heighten sense of character in place.*

The L Qualitative (1:1000): *An examination of the offsite-produced (quantitative) mappings through on-site (qualitative) experience to identify a location (figure 2). Teams printed their maps, travelled to Anholt island, and explored the region to identify a building site for the later studio project. Their on-site experiences both located the area for their design project and more importantly adjusted the aesthetics and logics of their L mappings through qualitative experience, instigating an 'empathy with place.[6]' In this 'analog' moment, teams drew directly on their mapping prints to catalog the adjustments to be made in order to reflect experience in situ.*

The M Qualitative (1:10): *An interpretation of natural patterning found in situ through the filter of 1:15000 and 1:000 mapping. Teams sought natural patterning on our site that reflected an aesthetic found in the XL mapping. This patterning was meant to represent a reflection of forces on the island as witnessed through the 'glasses'*

Figure 2: An **L** (large) mapping of site, examining wind turbulance and view cooridors. Drawing by Rabea Gonnsen, Mark Korfitz Gylling Hansen, and Julian Falko Johann.

of the XL mapping and occupying a (framed) area no larger than 10m x 10m. In extracting this patterning, teams would have to further evolve their overall mapping strategy and tests its efficacy at different scales.

The S Qualitative (1:1/10:1): *The recording and isolation of a fragment of curiosity. Using 3D scanning (via photography, the Scan3D app and other digital capturing toolsets) teams documented a moment of exciting and dynamic weathering on the site, from beach to property line. This fragment was meant to represent a reflection of forces on the island as witnessed through the 'glasses' of the XL and L mappings, occupying a (framed) area no larger than 10cm x 10cm.*

The S study was to instigate a scanning of a specific artifact onsite, producing a physical reproduction from digital documentation of that artifact at a 1:1 or even 10:1 scale. In creating this artifact, teams would (unknowingly) begin the process of collapsing and organizing their mapping studies towards the instruction of a physical 'Rosetta Stone.'

Intersectional Instruction – Preparing the Rosetta Stones: Upon return from site explorations, teams were tasked with producing physical CNC-milled evolutions of their L (1:1000) mappings, employing the craft and traits of CNC-milling to create heightened and tactile physical constructions representative of their mappings. The act of CNC milling requires a 1:1 understanding of tool, machine instruction (drawing) and material, with the resulting works engaging a tactile response from viewers – works that want to be touched in a 1:1 fashion. These 80cm x 80cm *Anholt Rosetta Stones* were to operate at the intersection of their findings while also inspiring architectural futures, the very nature of a Rosetta Stone.

And this process had even more value as a tool towards the evolution from digital drawing to physical manifestation. In requiring teams to evaluate all of their mappings and collected data, each was forced to evaluate not only the 'good' from the 'bad,' but make connections between a virtual process and physical technique – exploiting machining operations as method towards a heightened understanding of place.

RESULTS: EXAMPLES OF ANHOLT ROSETTA STONES

The evolution from graphic mapping to physical construction is no easy task, but is at the heart of both the studio pedagogy and the very act of an architectural process. In no direct way can (nor should) a formulated graphic become a 1:1 physical manifestation as the very act of translation in media requires an employment of latent material and tooling characteristics – instigating an evolution in aesthetic. Instead, the graphic serves to inspire and instruct the process of articulation for the physical construct.

Such is the case for the 'Shifts in Boundary' *Anholt Rosetta Stone*. An initial sequence of mappings meant to visualize both physical and imagined site boundaries over time and space employed intersecting circles of varying size and contrast to articulate these boundary conditions. A registration rooted in demising and honed by perception generated a new and heighten topography – one based in intelligence rather than record.

In determining a method of evolution from the graphic to the physical, the team exploited an often unused characteristic of a CNC-milling tool - normally reserved for the smooth finishing of work - as their main method of articulation. The center points of the circles found in the mapping became center point targets for the engagement of the ball-mill into material. The depth of engagement from the ball-mill was controlled by an evaluation of boundary intensity found in the graphic mapping, an analysis at the intersection of the quantitative and qualitative as judgement had to be exercised by the team's own wants rather than a numerical evaluation. The resulting 'landscape' evolves the territorial borders found in the mappings (figure 3) into a topography of gouged perception, a highly tuned subtractive surface of discovery in experience heighted by the characteristics (and control) of a spherical tool – the definition of 'Workmanship' in the position of David Pye.

In a second example, 'Shape and Natural Forces' takes its inspiration of articulation from the natural forces of wind and water current – the forces that continually reshape the geography of the island. Employing statistical data, the XL mapping of the island displays a series of dynamic parallel curves (lines) negotiating the influential forces of the wind and the current. The XL drawing is not a tracing of measurable information, but rather an image of the ongoing conversation between the Kattegat Sea and island.

