

LARGE-SCALE PROTOTYPING

IN A **BLUE-URBAN** CONTEXT

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1. INTRODUCTION

This research focuses on developing insights about large-scale prototyping in blue-urban contexts through the case of the design process of CPH-Ø1 prototype developed by Maritime Architecture Studio as part of their Copenhagen Islands project. The report first starts with **The Blue-Urban Connection (1.1)** by describing the context of the case and problem formulation, followed by **Defining Design Process, Prototyping and Temporary Urbanism (1.2)**. **The Case of CPH-Ø1 (2)** introduces the history and concept of the project and the prototype. This section is followed by **Theoretical Frame and Concepts (3)** where the theories inspiring this report are presented and related to the case. In **Methodology (4)** we describe the methods used in order to gather detailed data, their limitations, as well as a section on project management. Driven by the data the following section presents the **Analysis (5)** structured by 4 themes. In the **Discussion (6)** we highlight relevant findings useful for our **Advice (7)** section, in which three pieces of advice are introduced. Lastly, the **Conclusion (8)** sums up the report and relates back to the context of the research by providing contributions for further research.

1.1 THE BLUE-URBAN CONNECTION

Today the world is driven by sustainability and responsibility towards the environment due to concerns with climate change, which are not only impacting everyone's daily lives but also bring new tendencies to urban design. Cities are trying to adapt to these concerns and thus '[t]here has been greater awareness and a renewed interest in how design can contribute to sustainability' (Knox 2011:243). In fact, new movements have risen up in order to take into account environmental concerns within proposals of new ways of living in cities. One of them is Blue Urbanism, a field that encourages urban development to address issues of rising sea levels by examining and rethinking the 'relationship between city and ocean' (Beatley 2014:xi). As a result, there has been an increased interest in the development of maritime architecture to extend urban life on water. Consequently, it has also been rising as an interesting topic of research - see Baumeister, Bertone and Burton (eds.) 2021 on ways to deal with these concerns and solutions through urban extensions; Ronzatti and Lovric 2020 on floating public spaces; Pittman et al. 2018 on marine park concept as a tool to connect community and city seascape.

Research (Kaji-O'Grady & Raisbeck 2005) on proposals for urban designs on water in the 1960s and 1970s provides examples of maritime architecture projects that passed the

conceptual stage becoming a reality. Some of such examples include 'Jacques Rougerie's Galathea and Aquabulle in the early- to mid-1970s, Cousteau's Conshelf experiments ... and Kikutake's Aquapolis (1975)' (ibid.:447). Some larger habitats that were built are Sealab I and II (in the United States), Seatopia (in Japan) and BAH and Helgoland (in Germany) (ibid.).

Developments in maritime architecture are seen around Denmark and Copenhagen as well. Especially because 'Copenhagen is exposed to an increasing threat of flooding caused by climate change' (Coolidge 2017). While the city is threatened by rising sea levels, at the same time developments and expansion towards the sea continue to grow, 'this clash raises problems about how we manage the risk of flooding while we protect and develop the spatial qualities of the urban coast' (ibid.). Maritime architecture responds to these issues, proposing developments for the harbour while providing solutions to rising sea levels. Some examples in Denmark include: *House of Water* - a vision for a public space in Copenhagen harbour, combining water, architecture and technology (Tredje Natur n.d.); *Urban Rigger* - a housing community (Urban Rigger n.d.); *Hasle Harbour Bath* in Bornholm - a concrete platform used as a public space on water (White Arkitekter n.d.); *Teahouse Ø* - a floating pavilion (Guido 2021); and *Det flydende Shelter* - a floating shelter to stay overnight, which for a test period is placed in Teglværkshavnen (Kiil 2020).

In Copenhagen, Maritime Architecture Studio (MAS) led by Magnus Maarbjerg and Marshall Blecher focuses on these types of developments. MAS is concerned about climate change and thus designing under the concept of Blue Urbanism. The studio's goal is to enhance the harbour environment by making it more open, engaging and lively, and improve the city-sea relationship (Maritime Architecture Studio n.d.).

This paper focuses more specifically on one of the projects of MAS - Copenhagen Islands (CI). CI is a floating public space in Copenhagen harbour, which aims to address the issues of misuse of the harbour environment as well as climate change and rising sea levels. The project is interesting because it comprises, in MAS understanding, urban public space in the waterfronts as an innovative way for people to have a democratic relation with water. But at the same time it is also relevant since the architects have implemented the testing of a 1:1 scale prototype known as CPH-Ø1 in their design process. CPH-Ø1 allowed the architects to test the design and its materiality as well as to explore the concept of CI in relation to the dynamics of different spots in the harbour, making it a compelling case to analyse. The case of our research is thus the design process of CPH-Ø1.

Although this is our case, during the time of our research the prototype was not existing anymore, making it impossible to examine it in situ. Hence we focus on exploring in retrospect how CPH-Ø1 fits into the design process of CI and the contributions it provides for the future of the whole project, as some of the outcomes are already visible.

In a wider context of our project we are interested in questioning how large-scale prototypes could be useful for blue-urban projects. To do this we are conducting a case study to understand the relevance of using large-scale prototypes to test in blue-urban spaces, which raises the following research question:

How was the design process of CPH-Ø1 carried out and how can this study contribute to practices of large-scale prototyping in blue-urban projects?

The research firstly aimed to examine the design process of CPH-Ø1 retrospectively and then, after conducting the analysis, discuss the insights in relation to blue-urban projects. By practices of large-scale prototyping we mean the use of 1:1 scale prototypes incorporated into design processes. While blue-urban projects refer to the spatial elements that enable the relation between cities and sea. We are following the ontological frame proposed by Bærenholdt et al. (2010:3), that the prototyping process and its impacts are analysed through the *research into design* approach. The contribution of this report towards blue-urban projects in general portrays the *research for design* approach, since our research outcomes could be helpful for similar creative processes, and could be considered as well by practitioners as a possible support for urban projects. Therefore, to help us answer the research question precisely, we are applying a sub-question: *What advice can be extracted from the study for both the future of CI and blue-urban space projects?* This leads us to the 'contribution' element that we pose in our research question referring to possible pieces of advice and tools.

1.2 DEFINING DESIGN PROCESS, PROTOTYPE AND TEMPORARY URBANISM

The following section expands on the main concepts of our research to provide clarification. The three concepts explained are Design process, Prototype and Temporary Urbanism. We developed these because we see them relevant throughout the report.

Design Process

We consider it relevant to define design processes, not only because it is the main aspect in our research, but also guides our focus for analyzing CPH-Ø1. There is not a proper

definition of a design process because it could be defined and interpreted differently according to the perspectives of several authors (Brown & Katz 2009, Dorst 2019 and Cross 2011). Nevertheless, we feel comfortable with one of the definitions made in Kimbell's literature (2011) when citing Herbert Simon (1969), who describes 'design as a rational set of procedures that respond to a well-defined problem' (Simon cited in Kimbell 2011:290-291). By this, he is defining how designing constitutes a process with a specific aim that involves 'problem-solving and decision making' (ibid.:291.). We consider that this definition reflects appropriately the aspects during the process of prototyping that we are analysing. A process in which 'problem solving require[d] continual translation between the state and process descriptions of the same complex reality' (ibid.). In other words, the design process was developed by different elements that helped the designers to better achieve the realization of their ideas.

Prototype

We find it relevant to bring into this report the definition of prototype due to the main role that CPH-Ø1 has in our project. Taking this into account, we found that a common definition is the experimental nature of testing the materiality of a concept in real life. Although some of the definitions come from articles in the field of IT, we consider that some of them describe properly what we are considering as a prototype in this report. For example,

Prototypes are the means by which designers organically and evolutionarily learn, discover, generate, and refine designs. They are design-thinking enablers deeply embedded and immersed in design practice and not just tools for evaluating or proving successes or failures of design outcomes (Lim, Stolterman, Tenenberg 2008:2).

Thus, a prototype is not only a tool to test pre-determined aspects in a project, it also carries the agency of stimulating further thinking on the designs. As a result, 'prototypes (1) enable communication, (2) aid in learning, and (3) inform decision-making' (Lauff, Kotys-Schwartz, Rentschler 2018:5). In relation to this, we have identified in the maritime architecture field that testing is the main goal of prototyping, it is not only about materiality concerns but also about the relationship between the users, the environment and the artifact:

Prototype testing in architecture ... involves using the physical proposal for its intended purpose. Cook advocates a 'scientific approach' to testing, but evidently one that is not solely focused on the hard sciences of construction, material and services. Cook includes the soft sciences of psychology, anthropology and linguistics The testing of marine

architecture prototypes necessarily includes the impact of the environment on psychological and physical well-being. (Cook cited in Kaji-O'Grady & Raisbeck 2005:467)

In a way, Cook is evoking the importance of acknowledging the prototype as more than its material presence, as an artifact that brings impact on human beings. To sum up, a prototype is considered in our research as a tool to gain knowledge from testing in a holistic way, where designers can see a manifestation of the concept. This gives designers an opportunity to consider new insights that might arise and solve problems that can not be seen in a sketch or a blueprint.

Temporary Urbanism

Temporary Urbanism (TU) became relevant while researching and questioning the definition and the role of CPH-Ø1 throughout the design process. It emerged during our research development, when considering testing designs in an urban context. Therefore, it is pertinent to have this concept in consideration and distinguish TU from the concept of a large-scale prototype. TU is a way to explore the unknown dynamics of cities:

Hausenberg states that temporary urbanism can be a way of challenging the rules and norms existing in cities, and therefore have a result of making citizens open-minded and create a desire to discover the unknown. (Hausenberg cited in Isaksen 2018:22)

TU is an innovative opportunity mechanism in city-making by expanding and proposing new ways to live in cities. In fact, 'cities are places where ideas should be tested. Creating innovation, creativity, and the desired liveability through experiments is among other things what temporary urbanism can contribute to in city-making' (Jane Jacobs cited in Isaksen 2018:19). It is also important to mention that TU also gives the opportunity to the designer/planner to experiment and fail, and from that create a better solution for a specific problem. In a way, TU 'turns the city into a testing ground where new forms of thinking can be implemented without the danger of permanent failure' (Dovey cited in Isaksen 2018:21).

Furthermore, TU's relevance is highlighted by its outcomes in the community. The fact that this mechanism tests elements in urban dynamics, brings with it the inclusion of users, as users 'become active promoters of socio-spatial change and increase the sense of community' (Bragaglia & Rossignolo 2021:6). In other words, TU works as an element of unity where people interact with each other and get to a common ground about their own place. By this, we argue that TU could bring another perspective to the design process of our case study.

2. THE CASE OF CPH-Ø1

In this part of the report, we define the context of the CI project and CPH-Ø1. Although the focus is on the design process of CPH-Ø1 and its implications for the project, we find it important to contextualize it by first giving an account of MAS and an outline of their CI project followed by a more detailed description of CPH-Ø1.,.

2.1. MAS AND THE CI PROJECT

MAS is an architecture studio focused on maritime projects. It is located in Copenhagen's harbour and was founded in March 2021 by the architects Magnus Maarbjerg (Danish) and Marshall Blecher (Australian). Both have separate studios of their own, so the creation of MAS was a way to officialize their partnership and a shared vision 'to improve the relationships between the city and the sea' (Maritime Architecture Studio n.d.). During the creation and development of CI and before MAS, Magnus was a partner at Fokstrot studio, previously located where MAS is now, which handled projects mostly on water. Marshall, on the other hand, established his own practice of residential projects in Denmark and Australia. Consequently, CI was created and has continued since 2015 and developed simultaneously with other projects.

From the initial conception of the project, MAS' idea was to create a floating public platform on the waters of Copenhagen's harbour. The first concept took the shape of a *Parkipelago* (Maritime Architecture studio n.d.) - a group of artificial islands designed for specific activities such as: tree park, fishing platform, water playground, stage, sauna, mussel farms, café (CI presentation¹) (fig. 1). The *Parkipelago* concept was later put aside due to complicating the funding of the project and other practicalities. Thus, at the moment the final project intends to consist of three differently sized islands to be implemented as an urban park on water.

¹The document referenced is an internal document provided to us by the architects and treated in the report as part of our data collection. See page 25 of the report for more information about the document.

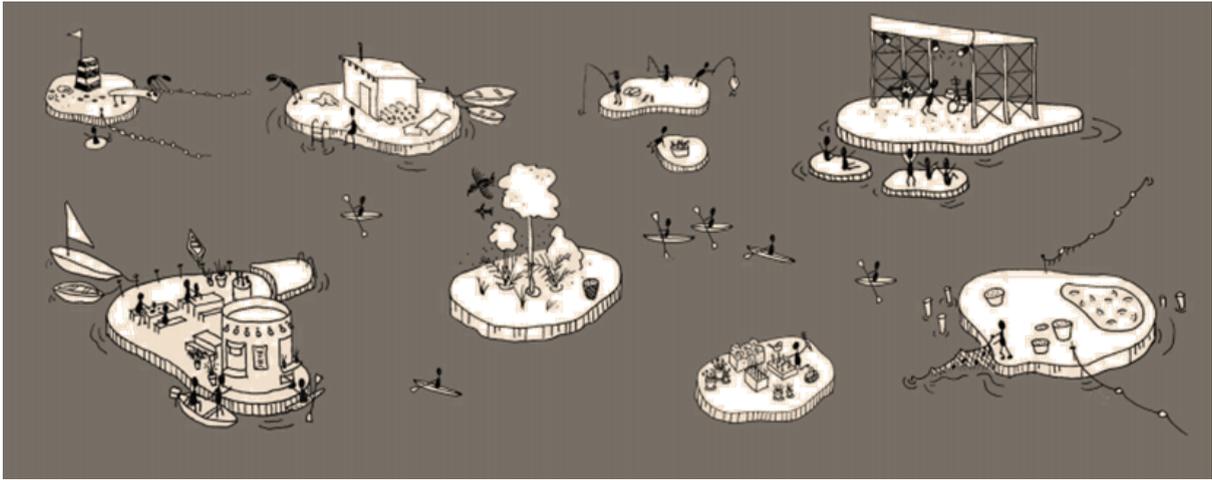


Fig.1 First concept of CI: sketches by the architects. Source: CI presentation

Regarding their locations in the harbour, the placement of the islands will not be in a fixed spot, instead, they will be in predetermined areas accorded by the architects and By & Havn - the port authorities. The selection of the locations was based on assessments by both MAS + By & Havn, from which a criteria for the implementation and regulation of the project was created (By & Havn assessment²). The islands will have the flexibility of being used all in one location or dispersed in different parts of the harbour and moved around if needed (CI funding application³).

