

## Drawing Cages

The Settings of Mediating Actors in the Case of Low2No

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### Abstract

Understanding how we produce our built environment is a central challenge when we aspire to imagine sustainable futures. In spite of several proposed goals and guidelines for sustainable building, success may often prove elusive in the crosscurrents of interests involved in urban development. This paper is a study of the ambitious Low2no project, that provides an instructive case illustrating challenges and possibilities of sustainable urban development in the context of Finland. The paper presents an Actor-network theory based reading of the project, from conception in 2008 to realization in 2018 as the Airut-block in Jätkäsaari, Helsinki. The project is described as a changing network of actors, human and non-human mediators. The reading follows the trajectory from the initial goals of the project, through different phases, to the finished built environment. The heterogeneous set of documents, written and visual, connected to the project make up the primary material used in drawing this narrative. The analysis results in the first comprehensive description of the project. Conclusions focus on highlighting the mediating role of non-human actors, and their effects on the process, as well as the crucial role they may play when designing similar projects.

**Keywords:** Actor-network theory, architectural drawings, urban planning, urban design, Low2No.

*Each new setting is a transformation or translation, where the actors of the setting change, towards a more durable and firm version of the project – ultimately, the building project becomes a setting of related construction materials, instead of humans, drawings and contracts.*

## Introduction

The Low2No -competition and the following process of design and construction, was an example of an ambitious project of urban development, with sustainability as its aim. The project has been presented by the participants as a (qualified) success, but so far the studies of the project (most notably Bechthold and Kane, 2010; Jokinen, 2012; Menna, 2013; Liang, 2014) have been limited in their scope, as the studies have been conducted as the project was still ongoing. A description that gives an account of the transformations that took place during the whole duration of the project, and the changing constellations of sociotechnical actors, resulting in the discrepancies between the stated aims and the results, is here essayed.

This paper is a qualitative study that attempts to provide a first full account of the project, and by doing so also outline a methodological model for analyzing similar cases. The paper attempts to give an answer to the following intertwined questions: *How did the Low2No project end up as the built block, renamed Airtut? What role did different actors play in this process?* It is here argued, that the project has not been described before in a satisfactory manner in either research or professional literature, and that especially the role of different architectural drawings and documents require an explanatory description so this and comparable projects can be sufficiently understood. This understanding can contribute to how the processes of similar projects are designed

The study has been conducted by analyzing the documents that were produced as part, and in connection of the project, spanning from its inception in 2009 as a competition to the period immediately after the completion of the block in 2018. These documents comprise a variety of different types, from written statements and blog-posts to design drawings of the project in various stages and legally binding plans, like the detail plan of Jätkäsaari. The previous studies made of the project have shed light on the different actors and their relations. A set of discussions and exchanges with participants have been conducted to fill in gaps in the record concerning the different phases of the project.

An Actor-network theory (ANT) approach – following the actors (Callon, 1986, p.199; Latour 2005, pp.11-12) has been chosen for engaging with the topic. It allows for the accounting of heterogeneous (human, non-human) actors in any given situation, according to what their effect and role is in relation to other actors. Concepts from Science and technology studies (STS) have been also appropriated, as several key elements can be best described through terms like setting, program and antiprogram (Akrich and Latour, 1992, pp.259-264). ANT as a theoretical perspective for studying architectural issues is well established (e.g. Yaneva, 2022), and it has been used for describing processes similar to the subject of this study - projects, where human and non-human actors had to be accounted for in order to draw a complete picture of the process.

In this paper, the ANT approach has guided the design of the research in focusing on the relations the different actors have formed during the process and their effects on the project. The chosen STS concepts have helped in structuring the different phases of the process, and in evaluating the nature of these phases. The approach has enabled the consideration of a wide range of actors as well as their possible relations without prejudice for or against certain types of actors (human or non-human) and it has allowed for an account of the process to appear from within the actors and their relations, without a pre-set structure.