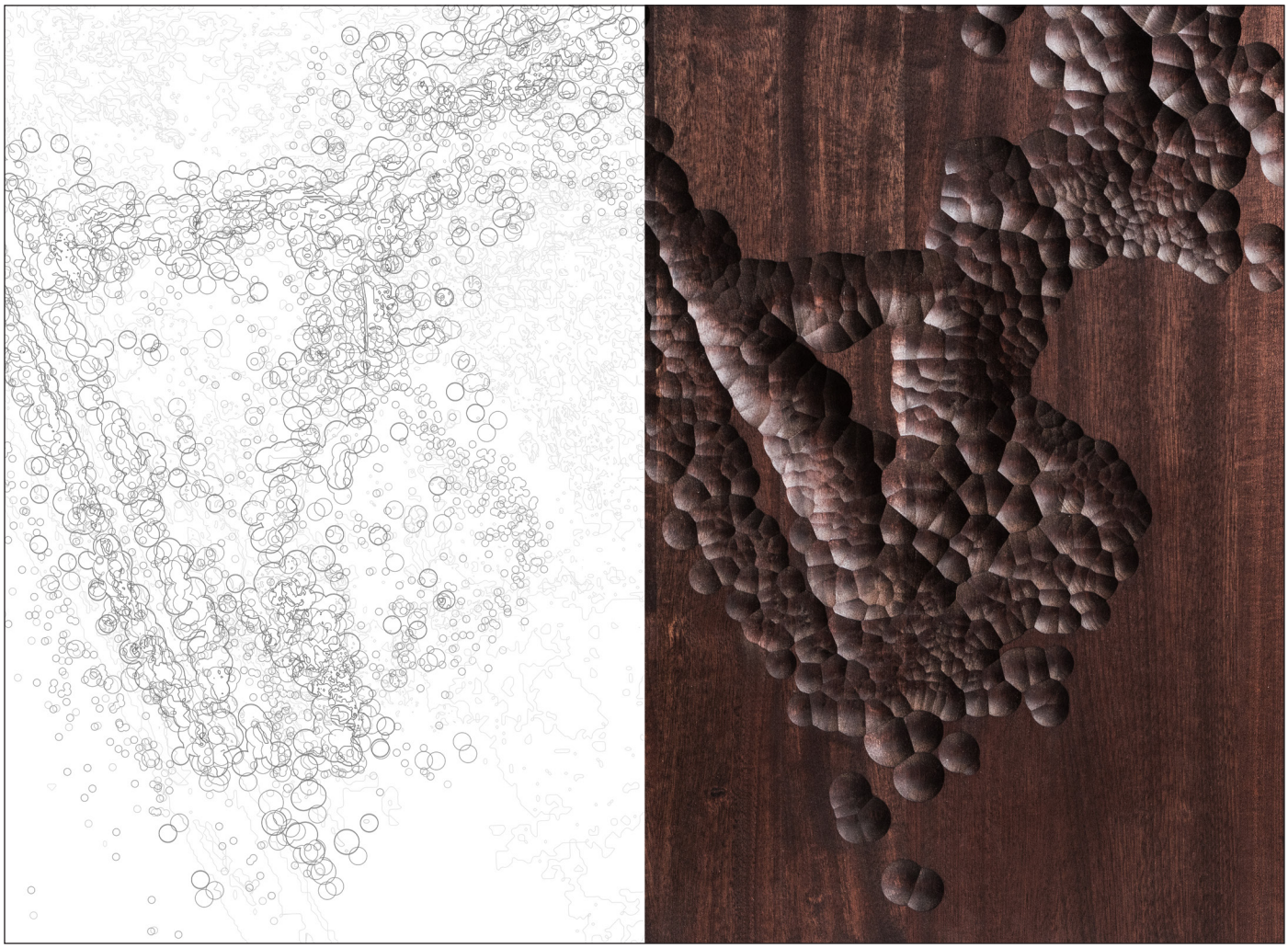

Figure 3: A comparison between the large mapping examining percieved site borders (left) and the evolved *Rosetta Stone* milling (right). Drawing and milling by Alexander Thorbjørn Fiala Carlsen and Alexandria Bo-Weong Chan.

Zooming in to the region of the site, quantitative research was undertaken to build up the basis for the L mapping. In preparation for the intended site visit, this information was mapped at 1:1000, with the resultant mapping taken to site for further use. The initial quantitative-based L mapping pursued the same geography shaping forces as the XL mapping, with a special emphasis on the wind forces. The impact of the wind on the surface of the Island and redirection of the wind were mapped based on topography and wind data.

After observing, sensing and registering the site in situ, the initial L mapping was edited and revised. The original qualitative mapping evolved into a blend between factual information and perceived findings. Eventually, the L mapping became a drawing about moments of shelter, small protected spots on the site which provided cover against the strong winds by vegetation and which offered visitors small moments of calmness in a very windy environment. Those moments of calmness where firstly mapped as white pockets defined by small blank areas emerged by subtle spinning movement between the parallel curves (lines).

Finally, the L mapping served as instruction and inspiration towards the development of an *Anholt Rosetta Stone* engaging a tactile response that is small and intimate. The parallel curves (lines) were edited and turned into toolpaths for a CNC mill and through experimentation with material and technique, the *Rosetta stone* emerged. The parallel curves (lines) turned into subtle traces of the ball mill and the moments of calmness, which in the L mapping appeared as white spots turned into solid calm formations in a very dynamic landscape.