² ibid.

³ ibid.



Fig. 2 Representation of Copenhagen's harbour, with the potential locations for the islands
 Source: CI funding application

By the end of 2018 an expansion of stakeholders and more applications to get support from Copenhagen municipality and other investors has been made, but at the moment the project is on hold, waiting to advance to the construction phase, due to funding pending.

MAS' aim is multifaceted: to experiment with ways of bringing more recreational activity to the harbour, to expand the perception of it as an extension of public urban life. And to be a provocation for current issues affecting the quality of the city's waterfront:

Our concern for the harbour environments started as a reaction to the development that we've witnessed in Copenhagen harbour where the waterfronts have been rapidly crystallizing during the last decade. Expensive real estate treating the harbour like a private front garden with no connection to the water at all (Maritime Architecture Studio n.d.).

By this statement MAS' judgement is that the waterfront is losing its indetermination and openness to spontaneous urban activities, and instead 'crystalizing' in the sense of stiffening it up into homogeneous, semi-private housing developments.

2.2 THE PROTOTYPE CPH-Ø1



Fig.3 CPH-Ø1 from above. Source: CI presentation

The design process of CI started with the architects applying to the Danish Arts Foundation for funding to build a 1:1 scale prototype. The prototype was a 20sqm floating platform on recycled barrels, for the structure and cladding had a blend of larch and fir wood, with a linden tree planted in the middle. It was firstly tested on water in 2018 by MAS' initiative, placing it in the harbour next to their studio in Sluseholmen. Later in the year, it was officially tested at Kronløbsbassinet in Nordhavn after the involvement and approval by By & Havn. The testing of the prototype included technical evaluations of its material and technical viability as well as site visits and interviews with people using it. Since then CPH-Ø1 was moved to different places until 2020, when it was taken out of the water and destroyed.

From the start, MAS' intention of building CPH-Ø1 was as a temporary testing element of the process rather than a project in itself. However, learning about its materiality was not the only outcome from prototyping. They used it as a visualisation of CI to capture local and international attention in the media and participate in design competitions. That effort resulted in further interest in CI from different stakeholders and support from Copenhagen municipality and By & Havn.

3. THEORETICAL FRAME AND CONCEPTS

Our case is constituted by a project from an architectural practice and its relation with the places where its prototype was temporarily tested. Taking that into consideration, we found pertinent to introduce in this report some theories and concepts to assist our analytical insight into the design process of CPH-Ø1. *Practice theory* includes an overview of different authors about the meaning and constitution of a practice and the definition of *problem-solution* dynamics in a design process. *Scaling Up and Down* refers to the works by Yaneva on empirical research in architecture offices and observations on the effects of modeling and prototyping in a given project. Lastly, the concept of *place* is construed and from it we develop the notions of *placemaking* and its relevance for user involvement in urban projects.

3.1 PRACTICE THEORY AS A FRAME OF THE DESIGN PROCESS

There is no consensus of a single, general and united practice theory and its terms, as many authors point out (Reckwitz 2002, Warde 2005, Shove & Pantzar 2005, Watson 2012, Kimbell 2011, 2012). On the contrary, theories of practice encompass a range of interpretations of terms and applicability. Nevertheless, and despite the lack of a cohesive Practice theory and its concepts, 'the crucial point is that practices, as recognizable entities, are made by and through their routine reproduction' (Shove & Pantzar 2005:44). Reckwitz (2002:249) indicates the definition of *practice* in the context of social sciences:

"Practice" (Praxis) in the singular represents merely an emphatic term to describe the whole of human action A "practice" (Praktik) is a routinized type of behaviour which consists of several elements, interconnected to one other: forms of bodily activities, forms of mental activities, "things" and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge.

We followed the notions of practice theory that focus 'on the details of doing, the role of embodied knowledge and skills, of routine and habit, and the affective experience of being and doing in the world' (Watson 2012:489). Moreover, Reckwitz (2002) and Watson (2012) refer to interconnected elements that work together while the practice is performed, which are defined as *material* (physical support), *skills* (know-how or competences) and *meanings* (personal, cultural and social connotations). These elements help to nourish the understanding of the world, as Reckwitz (2002:253) states:

A specific social practice contains specific forms of knowledge. For practice theory, this knowledge is more complex than “knowing that”. It embraces ways of understanding, knowing how, ways of wanting and of feeling that are linked to each other within a practice. In a very elementary sense, in practice the knowledge is a particular way of “understanding the world”, which includes an understanding of objects (including abstract ones), of humans, of oneself.

Furthermore, the continuous contribution of ‘carriers’ (Reckwitz 2002) or practitioners who carry not only ‘patterns of bodily behaviour, but also of certain routinized ways of understanding, knowing how and desiring’ (ibid.:250) produce, reproduce and transform the practice and this way ‘engender and entail new forms of production and consumption’ (Shove & Pantzar 2005). This means that the performance of the practice can evolve and create new practices from existing ones through the continuous performance of the practitioners.

Besides comprehending the importance of the practitioners and in accordance with specific desires, knowledge and meanings, a practice can also occur in different scales from an individual level to a collective one (Reckwitz 2002), or even to whole networks of ‘Communities of Practice’ (CoP), as Faulconbridge (2010) defines and contextualises them in architecture practices. CoP are composed by carriers who, as in any practice, take in the same objectives, routines, educational backgrounds and set of skills (ibid.:2843). The CoP networks or ‘constellations’ of practice are formed through practitioners and tangible elements moving around (ibid.:2854), that can create a ‘buzz’ of shared information and knowledge at a global scale. Thus, we find it important to identify how these networks and ‘buzz’ interfere or enact with the purpose to further the process and the outcomes of building the CPH-Ø1 prototype.

MAS distinctive design practice from other CoP could explain decisions taken by the architects in the process of materializing CPH-Ø1 and what followed. As practice is ‘a nexus of doings and sayings’ (Schatzki in Watson 2012:489), Watson (2012:489) argues that ‘practice approaches are often deployed for and through a focus on the details of doing, the role of embodied knowledge and skills, of routine and habit, and the affective experience of being and doing in the world.’ In addition, the ‘theories of practice can be understood as focusing always upon the local and immediate, in the details of doing’ (Geels in Watson, ibid.). Thus, regarding our analysis of MAS’ design practice we focused on certain specific details of their design process, to investigate in retrospect how the architects, in Reckwitz’s (2002:252) words, carried on ‘using particular things in a certain way’ under the umbrella of practice theory.

Practice theory approach is thus applied in this report to frame and support the analysis of the design process of CPH-Ø1. As mentioned in our introduction (1.2), design process is defined by the problem-solution dynamics and decision making that occur when developing a design project. We distinguish between design process and design practice concepts, because we consider that the latter relates more to the performance of the practitioners, when they apply their ideas and know-how to handle the objects in developing designs. We defend that both terms occur simultaneously when designing but are also different, thus we use the term design process in relation to the stages of the CI project and CPH-Ø1, and design practice for MAS' actions and procedures.

By engaging with the design process of our case we find the need of integrating concepts from design and architectural studies that complement the practice theory approach. For this we looked into how Kimbell combines the approach with research on design practices. Kimbell (2012:131) considers the approach useful to study designers' work as 'a situated, contingent set of practices carried by professional designers and those who engage with designs, which recognizes the materiality of designed things and how they come to matter.' For Kimbell (2012:133), practice theory is 'a way to see design activity as distributed across a number of different people and artifacts that together enact designing and designs,' in a bundle of 'minds, things, bodies, structures, processes, and agencies' (ibid.:141), The practice theory approach works then as an 'analytical device' (ibid.:136) to comprehend and sustain our research into the design process of MAS and its bundle of elements and people. Kimbell (2012:135) links the practice of design, or *design-as-practice* with the elements and the thinking that constitute that practice:

Design-as-practice cannot conceive of designing (the verb) without the artifacts that are created and used by the bodies and minds of people doing designing. This way of thinking of design sees it as a situated and distributed unfolding in which a number of people, and their knowing, doing, and saying, and a number of things, are implicated.

With this notion, we are taking into consideration not only the architect's ways of doing and thinking but also the artifacts that are part of their practice and the number of people implicated in the design process such as stakeholders, prototype users and consultants. In this way our research aligns with 'understand[ing] design activity not just as the work of design professionals and what they do or think, but sees designing as constituted in the intra-action (Barad 2007) of these diverse elements' (Barad 2007 cited in Kimbell 2012:141).

Moreover, it could also be said that ‘design professionals have an episodic way of approaching their work; they rely on hunches and presuppositions, not just facts ... the nature of the problem-solving process itself shapes the solution’ (Rowe cited in Kimbell 2011:291). This statement denotes the relevance that the problem-solving dynamics have within the whole design process iteratively, and how it is influenced with more than rational knowledge from the practitioners. In relation to iteration as part of the problem-solution movements in designing, Dorst (2019) mentions that ‘[i]n problem solving descriptions of designing, the design is simulated (prototyped) and evaluated - when the solution is not good enough (not “satisficing”) the process iterates’ (Kruger & Cross cited in Dorst 2019:63). This means that prototyping is understood in the problem-solving space as a simulation of a solution, and part of the process of *co-evolution* in a design process but not the end result. It also means that when the solution reached does not work, the process goes back to the *problem space*. However, it is never going back from the very beginning when the project started, to the same problem, as ‘in iterating, we take the lessons learned from testing the proposed solution back to the earlier activity that we need to revisit’ (Dorst 2019:72). It is instead a move forward to a new framing of the problem (or new problems) in co-evolution.

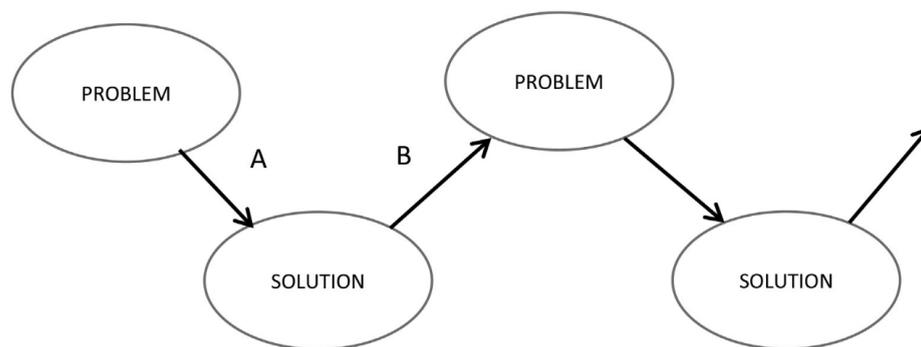


Fig. 4 Co-evolution concept. Source: Maher and Tang in Dorst 2019:61

Dorst (2019) defines co-evolution to the sort of dynamics where the process is non-linear, repetitive, in *jumps* by utilizing parts of the solution to reconfigure or feedback a problem (fig. 4). From observing the scheme it could be said that the architects’ process experienced a continuity of A: *downward jumps* from problem space to *solution space*, and B: *upward jumps* from solution space back to problem space. These iterative moves link to Yaneva’s research on *scaling up and down* concept and can support our analysis on different instances like materiality or the urban context.

3.2 SCALING UP AND DOWN

Albena Yanevas' approach resonates with Kimbell's (2012) in analysing design practices and observing the role of design processes taking place. Looking more in depth into how the architects worked, inspiration in our report is drawn from Yaneva's work (2005, 2009), as she develops ethnographical accounts with an empirical focus on the actual design processes involved in design-making. Although through her cases, she is 'bringing us into the office and to follow the work' (2005:869, 2009a:23-24) we use her research as insights to comprehend our case retrospectively.

Therefore, our research studies the CI project and stresses the role of uncertainty in the design process of CPH-Ø1, to comprehend the behaviour while designing through design practices. Moreover, for us it is important to argue that the action of designing serves not only to develop design artifacts, but also as a mean of acquiring genuine knowledge through what Yaneva (2005:870) defines as 'material operations' or 'knowing through scaling'. When focusing our analysis on such moves of *scaling up*, *scaling down*, *rescaling* and *jumping the scale*, we depict how the use of scaling brought CPH-Ø1 into existence, stressing materiality and openness of the design process. At the end, with the aim of understanding the implications of practices of large-scale prototyping within blue-urban public projects.

Thereby, the scaling up and down concept is included in our theoretical framework because it allows us to analyse retrospectively the process through which CPH-Ø1 was developed and its implications for further design process of CI, as '[k]nowing through scaling is an integral aspect of architectural practice' (Yaneva 2005:870). By using her research we focused on the actual architectural practices and techniques of prototyping, a broader perspective on the *scoping in* and *scoping out* dynamics and the states of 'knowing less and knowing more' (ibid.:880-881,887). The significance of Yaneva's accounts resonates with the design process of CPH-Ø1 because 'in such experiments with scaling ... moves with various tools and models, the intelligibility of materials and the actions of the architects are all made observable' (ibid.:869). Further, it helps us to understand the fabrication of models, scaling up and down, the different rates of speed and reassessments in the design process.

As part of the design process, we find relevant how Yaneva (2005:869-871) highlights and portrays manipulations with materials and scaling instruments within the work on models. Furthermore:

Scaling can be considered as an experimental situation in the sense that it is subjected to constant and well-equipped observation of possible consequences of acting on scale models; it is an apparatus for conducting, recording and interpreting the results of manipulating selected features of models. (ibid.:868)

By this, the importance to understand the constant relation between materiality and the designer helps us to argue that the process of scaling is usually carried out either as ‘an exploratory move by probing in trial-and-error’ or ‘a systematic test’ with the intention of either confirming or rejecting the outcome (Yaneva 2005:868). Thus, the scaling-up of the CPH-Ø1 can generate empirical accounts of the model in exploring various dimensions of it. Including scaling as a central issue in the case of CI would help make clearer the iterative process, as the ‘going back and forth’ between scales and models (ibid.:884-885) and place the prototype as an element in that process. Moreover, Yaneva (ibid.:887) argues that ‘scaling up and scaling down are not successive moves, but parallel states, each containing the other and referring to it.’ Her article connects to our aim of understanding a scaling process as having a versatile rhythm, relying on the sudden jumps and returns instead of being a logical, linear procedure moving in a straight line from abstract concept to concrete object (Yaneva 2005:867).