The fairly large amount of documents and statements produced during the project provided several possible entry points for the study. Here the conventional choice of a chronological description has been chosen, and the launch of the competition

and the related documentation act as the starting point for data collection. Following the progression of the project, different actors became visible or faded from view, and these changes formed the basis for the sampling of material, as well as occasioning the initiation of new discussions with some of the actors involved. Limits to collection were posed by time and access, but as the project was for the purpose of this study finished, the research had the advantage of a subject that was inert, and not still transforming (as had been the case in all the previous studies made before 2018).

The collected data was analyzed by identifying the relevant actors and their relations, and then these were grouped according to their relational links. In practice this meant articulating a number of different settings, meaning collections of human and non-human actors with competences and performances distributed among them (Akrich and Latour, 1992, p.259). For example, the first setting in the project is situated at the moment when the competition is formulated, and it is the following collection of heterogeneous and related actors: Sitra, the City of Helsinki, the Finnish Association of Architects SAFA, the Detail plan for Jätkäsaari, and the documents for the brief of the competition. In this setting, Sitra articulated the goals of the Low2No project through the competition brief documents (in a tense relationship with SAFA); Sitra was supported in this by the City, that provided a detail plan for the site in Jätkäsaari allowing for a free exploration of designs for reaching the goals. Similar settings were articulated for all the major phases of the process, a new phase was identified whenever suitably large changes happened in the setting (a change in the involved actors). All in all, six phases were identified, with the last comprising the finished building.

In the results, these six phases were evaluated in light of the stated goals of the Low2No project, by examining the transformations in the proposed design. The evaluation is illustrated through the use of a graph that shows the drift of the project from the ambitious stated goals towards a business as usual (BAU) built block.

This categorization and interpretation allows us to state answers to the research questions and by doing so, give a full account of the Low2No project, as well as insight into how the processes of similar projects should be designed.

## Theory, Method and Material

### ANT as Theory and Method

In this paper, the ANT methodological framework (as described by Latour, 2005) is chosen, because of its suitability in dealing with heterogeneous actors according to their relations and effects, without prior categories or preferred types of data or explanations. A central pair of concepts in ANT are intermediaries and mediators, intermediary meaning an actor that relays the actions of others without interference – in some sense being an invisible participant in the process, and mediator meaning an actor that in some way alters the actions of others (Latour, 2005, pp. 37-42). Opening up the possibility of also non-human actors acting as mediators, not merely intermediaries for human actors, provides a foundation for descriptions of sociotechnical phenomena that is not limited to analyses of social factors.

Architectural drawings have been identified in this study as having central parts as mediators in the process. Drawings have numerous roles in the processes of the production of the built environment – they are actors and mediators in networks, affecting the whole, instead of neutral media, intermediaries transporting meaning unchanged from source to target (Lindgren, 2021). Different ANT readings concerning architectural representations have been

written, with Latour and Yaneva (2017) arguing for a new way of visualization of buildings; and several writers have focused on the role of visualizations in competition processes (Jacobsen, Tryggestad and Harty, 2021), working with scale models (Yaneva, 2005) and site analysis (Tietjen, 2018). Here, the architectural representation is central, but as part of the production of the built environment, instead of an object of study per se. As actors, drawings are seen as participating in the settings of this particular project on the same footing as human actors, making things possible and influencing outcomes.

ANT approaches have been used in descriptions of the use and design of urban environments: in urban studies (e.g. Bender and Farias, 2010), with texts dealing with infrastructure being some of the paradigmatic examples (Hughes, 1983; Cronon, 1991); Closer to the processes of architecture and building, the use of ANT has been argued for as a way of accounting for non-human actors and systems in the urban environment (Blok, 2013; Teh, 2014) and as a way for explaining negotiation and decision making processes in building projects (e.g. Kurokawa, et al., 2017). Yaneva (2022) has provided an overview of the uses of specifically Latour's theories and methods in the context of architecture, with a focus on ANT.

Here the case bears resemblances to the main realm of ANT, Science and Technology Studies (STS). Analogous examples of ANT/STS descriptions are the case of the Aramis public transport system (Latour, 1996) and the TSR.2 airplane (Callon and Law, 1996) as technologically ambitious canceled projects, whose trajectories have been drawn by paying attention to the heterogeneous actors, whether human or non-human, involved in their different phases, following them and their relations, from inception to conclusion.