INSPIRATIONS: IMPACT OF THE ANHOLT ROSETTA STONES

Testing Background: Gauging the efficacy and power of the *Anholt Rosetta Stones* as tools towards design required both subject matter and a latent understanding of processes to be successful. The *Rosetta Stones* are charged constructions in their content, but reactionary only when tested against normative architectural conventions and procedures. For this test, the program of a Danish *Naturskole* was chosen as it so closely relates to the very nature of the remote and proximate, and is at the heart of Scandinavian movement towards reconnection with the seemingly neglected adjacent.

Figure 4: Inspiration examinations taken from the Rosetta Stone milling (top) produced by Aliis Mehide, Jonathan Abildgaard Moberg, and Liu Shirong, including programmatic groupings for protection (middle) and overall design aesthetics (bottom).

The Naturskole as A Proximate Prototype: The immediate post-World War II era bore witness to a strong industrialization within Nordic countries. Farming communities evolved into modern industrial societies, meaning cities grew at the expense of rural habitation. One of the early and continual negative aspects of this growth was that the new urban citizenry, and especially the children, missed daily direct contact with nature – a critical aspect to the history and legacy of Nordic countries.

In the late 1960's an idea occurred that children should learn about nature in the wild – not with textbooks in a classroom, but by treating nature AS the classroom. In Denmark, the first such school (called a *Naturskole*) was established in 1972. Fiskebæk *Naturskole*, located in a state forest 20 km from the center of Copenhagen, was designed to treat the site as a classroom, with curriculums and pedagogy inspired by place – choreographed to reconnect children with nature through examinations into specificity of place.

Nordic *Naturskole's* have different formulated objectives based on regional influences and specificity of location. There are, however, a large number of commonalities that guide the overall mission. First, a *Naturskole* should be a practical supplement to the everyday school's teaching of biology and science, giving students practical experiences in nature and an understanding of relationships and interactions in the rural environment. Furthermore, the *Naturskole* should give students an increased sense of responsibility for nature and consequently the understanding that it is important take care of the nature and the environment. Also, the *Naturskole* should provide students with an understanding of the interaction between nature and humans through time. Finally, time at the *Naturskole* should be embedded time, with students staying at the school (including nights) for at least one week.

An Architectural Inquiry: Students were asked to reflect on their *Anholt Rosetta Stones* towards architectural decisions, from the organization of program to the situating of structures to formal and material aesthetics. Certain parameters (beyond program typology) were given to the students, including resident numbers, types of classrooms, and lengths of stay. Using these parameters, students were required to 'ask' their *Rosetta Stones* questions, ranging from how program should be situated on site (protected or exposed) to the distribution of buildings (monolithic or scattered) to how the aesthetics of the *Anholt Rosetta Stones* can inspire and architectural vocabulary. Their responses to these questions should be manifest in their architecture.

An Architectural Reaction: The reflections and reactions of the team members behind the 'Shape and Natural Forces' *Anholt Rosetta Stone* display purposeful reactions – from the organizational to the blunt. In looking at the comparative triptych graphic (figure 4) we see two such reactions – first in massing and next in aesthetic.

In the case of the center image, the designer took the position of programmatic grouping to a) create a sense of community, and b) protect the students through clustering while c) respecting the tangible and intangible site characteristics via orientation. While the designer's buildings did not take on the exact formal quality of the programmatic diagram, the spirit of site analysis and programmatic reaction created a more purposeful architecture that reflected the condition of 'sheltering' as experienced by the designer while in-situ.

In the case of the bottom image, a blunter but still elegant geometric aesthetic was chosen, crafting buildings that bear a direct resemblance to the *Rosetta Stone* milling while expanding upon the formal nature of the analysis through materiality and articulation. This designer chose to closely examine the striations created by the tooling during the milling of the *Rosetta Stone*, using that quality as inspiration towards a rain screen cladding system that buffers its inhabitants from the environment while providing visual directionality and flow through the campus towards the waterfront.

SUMMARY: THE INTERSECTION AS INSTIGATOR

It seems like the site itself is very empty and sparse, with no clues. It seems like there's not much there. And yet if you train yourself to see what's there, to be a good observer, or have empathy with place, then you see lots of stuff and lots of possibilities.[6]

Used in our initial abstract submission and already referenced in this writing, Brian MacKay-Lyons quote so aptly frames the need for *Rosetta Stone-like* investigations as pedagogical tools in an educational environment driven (via todays culture and attitude) by almost instant and seemingly binary responses. Student research is often fast-paced and data-driven, providing the 'cravingly needed' overly mathematical justification for an architectural response. But, by slowing down, and by 'training yourself to be a good observer,' one can, indeed see 'lots of stuff and lots of possibilities.' The act of being in situ after performing initial research, and then being challenged to react to that research by doing nothing more than observing and augmenting, is a powerful moment in the education of an architect, especially when that environment is so close – and yet so far away. The benefits found at the intersection of the rural and the proximate are those of an instilled reflection and reaction, of an adjustment to pace and to attitude, and of the way in which the environment can re-frame an inquiry.

ENDNOTES

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