In light of the above, the *large-scale model* helps to ‘visualize ... sizes, shapes and precise positions’ (Yaneva 2005:880-881). Contrastingly, the *small-scale* model is abstract, less detailed, and expresses only the main features or the concept (ibid.:880-882). Thus, the scaling-up concept can be a parameter to understand the movements between various dimensions and descriptions of the model, and the large-scale model a tool to open up the project to more exposure and publics:

The large scale model is more powerful, not because of an inherent superiority of size, but because it has the ability to capture more parameters and concerns, to sum up more requirements and limitations, to reflect more details, corners and finishing, to enrol more viewers, to enable more bodies to gather around it, to mobilize the public awareness better (ibid.:881).

Moreover, when referring to different sizes of scales, it is inevitable not to mention *jumping the scale* which is defined as the move of passing to a larger scale (ibid.:882) allowing to clarify and define more details in action, in use, in failing or in being repaired or changed (ibid.:880). Thereby, we analyse the design process of CPH-Ø1 under the possible changes that generate outcomes of the shape, dimensions, elements, spatial quality, and the placing of the prototype in situ. It is also important to analyse that these

models, such as a 1:1 scale prototype, serve as compositions shaped according to multiple constraints, rather than placing them only as projections or anticipations (ibid.:872-873). For instance, these constraints could be linked to *site specificity* and *community concerns* (ibid.:871-872). These are considerations to identify, analyse and highlight in the development of our report.

3.3 PLACE [MAKING]

This following subsection introduces key concepts in working with place as proposed by Tim Cresswell, Doreen Massey, and other authors within the field of public space. Because our case relates to architecture practice, public spaces, and creation of places in urban contexts, we found it pertinent to define in our theoretical framework the concept of *place*. Nowadays, the concept of place is well theorised, but as Cresswell (2020:117) states, 'it is only since the 1970s that it has been conceptualized as a particular location that has acquired a set of meanings and attachments.' In Cresswell's (ibid.) understanding, this conceptualization of place involves three components:

[L]ocation refers to the "where" of place. *Locale* refers to the material setting for social relations the way a place looks. *Locale* includes the buildings, streets, parks, and other visible and tangible aspects of a place. *Sense of place* refers to the more nebulous meanings associated with a place: the feelings and emotions a place evokes. (emphasis added in the original)

Therefore, the concept of place is discerned as the combination of how humans interact spatially with the world, in its material and immaterial aspects: 'place is not just a thing in the world but a way of understanding the world. ... But place is also a way of seeing, knowing, and understanding the world' (Cresswell 2014:18). Thus, places are not only a location, places also involve different resources, materials, social aspects and meanings, which make each place different and unique. Furthermore, Massey (2001:463) makes a link to practice with the notion of *practiced places*, when she defines places as 'the product of material practices,' something that can only exist through routines that are performed and bring meaning to the space as place by the people performing in it. Space as place is thus construed through the relations that occur in that materiality: 'Place is experience, known, and thus made by embodied practices' (ibid.:464).

On the other hand, Jan Gehl and Birgitte Svarre (2013), brings the concept of place into the empirical and analytical study of urban contexts. The study of public life in the city is at the core of his approach, as city life is meant as the complex and versatile life

that unfolds in public spaces (ibid.:2). Possibly because of the applicability of the study and approach, the meaning of place is not conceptualized, instead it is used in its vernacular sense and applied in a practical way to different scales of urban spaces (e.g. the 'city as place', the square, the 'place in the sun', the bench, 'meeting places') (Gehl & Svarre 2013). We see the application of this approach as background knowledge in our spatial analysis of the harbour and on how CI fits the social emergence and planning principles defining 'place between buildings' (ibid.:3). Principles where users of public spaces are a vital aspect in the criteria for urban designing.

The '12 Criteria' (Gehl et al. cited in Gehl & Svarre 2013:106) tool was developed to approach spaces and to guide studies on the quality of public spaces (see Appendix 1 for the '12 Criteria' table). The criteria is based on 'fundamental knowledge about human senses and needs ... and what it takes to make people feel comfortable and stay in public space [and it] has been adapted over the years in a close dialogue with practice, so that it is functional' (ibid.). Thus, prioritizing people's needs over the aesthetic qualities of a given space (although one of the criteria covers that matter). The tool serves as a 'starting point for dialogue' (ibid.) between public space and public life, 'to examine how people experience the extent to which an existing public space lives up to specifications about places to walk and stay, scale and climate conditions' (ibid.).

Besides using his theory on public space as background, this report focuses on the practical way Gehl recommends collecting data and observation about public space. This is helpful to measure the quality of public life in the harbour areas, by implementing criteria to specific places incorporating public life architecture and urban planning processes. From Gehl's methodology, we included his '12 Criteria' not only as part of our spatial analysis but also as inspiration to create our own guidelines for spatial analysis of urban contexts in waterfronts and harbours.

Moreover, we take a step further towards the notion of *placemaking*. According to Madden (2011:654) '[p]lacemaking offers a new direction for the field of urban design,' a many-sided approach that establishes the community's vision as the source to frame a project and uses as resources the skills of professionals (e. g. architects, urban planners) to implement them. To illustrate this, and based on the 'Project for Public Spaces' (PPS) principles, Madden draws on the distinction between a 'Project/discipline driven approach' which could be called design for users and 'Place/community driven approach' (ibid.:658) or design with users. The first one, follows the conventional way of solving a problem, which was predetermined by external entities oblivious to the issues the community cares about. The latter defends that the community should be the driving

force of defining those issues (because it has a more knowledgeable insight of what those issues really are) and working in collaboration with the external entities/professionals (ibid.:658,659).

PPS is an organisation that focuses on ‘citizen participation and transformation processes’ (Gehl & Svarre 2013:67), defending the more holistic approach of placemaking. It provides tools to make the process of placemaking accessible and easy to follow to the general population. For PPS, placemaking ‘is centered around observing, listening to, and asking questions of the people who live, work, and play in a particular space in order to understand their needs and aspirations for that space and for their community as a whole’ (PPS 2018:17). By integrating this approach of user participation as part of a design practice it brings the benefit of acceptance of changes in the public space by the community because their experience in the place is taken into account to make the place work: ‘working with the community to create a vision around the places they view as important to community life and to their daily experience is key to building a strategy for implementation’ (PPS 2018:17).

In agreement with Gehl’s 12 Criteria mentioned above, ‘good “places” are busy because they have many reasons for people to use them, and they differ from “spaces”, which do not provide reasons for people to be there and use them’ (Madden 2011:654). Therefore differences regarding the presence or absence of certain objects or elements will affect the intensity of their use and thus their quality as a place. Placemaking approach could prevent unnecessary misalignments between what the community needs and what is designed by the professionals.

Although we acknowledge that placemaking is not an approach practiced in the design process of CI, we are including it to work as a more inclusive perspective on the meanings of *place*. Furthermore, this approach can contribute with our findings in our analysis and subsequently in our advice section as something that is at fault in the architecture practice of MAS.

4. METHODOLOGY

In the following, the research methodology used to gather comprehensive data for the analysis is presented. By adopting ethnographic research methods the methodological approach is constructed of a triangulation of interviews, observations and visual methods. The aim is to gain data of design processes, by following the architects’ working

process of Copenhagen Islands retrospectively. An ethnographic approach, not only accounts for a deeper understanding of the architects' behaviour towards the process but it also allows us to incorporate an analysis of dynamics of the harbour through observations.

4.1 INFORMAL SEMI-STRUCTURED INTERVIEWS

A semi-structured interview approach (Miller & Crabtree 1999:89) was the primary method for the research, relying on interviews with MAS. By using it as a method, the goal was a particular type of knowledge (ibid.:91) and seeking, as described by Brinkmann & Kvale (2015:150), to interpret and explain meanings, generating narratives regarding the process of prototyping. We identified key conceptual domains that helped to develop the interview and formulate main questions. Our process of interviewing started by constructing an interview guide (Miller & Crabtree 1999:93-94) with the questions organised by themes, such as the concept of CI, visual tools used, the process of prototyping, and design decisions. These questions worked as a main feature to comprehend aspects of how MAS worked upon the prototype and the design process.

Although we prepared relevant themes to be covered, and directed the interview through them, simultaneously we were open to whims, change of direction and unexpected information. As described by Brinkmann & Kvale (2015:150) we used this 'openness to change' in our research, to make space for the stories told by the architects and to articulate their perceptions. We saw these semi-structured interviews as flexible and iterative, where interpretations and analysis occurred during and between them, following the approach by Miller & Crabtree (1999:93-94). We chose this method to facilitate a construction of MAS' experience and our understanding of the process of CPH-Ø1. Due to the current COVID-19 pandemic situation, as well as the fact that one of the architects lives in Australia, this method consisted of both in person and online interviews.

4.2 WALK-ALONG

The second interview took place at MAS and included a walk-along interview with Magnus in the studio and its surroundings in Sydhavnen. This method allowed combining interviewing and observation as the walk-along interviews are: 'a hybrid' (Kusenback 2003:463) of the two of the two, which helps in 'exposing the complex and subtle meanings of place in everyday experience and practices' (ibid.:455). This was valuable as it revealed the visual and material environment. It enabled and functioned as

a guided tour from the architect's perspective where the MAS environment led us to understand how they worked.

Thus, the method was used as a tool offering us insights of *spatial practices in situ* (ibid.:466), by revealing the architect's engagement with the studio and the harbour and identifying unspoken relations with the materiality and place. Following Kusenback's technique (2003:463), it also helped us to access participant's experience, interpretations and verbal comments at the same time. In addition, the walk-along revealed how the architects situated themselves in the local landscape. Finally, it offered access to personal *biographies* (ibid.:466), linking between place and maritime life histories, thus uncovering some of the ways they were inspired during their practices and in the process of CPH-Ø1.

4.3 VISUAL ELICITATION (PHOTOGRAPHS, ARTIFACTS, AND MAPPING)

The interviews were complemented by visual elicitation in order to invoke memories and ideas that can be unsaid or forgotten during the interview (Johnson & Weller 2002:510-511), helping the architects to reflect and articulate thoughts on the design process. This method allowed us to gain more insights about the prototype and material details, by making them visible through images or sketches. Taking into account that the prototype was recently destroyed, the materiality of it was evoked by using photographs and models instead. Further, this method helped to formulate detailed questions about CPH-Ø1. This method was applied in three different ways:

Photograph elicitation included images (to gain information about the construction materials), the 3D model (to ask about the details visualised in the 3D model but not visible in the prototype), the prototype in different places of the harbour (to gain more details about the urban context).

Artifact elicitation involved the elements that the architects have in their studio, such as models of various scales, samples of materials, as well as their sketches from the first stages of the design process. Pointing at in situ objects (fig. 5) allowed us to see more details that would not have been visible just from interviews because of the opportunity to question the visible differences between the artifacts.

Map elicitation was used to visualise in which spots of the Copenhagen harbour the prototype was placed, as well as which locations are considered for the future

islands (fig.5). Also, to gain architect's insights about the specific areas of the harbour and its dynamics. By seeing the places in the map, the architect told more stories and relevant information in an informal way. Additionally, the areas that were marked during map elicitation were later visited by us to conduct spatial analysis.



Fig. 5 Artifact elicitation (Left). Map elicitation (Right). Source:authors

4.4 OBSERVATIONS (SPATIAL ANALYSIS)

Observations of MAS and Its Environment

Since the project is on pause, we were limited in doing observations of the design process in action. Although this omits the possibilities of actively engaging with regular activities in the studio, we have collected data on the different non-human actors involved, by incorporating observation during the interview and the walk-along in the studio. The observation involved documenting where the prototype and the project was developed. It was useful as a method, as it placed us in the position to observe and understand the role of the non-human actors in the process such as drawings, prototypes and general spatiality.

Observations of The Harbour

The observation method also included a multi-sited fieldwork in specific locations of the harbour (fig. 6). By *harbour* we mean both the area of the shore around the water as well as the water itself. The locations included the areas where CPH-Ø1 was previously placed as well as the future locations (7 in total). The aim was to understand through spatial analysis the dynamics of different areas. From interviews with MAS and looking at the 'By

By & Havn assessment' document we realised that place analysis and user involvement were lacking in their parameters for harbour spots. Moreover, to fully understand By & Havn parameters for the project's implementation, the observations seemed like a proper tool. Also, none of us has maritime knowledge, for example an element like boat traffic possibly would not have been considered without a proper observation of the harbour. Therefore we found pertinent to perform this kind of observation both to expand our understanding as well as to be able to develop our advice.

The spatial analysis was conducted by combining observations and mapping using Gehl's methodology (mapping, tracing, counting) and his '12 Urban Quality Criteria' (Gehl and Svarre 2013:112). These helped to capture the on-going changes, movement and flows in the space, as well as the type of activities that happen in the harbour. More specifically, the mapping included tracing the flow of people (moving by itself or in vehicles) both on the shore (walking, running, biking, driving cars) and on the water (swimming, kayaking, paddling, rowing and boats), drawing symbols of the users in the area (standing, sitting or swimming), as well as other material elements (ladders to the water, benches, etc.). The data collected by this method provided site-specific insights which during the data analysis were contrasted with Gehl's '12 Urban Quality Criteria' and By & Havn's parameters. Additionally, during the observations in the harbour vox-pops were conducted in order to engage with the users of the harbour and to understand their insights. Also to know if some remembered the prototype when it existed in the location.

Video and Photography

Photography served as an approach to study the MAS and the harbour. It functioned as an aid for our research to record and document the character and the details of the studio. Moreover to capture which elements played a role in the process, while the architect mentioned them in the studio's interview. Additionally, we took photographs of the places in the harbour where our spatial analysis was conducted to gain a better understanding of the area and to be able to refer back to the harbour spaces through the images in later processes if needed.

4.5 DOCUMENT ANALYSIS

Document analysis was used as a complementary method to follow the process that the project endured according to the requirements made by the harbour authorities, the municipality and sponsors. These documents provided insights to understand how the design changed to comply with different requirements so the project would be feasible.

The documents analysed included (henceforth they are referred to in the report by the names specified in the parenthesis):

- the architect's application for funding of the prototype (*Prototype funding application*)
- the architect's application for funding of CI (*CI funding application*)
- an evaluation on the test-period of CPH-Ø1 (*Trial period evaluation*)
- a risk analysis assessment by By & Havn (*By & Havn assessment*)
- a presentation by the architects of the CI project (*CI presentation*)

The visual elements in the documents, such as the sketches and models, were also analysed to see the visible changes and the different stages of the CPH-Ø1 visualisation. All the documents in Danish language were firstly translated into english using the translator online 'www.deepl.com' and then reviewed by our Danish native colleague.