## **Method**

### *Drawing the Network*

Methodologically, ANT requires that the actors be dealt with on their own terms and according to their effects on others, this "following the actors" does not stipulate any pre-set starting or end-point for the process – an indeterminacy that needs to be resolved in a study, as the extent of any description is by necessity limited.

In this paper, the mechanisms of the production of the built environment (based on the Land Use and Building Act, MRL 132/1999) – the types of documents that have to be produced, who can produce them, and what the relations of the documents are – provides us with an initial path and limits for determining the actors in this specific case, and previous studies give us lenses through which to identify and define further actors and articulate their relations.

The different design documents are themselves non-human actors in the process, and they reveal other connected actors through their authorship and circulation. Previous studies, recounting events in the process, further assist in drawing the full network of the project. Additional discussions and exchanges have clarified still some points in the relations of the actors. This drawing the network provided a fairly comprehensive picture of the dynamic and transforming relations of the project.

### *Analyzing the Network*

The network of the project was broken down into several separate settings – collections of actors that through their relations describe a specific phase in the project. A separate setting was always identified, when there was a significant change in the actors. Some of these settings were clear from the start, for example, the actors making up the initial first phase of the competition, while some of the phases required deciding what magnitude of change was significant enough.

If there was a change in the human actors on the level of the organizations involved, a new phase was deemed necessary, as well in cases, where design documents revealed large changes (e.g. of the scope or design features) – situations, where there was internal changes within the organizations or small iterations of the designs were not deemed as significant enough. The whole project from competition brief to finished building could be now described in six phases, where the first phase was the initial brief, phases two to five represent the four different design versions of the project, and the last phase was the building.

#### *Evaluation*

The phases of the project all present different sets of design features - the first phases providing descriptions of the ambitions of the project and the qualities of the winning competition proposal, the last phase the features of the project as built. The features of the competition proposal were categorized as: Systemic aspects, Urban design, Building & Construction, and Lifestyle -features. They form the program (Akrich and Latour, 1992, pp.259-264) of the project - what the project aims to do. As the project progressed towards realization, the actors either tried to keep the features as they were initially set, fulfilling the program, or advanced other goals (collectively called the antiprogram) resulting in changes in the features.

The evaluation is illustrated through the use of a graph, that draws together the actors and features of the different phases, as well as portrays the projects trajectory in relation to its initial program. The graph gives us a comprehensive picture of the project and allows us to draw conclusions about the roles of the different actors in the process.

#### **Material**

##### *Primary material*

The material concerning Low2No in its different phases has been gathered along the trajectory of the project and constitutes the primary material, as it includes drawing types (plans, permit drawings, etc.) that have clear regulated relations to each other and other actors, and because it provides descriptions of the features of the project in its different phases. The documents gathered from its inception to realization vary in nature – from the material produced for the competition (Sitra, 2009a-c; ARUP, et al., 2009); to blog posts about the process (the Helsinki Design Lab -blog).

##### *Previous studies*

The project has previously been described in several papers with different foci and theoretical frameworks. The early case study by Bechthold and Kane (2010) is valuable in its candid recounting of moments right after the competition phase. The study provides us with insight into the relations of the actors during the crucial first steps of the process, but the scope of the study encompasses only the period from inception to 2010, approximately phases I-II in this paper. Edelman and Kirkinen (2010) give a comprehensive outline of the competition entries and their implications. From a distance of a few years, Jokinen (2012) and Menna (2013) have been able to address the problems that beset the realization of the project, through qualitative case studies based on interviews of key participants in the process. Jokinen identifies the fragmentation of the project and lack of a shared mission as a key problem (2012, p.61) and Menna highlights the unresolved tension between the systemic goals of the project and the concrete building project (2013, p.77). The studies provide telling descriptions of the actors and their relations, but do not reach the construction stage, they deal with the time described as phases I-IV in this paper. A few studies with narrower foci have also been helpful, Liang (2014) has focused on the competition phase and joint

knowledge production, and Park-Lee (2020, p.24) uses the competition as an example in their study of service design procurement models.