4.6 SAMPLE & DATA COLLECTION

A total of 3 interviews were conducted with the architects (two with Magnus and one with Marshall⁴) which resulted in 197 minutes of audio data in total. During the fieldwork 7 locations were observed of which 1 was visited 3 times (as the first one was a 'trial' to understand the methods to be used), 4 were visited twice, and 2 were visited once (since one visit was decided to be enough for these locations since they are remote with little activity). Additionally, 8 vox-pops have been done.

⁴ Henceforth, in the report the interviews are referenced as such: online interview with Magnus - I1; studio interview with Magnus - I2; online interview with Marshall - I3. All the interviews have been conducted between April and May 2021.

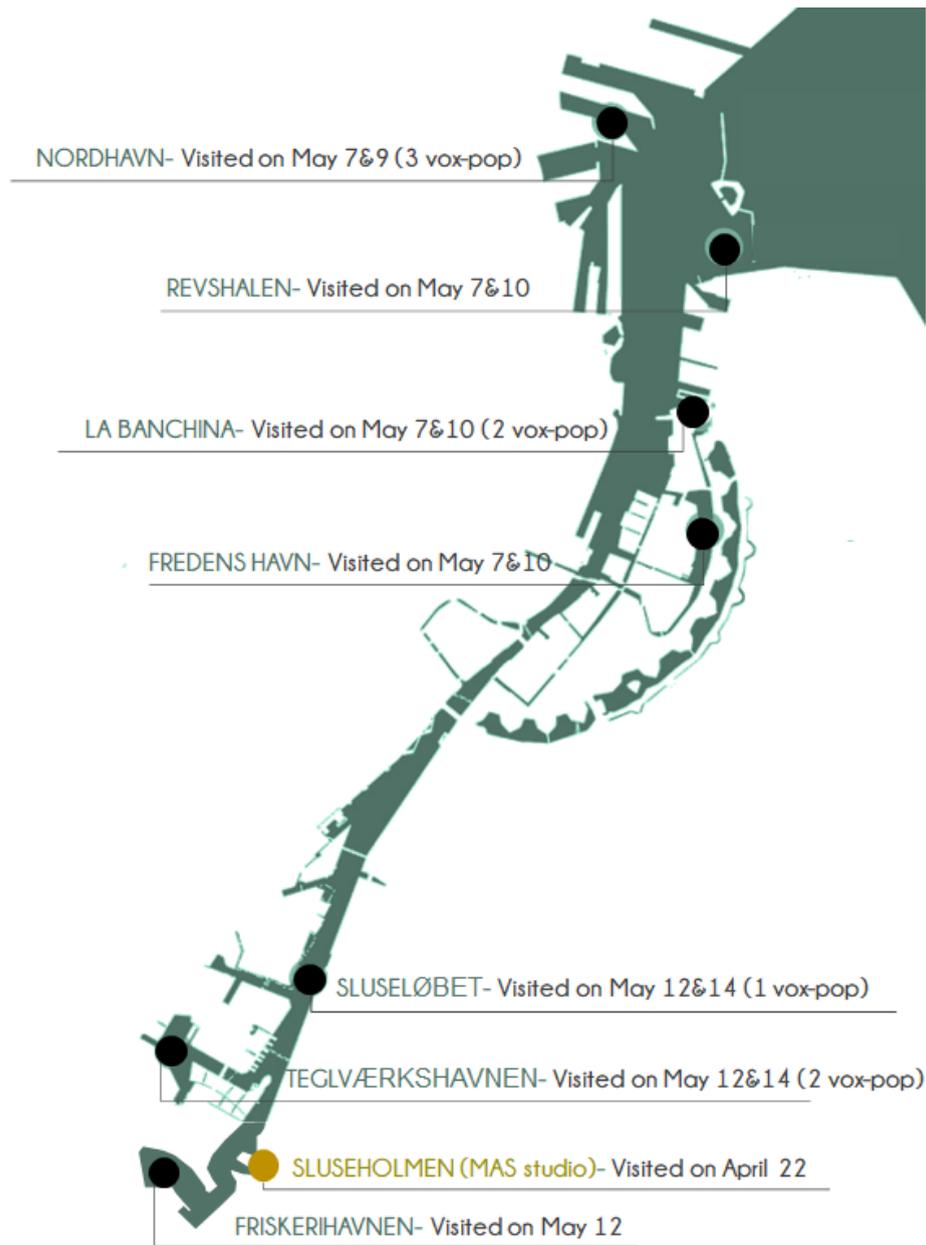


Fig. 6 Places where we did observations. Source: authors

4.7 LIMITATIONS

After describing the methods, it is important to acknowledge their limitations. While the interviews provided detailed accounts from the architects, they were memory-based and possibly biased, since the architects might have presented their project uncritically by portraying only positive sides of their project (for example, being afraid to contrast their point of view with the harbour authority). Furthermore, interviews were affected by circumstances and distractions, which is even more apparent in online interviews that we were conditioned to resort to due to Covid-19 restrictions. This limited a bodily presence with access to nonlinguistic information expressed in gestures, facial

expressions or sound quality. Nevertheless, the online interview increased the opportunity to talk with Marshall who was geographically distant from us. In addition, the observations were affected by our own preconceptions, which might lead to biased or one-sided data. There are also methodological limitations in studying the studio for a short amount of time, since the ideal would be a longitudinal study of the studio practices. Understanding these conditions, we incorporated a triangulation of methods, in order to try to lessen the limitations of each.

4.8 PROCESS OF DATA ANALYSIS - CODING FOR THEMES

Fieldnotes, interview transcripts and documents were included in the process of data analysis, described by Dewalt & Dewalt (2010:179) as reviewing and cross-checking, with the goal of enabling a summarization of large quantities of data into understandable information from which conclusions are drawn. Our data was organized using the 'NVivo' coding program. That took place on screen by selecting chunks of text, attaching categories and codes to them, while adding new ones simultaneously in order to build arguments and redoing categorisations. Following Dewalt and Dewalt (2010:189), this was done, in the end, to discover themes that tied important elements, from different people and documents, relevant for the design process.

Multiple themes of the process of CPH-Ø1 emerged from this, and the analysis investigates four central findings: (1) how materiality is used in designing; (2) the role of place; (3) users in the process; (4) the branding. The aim of coding was therefore to develop and identify these themes emerging from our observations and conversations in the field. It is through this type of looking for patterns and developing of codes, that we captured elements of the process of CPH-Ø1, and later guided and supported by relevant theory.

4.9 PROJECT MANAGEMENT

4.9.1 Reflexions As a Group

Managing this project was in many ways challenging but actually easier than we first anticipated. As a group of five members we were faced with creating rules and solutions for communicating amongst each other and for sharing of documents. We acknowledge that the use of technological tools such as social media apps and document sharing online were essential for an effective work flow as well as the

intense amount of communication among ourselves. Communication played a key-role among us in managing the different schedules to work, in the development of tasks and anything that came up relevant to this project.

As a start, we discussed previous group work experiences to decide how to organise the current group in terms of tasks. Additionally defining a possible hierarchy, such as having one of the members perform a leading role on a rotation basis. It ended up not being needed, a more informal dynamic of taking turns pushing for the project to go forward ensued. Using a group message in Whatsapp facilitated that dynamic, by bringing up the need for group meetings and other everyday communications in a direct and spontaneous way. Group meetings were held at least once a week, the number increasing by the approximation of the given project deadline and the availability from members as other courses from the semester ended. We tried to implement a fixed weekday for it, but mid-project the need for a more flexible scheduling for the meetings, including weekends, appeared. Meetings were mostly performed online due to Covid-19 restrictions. Despite that limitation, we were able to meet in person twice after a gradual reopening of places. Although in general terms the meetings online worked well with the use of the Zoom app, we found that meeting in person makes discussions on main issues of the project easier, and common ground is achieved faster. As a rule at the end of each meeting we would agree on a date for the next one and establish goals for it.

Google Drive facilitated from the beginning the sharing of files and group collaboration. Different folders and subfolders were created, based on components of our project. Changes in the drive made by a member (a title, a creation of a new document or folder), were communicated on Whatsapp to bring awareness of it to all. One of the first documents created was the *project timeline*, which helped us to visualize the number of weeks that we had for doing the project and set the deadlines for different instances (e.g. researching, contacting the company, supervising meetings, etc.). Another document was the *Group meetings minutes*, where we would write the order of the day, goals and the responsibilities for each member for the upcoming meeting. Another document useful for our process was the *Bibliography review*, this consisted of a chart of written articles and bibliography that we read individually sharing the relevance of the literature for our research with the rest of the group. In addition, we had pasted interesting quotes that were later included in the report. Finally we complemented our group work by communicating with diagrams that helped to define the general overview of our research. This was an important tool for some members to express the way they perceived certain ideas to reach a common point of view.

What characterised working in this group was the willingness to discuss opposing views, until an agreement or a compromise was reached. When that was not possible we resorted to supervisor's feedback to untie the situation. The discussions would happen during online meetings but in documents as well, using the *comments* and *suggestion* tools in Google Docs. Furthermore, our usual modus operandi to develop the report and other documentation required for the research (e. g. interviews, Gehl analysis, meetings with supervisor) was to split the parts of the document among the members to develop it and use the comments tool to edit it. By this, all the members gave their input throughout the document.

Starting the project, there was a difference of perspectives among the members on how the research about CI should be conducted. In a way that difference reflected our varied academic backgrounds (2 architects, 1 design consultant, 2 sociologists). For example, some terms or aspects in MAS' practice were taken for granted by the architects in the group, while on the other hand, the other members questioned those, which led to more thorough and interesting discussions. We believe that this was sometimes an advantage because the expertise of each one contributed to the research, but also sometimes created certain misconceptions, which were later clarified by discussing our different points of view. In addition, our different nationalities brought varied experiences and perspectives to the project.

4.9.2 Reflexions as Researchers

From the beginning, we used the CI project as a case study. The intention was to observe 'reflection in action' (Dorst 2019) empirically and in situ, in the design process of the CI and its prototype. However, when approaching MAS for a collaboration with their CI project we realised that 1) the project was on hold, 2) the CI project was not a priority for MAS 3) the prototype was no longer in existence, and 4) the construction phase of the islands was not going to start before our own project's deadline, and 5) our interactions were limited to meetings online. As a result, we were obliged to study the process retrospectively rather than being in the studio doing research *into* design (Bærenholdt et al. 2010:3).

What attracted us as researchers to this case study was the fact that the artificial islands were framed as a public space on water which in a larger context involved Blue Urbanism. Therefore our decision was to proceed with the research on CI and continue working despite the limitations mentioned above. The question that we then asked

ourselves was: can we actually learn in depth about the design process based not on direct observations of their work but by clues left in documentation and the architect's own words about it? What sort of research and analysis would we be able to perform? We could not follow the architect's creative thinking as they practiced it, so instead we turned the attention to the material elements of the design process, and highlighted the prototype to understand its implications in the project's development.

Therefore we managed to do some research taking in consideration two insightful aspects. On one hand, we were using information from the architects which was relying on memory of past events. As Cross (2011:216) states:

[W]hat designers say about what they do can of course be rather biased, or based on partial recall, or limited by their willingness or ability to articulate what are, after all, complex cognitive activities.

On the other hand, we had a trail of artifacts generated during the process by analysing documents and pictures of elements that existed once. As design researchers we adapted to the circumstances and dealt with the real world of creative practices, which are not always wired with academic research.

5. ANALYSIS - THE DESIGN PROCESS OF CPH-Ø1

The following section will focus on how the design process of CPH-Ø1 was carried out and developed from initial stages. Therefore, based on our coded data and theoretical framework, we developed an analysis divided in 4 themes. ***In dialogue with materials*** (5.1) we evaluate the role of sketches and models as material supports for the design of the prototype to simulate a permanence of it in situ, including all the material elements that were used in the construction and outcomes of the prototype. In the second theme, ***The role of place*** (5.2), we mention how the conception of place is involved in the entire design process of CPH-Ø1 and CI, and how revealing it was for the research. In ***Observing users*** (5.3), we develop an understanding of how MAS handled user involvement in the project mostly for stakeholders and municipality approval. Finally, ***The importance of branding*** (5.4) examines how publicity was also included in the process to make CPH-Ø1 more visible, which led to the branding of the CI project.

5.1 DIALOGUE WITH MATERIALS

Materiality is defined 'as the physical character and existence of objects and artifacts that makes them useful and usable for certain purposes under particular conditions' (Lievrouw 2014:25). In this report we argue that materiality refers specifically to the tangible, non-human elements that are involved in the creation and construction of the prototype. We analyse how 'architects are implicated in the making of composite things - the models ... together with diagrams, sketches and technical drawings' (Yaneva 2005:871). Thus, when looking at the process of CPH-Ø1, we are studying how specific elements perform in the design process. These elements include sketches, models and 3D digital images (renders) during the initial stages of the concept, the materialization of CPH-Ø1 and its impact in the project.

During our analysis of the design practice of CI, it became apparent that the materiality of CPH-Ø1, its existence, and testing in real world conditions was a decisive element of the design process by allowing the project to evolve. The relationship between the materiality of the prototype and the involved human actors was particularly important, in the sense that tracing the designers' interaction with material artifacts allows us to visualize the shaping of CPH-Ø1, or as Yaneva (2005:967) says, it emerges, becomes visible, material and real. As Marshall (I3) states about the importance of materializing the prototype:

I think the project wouldn't have happened, it was integral in every sense. You know, it was totally integral in getting permission [from the municipality and harbour authorities]. ... So it was really absolutely critical, also for ourselves to know that it was possible.

He is convinced that if they had not built the prototype and placed it in the harbour, the CI project would have remained as an untested idea and unconvincing argument for the authorities. It should be taken into account that the design process was influenced by external forces as well: the city authorities that manage and regulate the harbour, funding, stakeholders, and environmental impacts. Nevertheless, we argue that throughout MAS' design practice the material elements were a constant which advanced the process..

In the lens of practice theory, materials 'include things, technologies, tangible physical entities and the stuff of which objects are made' (Shove et al. cited in Larsen 2017:878). As one of the three elements that interconnect to constitute a practice, we can argue that all the tangible physical entities related to prototyping were the drive of the practice. Furthermore, building the prototype represented the embodied know-how of the architects in relation to maritime architecture and the sea, as well as their 'particular way

of “understanding the world” (Reckwitz 2002:253). Talking with the architects, their detailed explanations about the project and the prototype were grounded in the materials and construction, which showed how materiality is present in the whole prototype process.

Thus, we identified 3 key-moments in their design process for the theme of materiality of the prototype: (1) the conception of the project; (2) further conception and materialization of the prototype; (3) testing and outcomes of the prototype for the design process.

Conception of The Project

The first steps that followed the initial vision of creating an artificial island on the water included hand-drawn sketches (fig. 7). These artifacts were the first materializations of the initial concept. Some of the sketches portray the initial idea of connecting the islands with each other forming a parkipelago. However, this idea was later rejected since ‘there is some engineering that just makes it very difficult to interlock, and then it makes the project a lot more expensive so there is some stuff that we kinda toned down’ (I2).



Fig.7 Photo of the sketches shown in studio by Magnus. Source: authors

Nevertheless, the initial idea barely changed throughout the whole process in their view: ‘the design has been more or less fixed since the first sketches’ (I2) (fig. 8). Though if we compare between the first sketches, the images for their first funding and the final design of CPH-Ø1 (fig. 8: A, B, C, D) we can argue that there was an evident *jump* back and forward that showed how the shape changed substantially. This is a clear example of what Dorst means by co-evolution and problem-solving, because they had to explore and

go back and forth to come to a clear solution regarding the shape and some technicalities that would satisfy physical and aesthetic intentions. In fact Magnus (I2) said that they were amazed by the response to CPH-Ø1: ‘we liked the shape we got, but it really hit something right in the nail.’

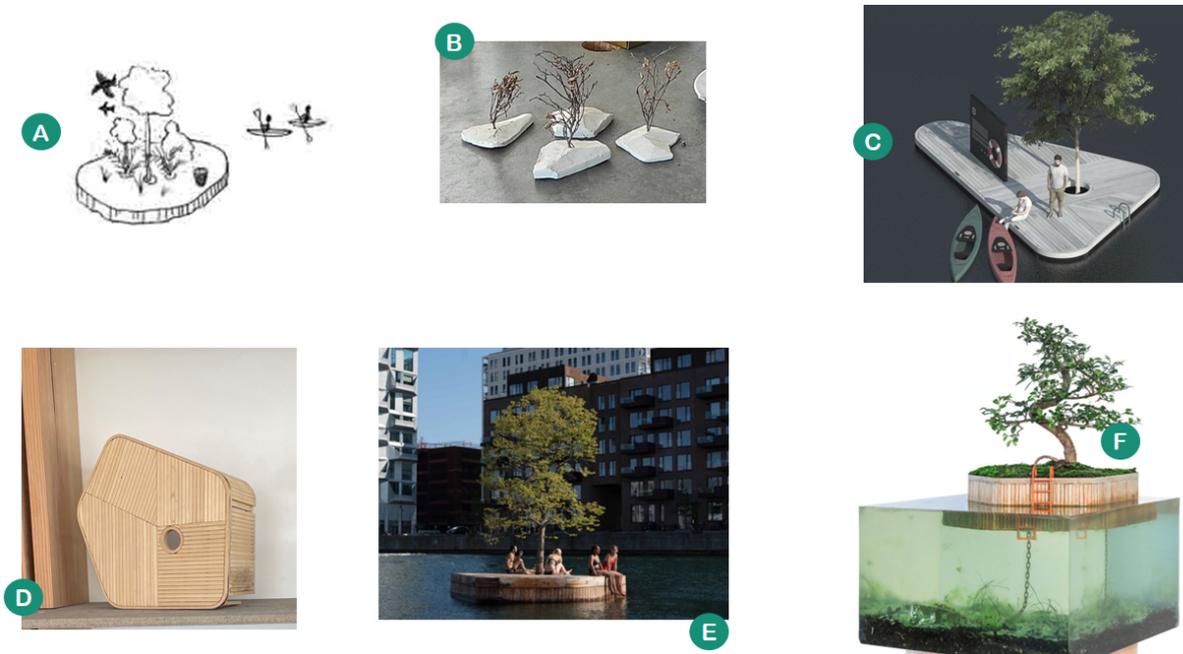


Fig. 8 Jumps done by MAS during the CPH-Ø1 process. Source: MAS documents (see p.25)

Another initial idea later rejected, was the assigned roles of the islands and their design depending on those functions. The idea was to ‘create something that could harbour a lot of different activities and functions’ (I1), such as for fishing, a café, a sauna. But later on the architects had a downward jump and decided to ‘leave it unprogrammed and leaving it up to people to decide how to use it, ... like a patch of grass’ (I2), one of the initial parkipelago’ islands. So, they had an iterative process on the usefulness of forcing an activity rather than leaving it to the final user to decide what to do.

Renders and small-scale models helped to understand the materialization of the island in a 3D visualisation. Thus, there was a jump from 2D visualizations to 3D, which brings a better understanding of the reality but still not the reality itself. During this stage of the process aspects like the texture, the materials for building the island, and their durability in the water appeared in the focus, as well as continued visualization of the shape. The early stage of the design process included small-scale models of different shapes made of concrete with a tree branch in the middle, as well as digital 3D models: ‘in 3D we have like thousands of different ways they could look’ (I2). But as Yaneva (2005)

states, these will be helpful only until a certain point because they do not solve real-world problems like durability in water, stability, and anchorage.

However, it is important to keep in mind that the scaling between these visual tools is not linear, the architects did start with sketches, but, similarly as described by Yaneva's (2005) scaling up and down, they kept jumping between sketches, models, digital 3D models and renders. Thus, the models and sketches were continually evolving and changed to reflect new ideas and considerations and move towards the final design their idea co-evoluted. According to Magnus (I2) the different visual tools 'support each other, so when you sketch then you maybe feel like watching it more in 3D and then you make a model of it and then you go back to sketching'. Magnus' statement is a direct evocation of Yaneva's explanation (2005:887) of parallel states when talking about scaling up and down and 'relying on surges, "jumps" and returns' (ibid.:867)..

While the sketches and models allowed the architects to visualize the design of the islands, the prototype brought the ability to check the materials in relation to the environment. The architects wanted to test how floatation and kinds of wood would work in the water, and how to anchor the prototype. As Marshall (I3) expressed:

We didn't have an engineer for example, and no one had done [it], built a floating platform in the way that we did. I wasn't sure for example if it would be possible to build that with a massive timber frame out of 'Douglas fir' [pine tree], ... so I just decided to build it and see if it works.

By this we can argue that during the conception stage, the architects had clear ideas of what they wanted but still experienced the problem-solution process testing if their thoughts were applicable to reality. In this stage, it is evident how they traveled through an iterative journey of forwards and backwards, by putting some materials and tools together (sketches, renders and small-scale models) to materialize their ideas..

Further Conception and Materialization of The Prototype

We are moving from impressions of how general materials are mobilised in the process of CPH-Ø1 to the more detailed processes of materialization of the island itself. After obtaining the funding from the first application to build the prototype, its design changed: 'after getting the funding I got back to the drawing board and sketched this version that we ended up building' (I3).. Working with CPH-Ø1, small things matter, such

as how materials are maintained and choices about other elements incorporated into the design.

The initial idea for the construction was to build it with metal gabion cages which for floatation would be filled with recycled plastic bottles (I1, I2, I3). The application for funding for the prototype was based on this idea, and the funding was needed to 'allow us [the architects] to "test the water" and particularly to gauge the feasibility of constructing floats using recycled materials' (Prototype funding application). However, this idea was never fulfilled as 'it was too expensive' (I2). Also, they were unsure how stable such floatation and the triangular shape would be (I3). The architects reflected that it is not complicated to make floating platforms on water, but 'most of this stuff is made out of styrofoam, which totally sucks but it's very easy' (I2).

In the end, the prototype was built from 'larch wood [structure], which is often used for boat building due to its high resin content, making it more durable in salt water', and stabilized by floating pontoons (CI presentation). The architects already had some previous knowledge of boats and maritime architecture. However, they also decided to use Douglas fir even while knowing that it was not good for the usability they meant to create (I3). This practice exemplifies what Kimbell (2012:131) describes as 'recogniz[ing] the materiality of designed things and how they come to matter.' By this, we can argue that they had some materials in mind and could talk with experienced people that were part of their 'constellations' of practice (Faulconbridge 2010:2854) but as designers explore their own ideas, they instead decided to trust their intuition. As such, working in the project created a 'bundle of "minds, things, bodies, structures, processes, and agencies"' (Kimbell 2012:133) that were translated in the materiality of the prototype.

Another material element is the tree in the middle of the island, there from the start, as they wanted 'to have an island with a tree on it, ... we thought that would be like the cool little kind of feature' (I2), and explained it as 'the little emoji of the island on the iphone ... [T]here is something dreamy about it that I think caught the attention of a lot of people' (I1). However, the construction of the island did not account for the maintenance of the tree, 'it was basically just a bucket so the water would just fill up and then the roots would drown and stuff' (I2).

To sum up, when doing the step from conception of the island to materialization, MAS had some changes of opinions that were affected by their previous experience and the people in the same field. Nevertheless, they managed to materialize the prototype, making use of its transitory presence to test material features.

Testing and Outcomes of The Prototype

CPH-Ø1 was an important tool in the design process in order to test and learn their concept, as Marshall (I3) expressed: 'actually like all through [the process] we learned a lot from the prototype.' The design process of the CPH-Ø1 itself ended with the disassembling of it and reflecting about the materials as well as understanding all the outcomes of its testing. We found interesting how deconstructing something can also be helpful for a design process, and how from the degradation of materiality the designers could gain insights for their own knowledge. When the architects destroyed the prototype, they saw how the materials worked and then they could go back to the problem space and think of a better solution for the final product, which could be also interpreted as an iterative process of Dorst (2019). The insight about the materials from which it was built was that the architects 'learned for example that the larch [a kind of pine tree] which was quite resilient under water but the Douglas fir which we were using parts, was totally crumbling apart' (I3). The next solution was for the islands to 'be built around a concrete floating platform to improve the stability and prolong the[ir] lifespan' (CI presentation) but this idea proved structurally unfeasible after consulting with engineers (I2), so at the moment they are back to the first concept of using gabions filled with floating elements (I2, I3) (fig. 9). This back and forward of ideas illustrates again how scaling up and down (Yaneva 2005) affects the iterative process of designing (Dorst 2019).

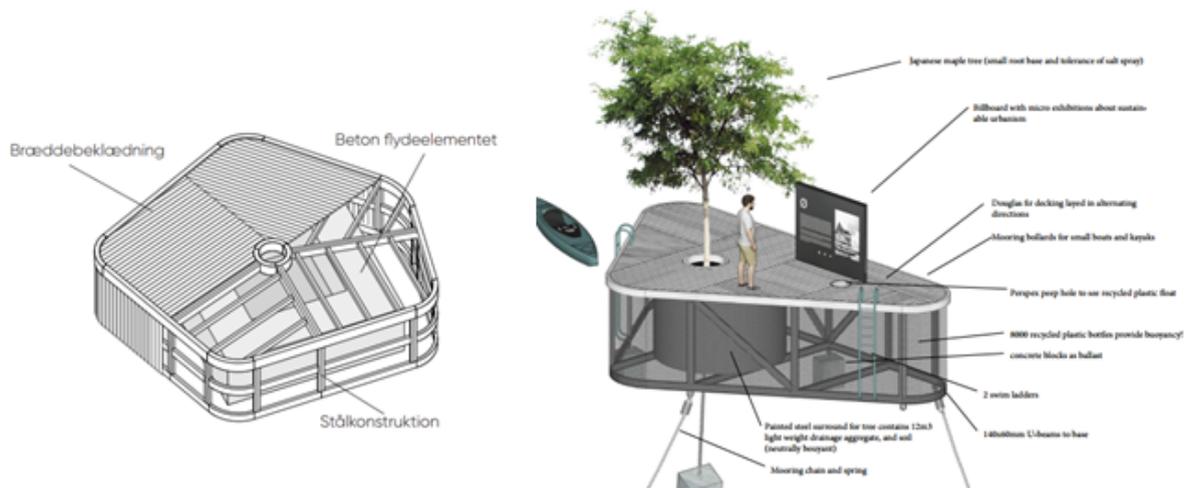


Fig.9 Solution with concrete for the next islands (left). Gabion cages visualisation (right).

Source: MAS Documents (see p. 25)

Unfortunately, the tree that was growing in CPH-Ø1 'ended up getting far too much water' Marshall (I3) and did not survive. Although this could be considered a constraint (Yaneva 2005:872) from the architects' point of view it was a non-negotiable element. They consulted with 'garden engineers' to find a better solution for maintaining the tree (I2). So the next islands will have a solution to guarantee its survival: 'It's about making some kind of drainage system so that will maintain kinda water circulating so the tree root can feed but not having the water filled up to the roots' (I2). This situation exemplifies that in spite of having certain ideas about the design and knowledge of maritime architecture, some aspects of the design cannot be anticipated and have to be tested in real world conditions. Prototyping is thus a useful tool in design practice as it allows to conduct such tests.

Although some of the considerations about the new islands come from the testing stage of the prototype, others are new ideas that have not been tested with CPH-Ø1, but the architects want to include:

In terms of material ... we learned a lot from the prototype of course, but also have some ideas of what we would like in the next one [island]. We want to create it more green, ... like a landscape-y kinda thing, almost like you chop out a piece of nature, ... and plunged it on to the ocean. (I2)

The visual representation of the islands (fig. 10), is an outcome after testing the prototype, which incorporates new ideas, like the grass, ladder, partial decking and connection between CI islands (I2).



Fig. 10 Render of the new islands. Source: CI presentation

Hence, analysing the process from the conception of the project to the prototype outcomes revealed how the scaling up and down process (Yaneva 2005) combined with the problem-solving dynamics (Dorst 2019) were part of and influenced the design process of CPH-Ø1, not only materializing its design but also by deconstructing it.

5.2 THE ROLE OF PLACE

When talking with the architects the importance of *place* in relation to the design process of CPH-Ø1 became apparent. Under the scope of place as a theme, two distinct kinds are referred to in this report: the MAS as a place of practice and the places in the harbour where the prototype was tested. On one hand, we were interested in (1) understanding to what extent the studio was influential in the design process, as the context could serve as an inspiration for the conception and development of the idea. On the other hand, we were interested in (2) the role of the harbour environment in the process of prototyping CPH-Ø1. It is not the focus of this report to analyse the islands/prototype themselves as a place, which brings other discussions (public, democratic space), but rather analysing the context of the prototype.

Designing in a 'Blue' Studio

By visiting the studio we noticed that maritime life had an important role in their working space and in the design process of CPH-Ø1. The studio was defined by a blue lightness brought by the water outside, elicited by several plants, wood and books such as 'The Maritime Compendium.' (Fig. 11). Not only did the studio exude this maritime atmosphere, it also had certain materials and elements displayed to characterize this particular interest of the architects. All the surrounding elements and objects in the studio might have served as an inspiration. Faulconbridge's perspective (2010:2854) helps to understand how tangible elements move around, creating unspoken relations and incentives. Furthermore, the studio was full of drawings, renders and pictures of other maritime projects displayed as if storyboards. Earlier models of the island were sitting on shelves along the wall (fig. 11).



Fig. 11 Elements displayed in the studio. Source:authors

These elements played an important role to kick-start discussions on typologies, concepts, materials and spatial conformations during the visit. Because artifacts develop their properties only in relation to other subjects (Osterlund & Carlile cited in Kimbell 2012:132), these elements were also talking to us and giving some information by being there. This particular aesthetic of the studio not only reflects that they design maritime architecture, but also the design style of their projects. In a way they appropriate the space by complementing the maritime character with textures, colours and elements that send a clear message for people visiting the studio by a statement: 'here we design maritime architecture!'. Magnus (I2) mentioned how working in this area is nice when bringing clients, who can 'see the close connection to the workshop and this very kind of maritime style up here', the studio thus being, what Massey (2001:463) would call a product of material practices.

Besides the impact of the interior of the studio, its placement facing the developments alongside the harbour also had an important role in the design process, by providing a viewpoint of the issues that the architects wanted to address with CI (fig. 12). Magnus (I2) explained:

It was very much in the beginning about creating this public space in the harbour because we saw how the harbour was being rapidly developed along the edges, and they were actually kind of ... stealing some of the public spaces or at least under-prioritising the public spaces to make these big apartment blocks ... over here [Sluseholmen] is a good example.

Moreover, having the studio in the harbour provided a direct access to the water for testing designs - the first placement on water of the CPH-Ø1 was right next to the studio. When asking Magnus (I2) if he thinks that working in this type of area helped his projects, he answered: 'Yeah, for sure. And definitely close to the workshop, right? So we can always test our prototypes.'



Fig. 12 View from the studio (Left). The workshop in the studio (right). Source:authors

Designing With Narratives of Place - The Harbour as Inspiration

For a better understanding of the initial idea of CI, the relationship between the architects and the harbour is considered. The architects personally experienced the changes happening in the harbour, and thus their personal and cultural connotations have influenced how they see the urban developments changing drastically the waterfront. For instance, Marshall (I3) mentioned how the evolution of the harbour dynamics were relevant for them to develop their practice as maritime architects:

Part of the idea of the project was about using these islands to sort of bring back some of the activity that's been lost in the harbour ... that was sort of the main artery of transportation and commerce and whatever, really the centre of the city to what it is now, ... we do together it's just sort of reimagine how to use this central public space in the city.

As pointed out it was an inspirational thought based on a specific vision of the harbour that was meaningful (Watson 2012) for them and thus what made them develop their concept of islands as a floating public space. Materializing the prototype on a 1:1 scale and placing it in the harbour for testing was the first step towards a desired direction. They were initially testing the concept and the materials, but soon the practice was expanded by incorporating the testing of the prototype in relation to the real world environment outside their studio Magnus (I2).

CPH-Ø1 allowed for an increase of their know-how of its materiality and also meanings for their design process and practice. What was interesting in the process of testing was how continuous movement to new specific spots, increased the knowledge upon the prototype and the waterfront places that were, to different degrees, in visual and tangible contact with it. In this, we identify the jumping the scale issue from Yaneva (2005). In an open-ended kind of process and concept it is important to give space to landscape, materiality and other important details. As Yaneva (2005:881-882) argues, 'by scoping *in* and scoping *out*, architects gain knowledge,' therefore, taking distance where the prototype was placed and going back there is a way to gain knowledge on how it affects the dynamics of the harbour. For instance, MAS argues that '[b]ased on interviews and site visits, we observed how the island quickly became a focal point for the area, bringing life and activity to an otherwise deserted and unused harbour basin' (CI funding application).

Another aspect of place was how MAS identified specific spots in the harbour relevant for CI. In agreement with By & Havn, Kronløbsbassinet in Nordhavn was chosen as the first official location of CPH-Ø1 to show how their narrative between the shore and water could work with the project in it. By this the 'Project/discipline driven approach' (Madden 2011:658) was evident, where the decisions came from them rather than the community. For (I3) the place chosen was perfect as it satisfied some of their parameters:

It was just totally vacant space which it once been part of the vibrant harbour. We thought ... it was this incredibly barren, authentic rectangle of water, it was a perfect sort of study point to see how it [CPH-Ø1] affected the area And also for it being in an area which is recently being developed.

By this we acknowledge that MAS was aware how conditions of the harbour would affect the prototype, but also how the prototype would affect the existing dynamics of the waterfront. Despite this, there were no efforts in involving the community more actively. And the users were crucial to test CPH-Ø1 but in this case it seems it was just with one purpose - to convince the authorities that the prototype worked in situ. After the test in Nordhavn, By & Havn and MAS decided to place in the harbour the final version of the project in some of the spots where CPH-Ø1 was tested and in new spots too. Magnus (I2), pointing during map elicitation:

Each of the areas have different functions or they could have different kind of activities ... Like for instance this one [pointing at Trekroner on the map] that would be obvious that would be like some kind of a fishing destination ... [pointing at another place] this one could be like a kind of a resting location, a lot of people go to SUP boards ... they all have this unique kind of purpose.

Nevertheless, they applied an empirical but not holistic analysis of the place in regards to usability and possible elements that could affect the project. The danger of this could be the avoidance of other possible spots or the favoritism to some places connected to companies that would like to have the islands for themselves. As well as the strong influence from By & Havn to locate (or not) the islands in certain areas, based on their parameters (By & Havn assessment) and perhaps for the creation of a certain image of the harbour. For example, one of the locations considered for the next placement by By & Havn is Fredens Havn. After our observations in the area, we felt that the two sides of the harbour have very different aesthetics - an informal settlement on one side and modern office buildings on the other. Thus Fredens Havn serves as an example of an area that the island would be forced to fit in.

Another outcome of testing was CPH-Ø1' impact for future projects in the harbour and insight on how they could be carried out. As observed by By & Havn in their assessment report of CPH-Ø1:

[B]ased on the one trial site [Kronløbsbassinet], it was agreed that a number of valuable lessons could be learned that could contribute to the decision-making process for projects such as CPH-Ø1 in the Harbour of Copenhagen, including what conditions, requirements and approvals such a project would need to meet should it become appropriate to proceed with projects of this nature in the Harbour of Copenhagen.

From this excerpt from the trial period assessment it is possible to claim that the demonstration of how the prototype, by being placed in a spot of Copenhagen's harbour, produced results for the design process.

To sum up, the studio located in the harbour, not only served as an inspiration for MAS to conceptualize CI, but also to simultaneously build and test it in the water. In addition, visits to the locations, interviews and their know-how, not only helped the architects to prove that the idea worked as a project that impacted the use of the harbour, but also provided acknowledgement from authorities to create some special criteria to regulate these kinds of projects. However, we identified aspects to be improved in regard to the disruption between what the project wants to achieve and the everyday life of the harbour. Therefore, we argue that there is a need from MAS' side in observing and collecting information about the place and integrating more user involvement to produce informed insights of the harbour.

5.3 OBSERVING USERS

By analysing how *Users* are included in the design process of CPH-Ø1, we identified three perspectives of understanding the term: (1) the idealization of users during the design process in the architect's practice, (2) who were the real users during the testing process, and (3) how prototyping brought a wider understanding of the users.

Idealization Of Users

With idealization of users we mean the way MAS thought about who would be the possible users of CI, from the concept stage until testing CPH-Ø1. With their previous experiences in the harbour, the architects conceived CI as a spatial artifact for assumed users - people already engaged with the harbour's activities. As Marshall (I3) expressed: 'we had a sort of vague idea that it would be a mix of just people with kayaks ... swimmers and fishermen but we really didn't know if anyone would use it.' By following their assumptions and without defining the specific context where the project would be used, they started designing for users that they were hoping to attract, staying only with the 'vague idea.' This is a clear characteristic of a 'Project/discipline driven approach' (Madden 2011:658) where in a way users and community are neglected from the design process.

Additionally, there were also some ideas from MAS on who could be the possible companies that could bring users to their islands. For instance, Magnus (I2) believes that

the activity (such as kayaking, paddling, and Go-Boating) in the harbour has been recently increasing and will continue to do so. Magnus (I2) expressed that the users of the islands are 'mostly people who ... can get into the water, have a kayak or have a boat,' nevertheless, he believes that the islands work well with Go-Boats since anyone can rent them. As a result, Magnus (I2) professed that the islands 'are good because they can support the recreational use of the harbour, they can give new destinations for people who are sailing, but they can also make people want to rent a boat to go there.' Thus, in their minds contributing to new dynamics in the harbour.

The Real Users During The Testing

After meeting with By & Havn and building the prototype, they needed to prove that people would use it and that CI worked well in complementing the dynamics of the place, in order for the project to proceed. Marshall (I3) refers to this by saying:

[By & Havn] own most of the water in Copenhagen and they are the ones that give you permission to put something on the water. ... And we had to convince them that was a good idea, and part of that process we agreed to do a month long, maybe it was one and a half month test run [at Nordhavn Bassin] to see how the local community would react to the project.

Only through By & Havn's request the architects analysed the prototype in situ with real users, meaning that the main drive for user analysis was the pressure from By & Havn rather than their actual interest in conducting user research. Therefore, after placing CPH-Ø1 in Nordhavn in 2018 (between July and September), they did observations for 12 non-consecutive days, of which 3 days were used for conducting informal interviews with 24 people (Trial period evaluation). As Marshall (I3) expressed:

They [By & Havn] were afraid of the island meaning more people swimming illegally in the basin and they were people that wouldn't like it for many different reasons, so we did this small study, pretty low-key study. I just went there once a week and recorded people using it, took some photos and wrote a few hundred words about it, but that satisfied By & Havn. ... And I don't think we have got any negative feedback in that process. So in the back of that they were happy to support the project and going forward.

The interviews aimed to find the general opinion of the project and how the interviewees found it useful for their activities in a current 'boring waterfront' (I3). Also, to reassure By & Havn that people would abide to harbour rules while using it. Hence, not only the

architects but also the authorities saw a positive response from the community, which proved the project's viability.

After seeing different users of the prototype their user's idealization became realistic. As an outcome, prototyping allowed MAS to observe other uses and thus identify who was interacting with CPH-Ø1. By this, it is apparent that after the enactment of users in the practice (Kimbell 2012:133), the design is materialized and in a way embraced by the community. This created new insights of how the community would use this new element in their environment, as 'the island became a gathering point for residents and visitors' (Trial period evaluation).

New (Understandings Of) Users

The test of CPH-Ø1 helped MAS to attract more organizations that could collaborate with the project. For instance, the architects mention:

Through a series of innovative cross-collaborations between recreational associations, educational institutions and social companies [the islands will] engage young people in the harbour's development, socially as well as environmentally. (CI funding application)

As a result of the trial period, there was a clearer understanding of the project as a tool to increase recreational activities and users of the harbour. CPH-Ø1 showed that CI matches with the new planning strategy for the harbour's development by By & Havn (By & Havn assessment). Referring to the recreational aspect, potential users (for example, using it for meditation, for a wedding, filming a video clip or ball dancing during Pride Festival (13)) were included because of the testing of the prototype. This shows that the conception of users expanded and the initial and vague idea started to be shaped by including more people interested in using the harbour. For instance:

Classes and school excursions to the floating Island parks [will] give children an insight into the harbour's unique biodiversity both above and below the sea. And whether it's kayak and SUP picnics or horizon-expanding work training programmes with young people from vulnerable neighbourhoods, Copenhagen Islands will be experiential meeting places that, in a new and unique setting, strengthen cohesion and awareness of our blue urban spaces. (CI funding application)

Although including users was crucial for testing the prototype's full potential, within the whole design process, that inclusion was not considered as a viable option.

The architects in their practice were from the start designing for imagined users rather than involving users, as is suggested by Madden (2010:658) when she talks about 'Place/community driven approach.' Conversely, the architects decided not to include certain suggestions from users at all: 'we also got a lot of proposals for how it should be used, how it could be used, but we didn't end up necessarily going for [it]' (I3). And the fact that they focused on the user experience just in one place denotes an omission for other possible outcomes. By this, we mean that each place has different characteristics, including the community, which is why a study of more than one spot was missing in the architects and authorities analysis in the trial period. This thought led us to claim that although the prototype was a temporal testing device to prove that it worked, at the end there was lack of connection between CPH-Ø1 and users. Thus, we believe that user research needs to be more present in the design process. Not only in the beginning of the development of the concept but also during and after the testing of the prototype.

Furthermore, throughout the entire data that we collected there was never an attempt, neither from the architects nor the authorities to go beyond a generic understanding of what the users were or will be (of the harbour, of the waterfront, of the CI). And while user research was neglected in regard to insights that can be gained for improving the design, it was an extremely important factor during the process. It is likely that the project would have been shut down if no one used the prototype, and the architects' proposal might not have been accepted by By & Havn.

5.4 THE IMPORTANCE OF BRANDING

We included *branding* as a theme as we found the promotion of CPH-Ø1 essential in the design process of CI. Since the prototype was built the designers became aware of the importance that publicity had as a tool to magnify the project. If it was not for their effort of promoting their idea, CPH-Ø1 and the CI the prototype would not have been accepted by the harbour and city authorities. For instance, Marshall (I3) told us:

We knew we had to get some publicity around the project as a prototype. We thought that would help us to push the project forward and ... get the Kommune interested. Because Copenhagen's Kommune and By & Havn are both interested in publicity, and we could see that if they had this positive publicity project they would be more likely to buy into it.

This exemplifies how the promotion of the prototype was an essential tool to boost MAS' project and the promotion of the city. Somehow CPH-Ø1 became what Faulconbridge (2010:2844) calls a 'subject of conversations which allowed negotiated meanings to

emerge.’ By using large-scale prototyping MAS increased public awareness around CI. MAS also used media platforms, magazines and participation in international contests to highlight the project’s attributes in order to gain recognition in the global public. Their publicity process consisted of hiring ‘a professional drone photographer to come out for a day with an enormous drone and ... just getting a lot of nice video and a few photographs’ (I3). This idea took their branding to the next level and still continues to do so:

And from a few of those photos which we felt were really powerful and I sent them, just to Dezeen, and they really liked it and published them straight away and that sort of kick-started this really weird, kind of cyclone of publicity. Which is still going on now, I still get fresh new cases every day from all over the world. (I3)

The promotion of the project was a reinforcement that demonstrated to the authorities the possibilities that the harbour could offer and the international appreciation that the city could get from this. Therefore, we argue that this aspect was an external element which significantly affected the design process. Furthermore, this is a clear example of how ‘mutual engagement and the associated buzz and spaces of sociality are facilitated by both face-to-face and technologically mediated interactions’ (Faulconbridge 2010:2844). In the CI case, the media and other technological aspects (e.g. Instagram posts #copenhagenislands) helped to facilitate the interaction and engagement of society with the prototype as well as to create buzz around the project. Because of the buzz, the architects kept receiving enquiries from interested users to use the islands for even private events (like getting married) (I3). MAS was aware of this that even in one of the applications for funding they dedicated a segment to show the public response in different media. The promotion of the project attracted interested people who started talking and bringing more noise about it on different platforms. Moreover, on a larger scale this buzz reached an international context, since they defined the viral potential and the enormity of the project’s branding value that contributed positively to profiling Copenhagen’s harbour in an international context.

On the other hand, the publicity of the project and the role of the media helped MAS to get some funding and attract collaborations that could support the project in the future by expanding the concept of the project (e.g farm mussels, fish nurseries and social projects). The media also attracted people that were interested in turning the project into commercial purposes, however, the architects prefer to continue with the idea of the islands being a public space. As Marshall (I3) expressed:

And we also got approached by a lot of commercial places and people wanting to use it for advertising and that sort of things. ... but we decided to stick with the original plan and just keep it as a public space.

They refused the offers to commercialise the project because it attracted a lot of support from harbour authorities and Copenhagen municipality by being presented and publicized as a public space. This denotes that the publicity opened new windows that were not considered by MAS. Incorporating prototyping into the design process of CI increased its branding, which is why it is important to state the outcomes that branding could bring to the table in the design processes for other blue-urban projects. By this, we mean how other designers can experience a quick advance in their project if they push the right buttons. Furthermore, MAS believes that the particularity of the project attracted more people and publicity (I2, I3). The fact that it is an empty platform ready to be used by anyone for anything can also be helpful to sell the project because the island works like a chameleon that mimetizes in accordance with the necessities of its context. Thus this makes the project more interesting and attractive. For instance, the CPH-Ø1 was already used in a photography festival at La Banchina restaurant (I1, I2). In the following picture (fig.13) it is visible how people embraced the island and used it as a place to sit and stand while enjoying the weather in this event.



Fig. 13 CPH-Ø1 used as display support by Copenhagen Photo Festival at La Banchina. Source: Copenhej 2019

To sum up, the publicity of the project in the architecture field lit conversations in their CoP, that according to Wenger cited in Faulconbridge (2010:2854), ‘allow[ed] “styles to spread worldwide as people copy, borrow, imitate, import, adapt, and reinterpret ways of designing.”’ We argue that branding was a crucial aspect during the design process because it helped the architects to boost their project by placing CPH-Ø1 in the harbour. They noticed the potentiality that the prototype had as an iconic tool in their CoP and the media to raise awareness towards the project and consequently towards what they consider the neglected waterfronts as public space.

With this analysis we pointed out how CPH-Ø1 came to be from an iterative problem-solving process, jumping between different scales through sketches and models, and how CPH-Ø1 in its materialized form contributed to further the design process of CI from testing its materials and interactions in the harbour. Also, the fact that the studio’s environment reflects and inspires MAS practice, but when placing the prototype in locations of the harbour for testing, the parameters were authority-based and not community-informed. Only when CPH-Ø1 was placed in the harbour were the users involved in the CI project but in a superficial way. Finally, as an unexpected outcome, the prototype turned out to be a tool for advertising the project, MAS and the city of Copenhagen; bringing more funding opportunities and stakeholders. From these insights we developed discussions on how to study blue-urban spaces and on the value of using TU as a strategy to incorporate users' involvement in the design process.

6. DISCUSSION

Having described and analysed the design process of CPH-Ø1,, this section discusses certain questions that arose during our research. We find it relevant because it brings some new perspectives regarding large-scale prototyping in blue-urban projects. The first part of our discussion focuses on considering the pertinence of studying blue-urban spaces to be incorporated in blue architecture projects. The second part discusses the similarities and differences between prototypes and TU, more specifically how TU influences urban spaces, and how it could be considered in a design process like our case. And by this, appreciating the significance of such a tool and strategy to facilitate practitioners in engaging users from the beginning of the design process.

6.1 HOW TO STUDY BLUE-URBAN SPACES?

As stated before, we have identified the necessity of going further on the topic of place, where in our research the definition frames public spaces and waterfronts. Therefore, we need to discuss the pertinence of studying blue-urban spaces.

The 12 criteria (Gehl & Svarre 2013) describe how urban spaces could be studied to understand the relation between citizens and those spaces, and determine if the spaces are good for the people that use them. The fulfilment of this criteria would create an improvement of urban spaces. In addition, By & Havn as a harbour authority and together with MAS have also developed 15 considerations⁵ for projects on the water just as CI that directly affect the dynamics of the waterfronts. These parameters are more related to what a project should consider for approval from authorities and safety issues regarding traffic on water, than being a guide for professionals to do a qualitative/quantitative study.

Keeping this in mind, through observations we applied the criteria and parameters on the spots where the prototype was placed and the future islands are supposed to be. We consider that although this was a good starting point for our analysis both Gehl's and By & Havn + MAS considerations do not entirely fulfil a comprehensive analysis of the harbour as a public space. When we used Gehl's criteria, we noticed that in some of the waterfront places it was viable to apply it. But there were some aspects that were not-applicable in a harbour context because the character of the place, its disposition and elements can be distinct from a public space on land. For instance, one of the criteria is *Protection against traffic and accidents*, which consists of how people can be safe from the transit of vehicles (cars, motorcycles, bicycles, etc). If we contrast this criteria with harbours, it is easy to identify that there are several elements that need to be added to the safety aspect such as the transit of kayaks, ferry boats, and other vehicles. Thus, one of the possible reasons that Gehl's approach needs to be expanded, is because of its urban nature, since it focuses on the comfort in streets, squares and parks and not on waterfronts. Nevertheless in this research we use Gehl's criteria as an inspiration in order to adapt some of the criteria and propose new in order to reflect the harbour space.

In contrast, the parameters that By & Havn + MAS used were from the perspective of authorities. Consequently, some of the parameters are related to regulation, legal aspects

⁵ Due to confidentiality the full document cannot be shared in this report.

and permission but devoid of quality of urban life concerns. Nevertheless, we found some relevant aspects regarding usability and safety, such as the permission to swim in the harbour. For instance, in Copenhagen there are just 9 spots in the city where people are allowed to swim. This is a particularity that needs to be addressed in order to understand that some places in a waterfront are forbidding swimming and need special treatment according to their use. Therefore, we see these parameters as a guidance that gives us new perspectives regarding the management and regulations of Copenhagen's harbour.

By identifying the lack of elements in the criteria as well as considering harbours as developing urban spaces with new dynamics, we argue that there is an urgency to develop guidelines for the quality of blue-urban spaces. This would be useful for maritime projects that aim to offer urban life around these places as well as researchers interested in harbour dynamics. Therefore, aided by both sets of parameters/criteria we created a guideline (presented in the advice section (7.1)). We consider that developing this could be useful for the CI project in order to create stronger arguments for the placement of the islands, thus making it more successful because it is being used. Furthermore, the guideline could be considered as part of a frame for other designers and the harbour authorities to incorporate in future design processes and urban interventions in blue urban spaces to ensure the quality of life there.

6.2 PROTOTYPING VS TEMPORARY URBANISM

After defining what is a prototype (a tool for learning through testing and experimenting mainly with the materiality of the design in real life), and TU (a way to explore dynamics of urban spaces through temporary design interventions), we argue that some of the aspects are similar. The concept of a prototype is understood from the technical perspective and used in the world of architects, designers and creatives, while TU is well known among urban planning initiatives and municipalities. The fact that the two concepts share similarities, but at the same time have their own differences, encouraged us to define and relate both concepts. Thus we discuss how the design process of prototyping could benefit by incorporating aspects of TU in it.

When exploring the practices around CPH-Ø1, we found it relevant to consider it in the TU realm. For MAS, CPH-Ø1 was not thought of as a TU project or in connection to its framework. Although Marshall (13) defined it as 'a temporary structure and installation,' he continuously responded about the island as being a prototype. However, the fact that CPH-Ø1 was created with the purpose of testing, thus transitory rather than permanent,

makes the artifact part of a TU agenda. CPH-Ø1 was presented as a ready-to-test product, which led MAS to explore new dynamics in the harbour and afforded the testing of some urban practices in situ. Furthermore, they achieved approval from authorities to have the project permanently in the harbour.

Thus, we consider that while CPH-Ø1 was not treated as a project of TU from MAS perspective, it could have benefited from such conceptualization. Because the TU approach argues for stronger involvement of community and experimentation with longer term observation, which creates user ownership by generating attachment to the temporal elements that are in those public spaces. The process of CI and CPH-Ø1 incorporated only superficial user involvement and only in one location, with one-sided results. For instance, the experience that MAS had with users could have been expanded by giving more time for people to acknowledge the prototype and interact with it, which is something that TU encourages. In fact, while doing vox-pop in previous CPH-Ø1 locations, some people did not remember it. Therefore, the actions and terms of TU could be useful for driving the interaction more with the community and gathering more insights from locals. In light of the above, we maintain that the TU approach is more focused on the users as co-creators and on the urban dynamics than the practices of prototyping.

In the case of Copenhagen, temporary urbanism approaches have been implemented since 2015 (Technical and Environmental administration city of Copenhagen 2015:10). According to the vision that the municipality has for 2025, the city aims to have a more flexible and creative focus on its urban spaces:

There will be room for experimental projects that may have a limited lifespan. There will be freedom to start up and test new things. Buildings and areas will change their function over time. We must have the courage to surprise and innovate. (ibid.)

Taking this into account, we believe that Copenhagen is giving an opportunity to practitioners to be flexible and embrace urban projects that use TU as a tool. Blue-urban projects could also benefit by using these strategies, as it allows the practitioners to be experimental. The TU approach 'enables a much higher level of creativity and innovation in urban design, because it turns the city into a testing ground' (Dovey cited in Isaksen 2018:21). While this level of experimentation is something not used as much in prototyping. If MAS had included more thorough user research, the outcomes might have been expanded and the insights could have been different.

This discussion raises an interesting aspect of how unanticipated developments and the energy of spontaneous uses could be incorporated into design processes. Furthermore, expanding the considerations, one could question: to what extent TU challenges traditional understanding and enables different ways of conceiving the relationships between design, construction and use? What are some of the difficulties or opportunities facing such practices in urban planning? While we do not address or try to answer these questions within this report, they provide a context for bringing this perspective into our case.

7. ADVICE

Within this section, we develop insights and conclude with advice, based on some of the outcomes from the analysis and discussions. This can be used by practitioners, building upon the key learnings from this project. But these are also directed to research on public life and in the field of maritime architecture and blue urbanism projects. Therefore, we developed (1) relevant perspectives regarding users to consider and involve in the design process, (2) a guideline that could be useful for studying blue-urban spaces, and (3) recommendations on opening up the practice of prototyping as a branding strategy.

7.1 ENABLE - THE USERS

We believe that a process which enables users, opens possibilities for participation and better outcomes for designing public spaces. Therefore our advice is that thorough user research should be considered in the design field.

User involvement in the design process of CI occurred only when CPH-Ø1 was placed on the harbour, mainly driven by the pressure of By & Havn and to attract additional investment. This led us to think that MAS were focused on fulfilling a requirement rather than being interested in user involvement. Furthermore, their user research did not account for different groups of users using the prototype and the harbour and the interviews were conducted only in one of the testing locations. Their research on CPH-Ø1 seemed like merely a confirmation of their premise, instead of assuming a thorough position of finding issues in the project.

An important aspect is the understanding and formalization of who the users are. In the case of CI, this aspect was never fully developed, as the architects had some preconceived ideas of who the users would be. While their understanding expanded after prototype

testing, it seems that they never established a methodological classification of users by groups. To develop a study on user research, a range of different groups of users should be considered when developing public spaces, thus gathering a more comprehensive and inclusive understanding. Detailed user research would have helped to see that and apply that knowledge to their design.

Considering this, users should be included in the design process since 'the professional is the facilitator and implementer of a community's vision rather than the one who defines the vision' (Madden 2011:661). Meaning that users should account for their vision of the place, as the community has more knowledge of what kind of place is needed. Thus we advise that insights from user research should be driving the vision of what a place needs and what kind of design would be more used, designers' job is thus to build on that vision. Therefore, we suggest:

1. To plan the design approach (project/discipline driven, TU, placemaking), which would guide the process and influence the type of user involvement.
2. Before testing anything in situ, consider doing research of the place and engaging with the community that you want to intervene with in order to grasp their necessities, ideals and nuances.
3. To consider user research during the different stages of the design process (from the conception until the end), for more inclusive design.
4. To implement the prototype in urban places for enough time (until starting to receive the same kind of data) in order to have a thorough analysis of the relation between artifact and user.
5. When doing observations in situ take into account both positive and negative reactions of the users' interactions/non-interactions with the design. Supported with data, such as surveys, vox-pop in the place, allowing people to provide spatial information about routes, experiences, opinions and challenges.
6. Focus on urban use rather than urban design. This can generate insights, capturing movement, flows and behaviour, which will make the effects that the artifact can generate in the place more tangible.

7.2 OBSERVING AND ANALYSING BLUE URBAN SPACES

Following the discussion on how to study blue-urban spaces, we propose a guideline with 8 criteria for conducting spatial analysis. A guideline developed to aid professionals, when designing for or researching about a specific place in the harbour. As stated in methodology (4.4) the space observed, analysed and in which our criteria is intended for,

is the border of the waterfront and the water that conforms and relates to the whole area of the harbour (fig. 14).

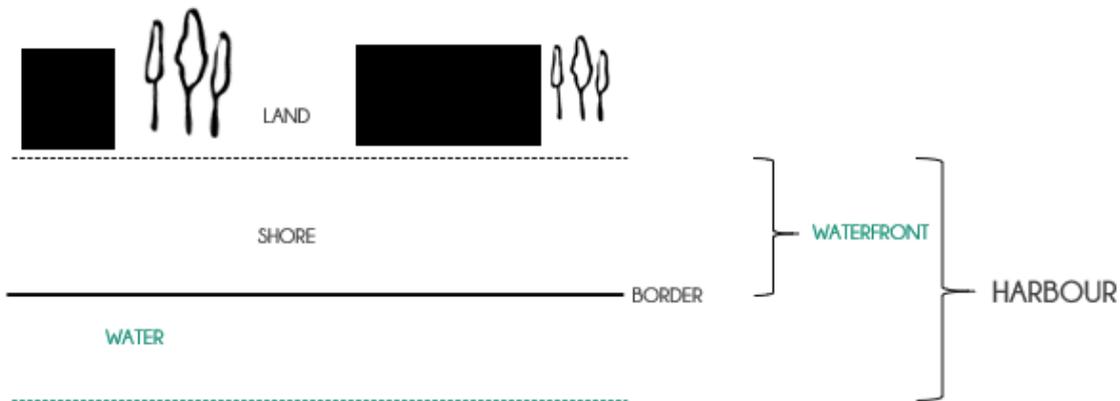


Fig. 14 Conception of the space observed as Harbour. Source: authors

We are taking Gehl criteria with the parameters that both MAS + By & Havn developed as an inspiration to produce a guideline for blue-urban spaces. We believe that it could act as a guide for anyone who is interested in observing and studying these spaces in the city. Specifically, people willing to study the field of Blue Urbanism and maritime architecture could use it as an inspiration. Nevertheless, it is important to clarify, that the exercise that we did was based on our own observations by using Gehl methods, and that we do not pretend to replace his parameters. On the contrary, we are aiming to complement his criteria by producing a tool to better understand the harbour, its dynamics and what is at stake when considering the quality of city life in blue-urban spaces.

Blue-Urban Space Guideline - 8 Criteria for observations

(all the words in verbatim are taken from Gehl's 12 criteria (Gehl & Svarre 2013))

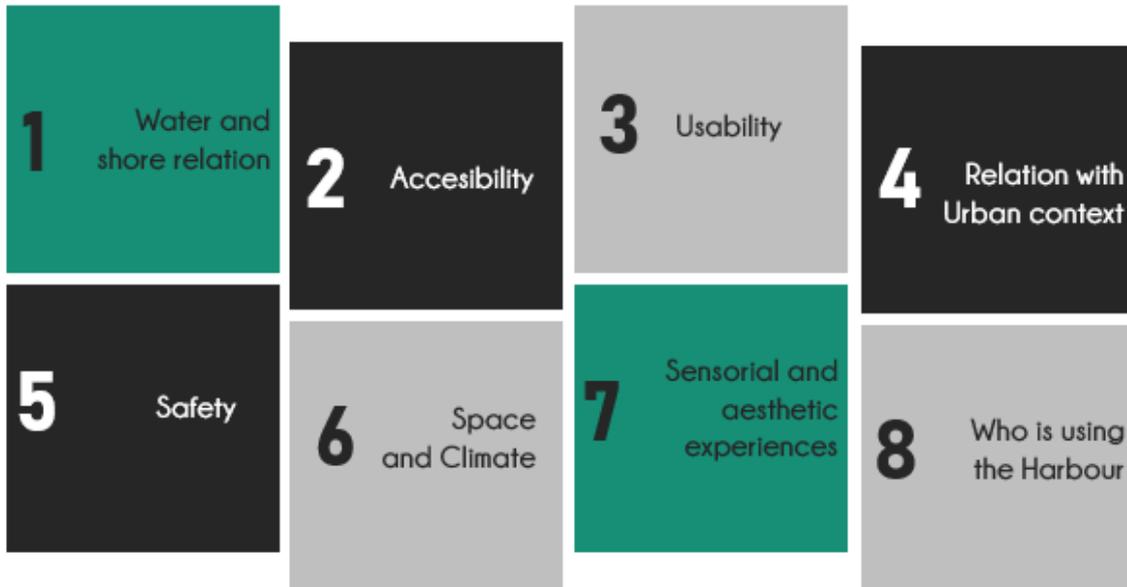


Fig. 15 Visualization of the 8 criteria for observation. Source: authors

1. Water and shore relation

This is about how well the public space on the water is connected to the shore, if there is a connection or a fragmentation. The questions raised to observe this criteria are:

- Is it possible to observe the water and the border without any kind of limitations?
- What is the distance of the water level from the shore?
- If there are differences in the use of the shore are those uses related somehow or not?
- If there are people on the other shore is it *still possible to see them as people*?

2. Accessibility

Here it is important to observe accessibility for the people from two perspectives - t water and border. By this the observer needs to analyse the following:

Water

- Are there *physical elements that limit* the entrance to the water from the shore?
- Is it possible to *access* the water without paying a fee?
- Are there options to *access* the water for swimming? Are there elements that invite people to swim (e.g ladders, steps, platforms)?

- Are there elements that guarantee access with other devices or vehicles (eg. kayaks, paddle boards, boats)?
- Are there signs that invite people to go into the water?
- Are there elements that afford *accessibility* to the water for everyone? Is it easy to find those elements within the place?

Border

- Is it possible to reach the border from the water? Is it possible and easy to reach the shore by walking, biking, or by car?
- Are there *physical elements that limit* the entrance to the shore?
- Is it possible to *access* the shore without paying for it?

3. Usability

This needs to be conceived from two perspectives: water and border. Here, the idea is to observe if the place affords activities that complement each other, or activities that could generate conflict between them. The following questions will guide the observation:

- What kind of harbour is it? Which are the elements that characterize the type of harbour (e.g fishing boats, nets, signs, type of boats, people that are around, etc.)?

Water

- Is it allowed to swim in the water (legally)? Is it possible to swim in the water (cleanliness, depth)?
- Is it possible to do other activities with vehicles in the water (eg. kayaks, paddle boards, boats)?
- Are there public spaces on the water that can be used for free? How much part of the space in water is public/private?
- Are there *physical elements that might limit or enhance* personal mobility in the water?
- Are there elements on the water that enable the activities of *lingering/sitting/observing/talking*?
- Are there elements or signs that facilitate or enable *playing/ doing exercise* and other recreational activities in the water?

Border

- Is it possible to move around the border by *walking*, biking or by *wheelchair, stroller* or a car?
- Are there public spaces in the border? How much space on the shore is public/private?

- Are there *commercial* uses around the area? Are *commercial* elements privatizing part of the space of the shore?
- Are there *physical elements that might limit or enhance personal mobility in the forms of walking, using a wheelchair, or pushing a stroller? Is it evident how to move through the space without having to take an illogical detour?*
- Are there elements in the border that enable or limit the activities of *lingering/sitting/observing/talking?*
- Are there elements or signs that facilitate or enable *playing/ doing exercise* and other recreational activities in the border?

4. Relation with urban context

It is important to take into account who are the neighbours and how they could be influencing the dynamics of the space. The following questions can support these observations by seeing evidence of the positive/negative relations between public and private areas:

- What kind of uses are around the shore (e.g. *residential buildings, offices, commercial*)?
- Are there signs that work as instructions for users of the public space demanding a type of behaviour?
- Is there evidence of the relation with neighbours by the activities that are permitted in the place?

5. Safety

What needs to be considered is that users of the space can be safe inside the water and on the shore. Therefore, when observing on safety it should be reflected:

- Are there elements that indicate the place is prepared for an eventuality (e.g. *lifebuoy, supervision or security cameras, written signs indicating what could be risky*)?
- How secure are the elements on the water or connected with the water (e.g. *dock, ramps, ladders*)?
- Are there any signs and *lighting* in the area that can support and guarantee an activity? Are they controlling people's behavior?
- By being in the place, is there a feeling of *safety*? Are there more people *using the space* at the same time while it is observed? Does the space seem neglected?
- Are there elements that can protect the user from *being hit* by a car,

bicycle, boat?

6. Space and climate

What needs to be analysed is how the elements in the place contribute to enjoy better climate regarding seasons and weather.

- Is the place prepared to be used during different *seasons*?
- Are there elements that can help users to be comfortable in the place on the water or on the shore during different *weather conditions*?
- If the weather conditions are good, is it a nice place to be?

7. Sensorial and aesthetic experiences

This conceives the *aesthetic* part of the place. Here it is important to identify if there are elements disrupting/enhancing people's sensorial experience:

- Does the *place seem to be used*? Are there elements that indicate that people go to this place? Are those well maintained?
- Does the place provide elements to keep it clean? (e.g trash bins, signs reminding people to throw their litter in the correct place)
- Are there elements in the shore and the water that can serve as a public shelter for protecting users from *unpleasant climate experiences*?

8. Who is using the Harbour?

This refers to the importance of applying Gehl methods as *mapping, tracing and counting*. These will not only give insights on how many people interact in the space, but also help to identify who is using the place at a specific time of the day.

By this some questions could be helpful to support the methods mentioned:

- What kind of traffic is around (eg. boats, kayaks, paddleboards, ferry boats, cars, bikes, etc)? And how does it move through space?
- How many people are in the space for at least 30 mins? How many are in/on the water and how are on the shore?
- Which is the group age that uses the place the most?

The guideline produced is inspired by the 2 different considerations that we used to observe the locations in the harbour. With this in mind, we acknowledge that there is always space for improvement regarding our criteria. This can be further developed by using it more and more, and observing not only Copenhagen's harbour but also other harbors in the world. The blue-urban space guideline should be considered not only as an observation tool itself but also as an opening statement for further research as well.

7.3 EXPLOIT - THE PROTOTYPE

From CPH-Ø1 we learned that prototyping can be a powerful resource for branding in a design process. That way of testing the project generates dialogues leading to new network opportunities that would never have happened without it. After realising the exposure and positive buzz that the prototype brought, MAS used it as a prop to promote the project in international CoP, boosting exponentially the project forward, bringing favourable publicity not only on the project and MAS, but also to Copenhagen's image. All that interest in the project gave it credibility in authorities and investors' eyes and gained further support to be implemented. On account of the mentioned above, we suggest bringing a more holistic approach to projects by encouraging practitioners to recognize the importance of the prototyping stage as more than an optional element of testing materials or scaling up a model, but also as a tool for branding the project. Therefore we suggest:

1. To allocate (more) resources for the prototyping stage, such as expanding the design process timeline and budget. That would afford the time and money to spend on branding the project.
2. Be aware of/find initiatives from foundations, municipalities or companies that are interested in sponsoring urban projects. This would not only give more resources but also create more visibility, networking and recognition for the project.
3. Take into account how TU as a strategy can help with the publicity of the project. This is an urban tool that would create awareness by expanding the pool of networking and experimentations with the community. And could also improve the chances of attracting (more) stakeholders.

8. CONCLUSION

The project was interested in prototyping processes in blue-urban spaces. The design process of the CPH-Ø1 prototype developed by MAS was used as a case study. Our research question was then based firstly on understanding how the design process of CPH-Ø1 was carried out, and secondly on developing contributions for large-scale prototyping in blue-urban projects. In order to answer this two-part question, we first clarified the use of the key concepts for this report - design process, prototyping and TU.

That was followed by an account of the constitution of MAS and their specialisation in maritime architecture, as well as explaining the history of CPH-Ø1 and its purpose. We then framed our research using practice theory, which gave the foundations to understand what elements constitute a design practice and the understanding of co-evolution dynamics in a design process. Yaneva's research on scaling up and down through different stages of the process further contextualised the dynamics of the MAS' design process. The concept of place backed up what was at stake when placing CPH-Ø1 in real-life conditions, while the placemaking approach was used as an example to contrast how user involvement was performed.

Our analysis was guided through themes developed based on data from our ethnographic research-into-design: materiality, place, users and branding. While our research-for-design with spatial analysis of the harbour sparked a discussion on the importance of blue public spaces, as well as made us devise a set of guidelines for analysing harbour as a public space. The analysis' outcomes inspired a further discussion on the potential of framing CPH-Ø1 as TU, as well as advice on user research during the design process and how our case showed that prototyping in blue-urban places can work as a branding strategy for practitioners and their causes.

Summing up, the design process of CPH-Ø1 had the iterative, problem-solution dynamics regarding its materiality reflected in the conceptualization of design practices and CoP research; the user involvement in the project was only present while CPH-Ø1 was being tested and the user research conducted by MAS was limited. Regarding how this study can contribute to prototyping in blue-urban projects, we conclude that using a large-scale prototype as a branding strategy can bring unexpected benefits such as networking to a project. Furthermore, the insight on the lack of analytical tools to evaluate harbour places led us to create the blue-urban space guideline, that can be used by practitioners for analysing urban life quality in harbours.

Nevertheless, it is important to be aware of the limitations in our research. From the start, the study of the design process was limited due to the CI project being on standby, and the prototype not existing anymore to observe and test it ourselves. Also, the time constraint of this project prevented us from going after interviews with stakeholders of the project and By & Havn, including other case studies from MAS, but above all from going a step further and testing in the harbour our 8 criteria guideline.

This report aimed to bring some potential insights to support MAS in bringing awareness and solutions aligned with the issues of climate change and rising sea levels. Our

suggestions on user research might be useful for MAS to consider, by incorporating in their practice more experimentally notions of placemaking or testing our 8 criteria guideline. Finally, the presentation of TU could be used as an approach to interpret their prototype and perhaps be considered as a strategic tool or argument in their upcoming blue-urban projects.

Hence 1:1 prototyping can be more integrated as an experimental tool that brings together design processes and urban-life quality considerations in maritime architecture. However, at the same time it is important to kick start the conversation of possible disadvantages of prototyping: for example, is the temporality of the prototype only a positive aspect - does destroying the prototype at the end of the process bring negative impacts to the environment? Nevertheless, we see how our research can contribute to literature and further research not only on prototyping in blue-urban places but also on the discussion of differentiating TU from prototyping. Hence seeing in which cases it is better using one or the other, and enlarging the scope on ways of conducting ethnographic research on design processes. Further research on this topic could benefit from opening the discussion with these questions: where is the line between public and private spaces in the harbour, in artificial islands or floating platforms and in urban spaces in general, and more specifically can CI project and CPH-Ø1 be considered a democratic and public space? Lastly, it is interesting to imagine how the harbour with this project would look like in 10 years?

Acknowledgements

Thanks to Magnus Maabjerg and Marshall Blecher for all their openness and cooperation during April-May 2021, that made this project possible.

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