*Discussions and exchanges*

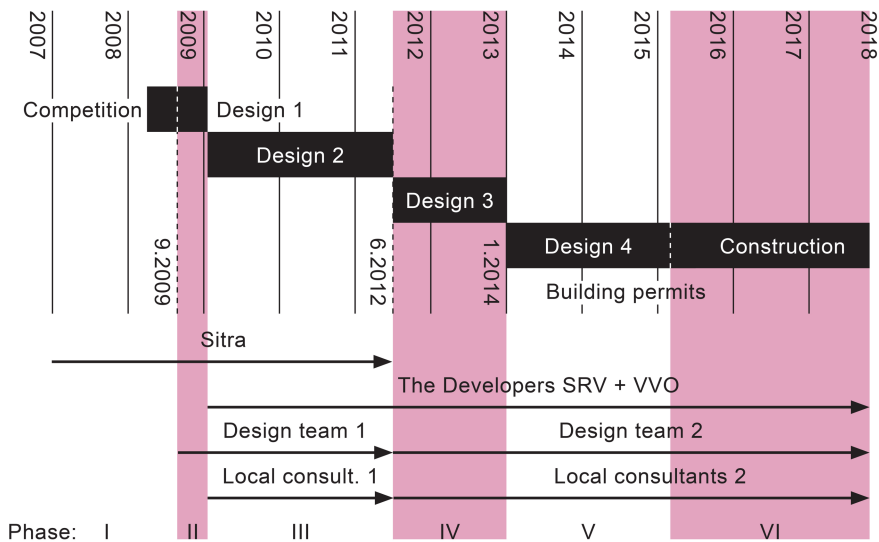
A number of discussions and email exchanges were also conducted with some of the participants, with the purpose of filling in missing information as well as verifying previous accounts. Discussions were conducted with the following people [role during project]: Harry Edelman [competition secretary of SAFA], Matti Kajjansinkko [Jätkäsaari Project Leader, City Planning Department, City of Helsinki], Jukka Noponen [Executive Director of the Energy Programme at Sitra], and Marco Steinberg [Director of Strategic Design at Sitra]. The discussions were conducted live (Noponen, Kajjansinkko) or on zoom (Edelman, Steinberg), all discussions were semi-structured and transcribed by the author. Email exchanges with participants like the architect of record (Antila, 2022) provided statements concerning the actors and their relations during the years just preceding and during construction and an unpublished written statement from Sauerbruch Hutton (2017) provided an overview of the changes in actors and their responsibilities during these years.

**Figure 1.** Timeline of project from competition to construction and the participants in the various stages of design. The different iterations of the design are numbered 1. to 4., and the phases of the analysis in this paper are shown in roman numerals I to VI.

Significant dates: September 2009 when the competition was concluded, June 2012 when Sitra announced its withdrawal (decision had been made already in May) and January 2014 when the first building permits were applied for, with Optiplan, the Local consultants 2 - as the Architects of Record (first permits applied on 1.1.2014, last on 25.2.2016).

**The Case of the Low2No project**

Below the Low2No project is described chronologically through the main actors and their relations, based on the gathered and analyzed material. First the main actors and their relations are described shortly, then the narrative of the process is recounted, broken down into six phases. Each phase is described as a list of identified relevant actors, a short summary of the phase, and a narrative of events. Figure 1. displays the timeline of the project and the changing sets of human participants during the process.



- Design team 1  
ARUP, Sauerbruch Hutton Architects, Experientia and Galley Eco Capital.
- Design team 2  
Sauerbruch Hutton Architects (represented by ALAS Alarcon Linde Architects)
- Local consultants 1  
SARC Architects, Vahanen Group, Granlund
- Local consultants 2  
Optiplan (from 2019 part of Sweco), MA-arkkitehdit (from 2018 part of Sitowise)

**Human Actors**

*Sitra*

Sitra, the Finnish Innovation Fund was the key actor in the project, it initiated the process and formulated the goals to be achieved. Sitra also acted initially as one of the developers for the block.



The Low2No project was a key part of the Energy Programme in Sitra, launched in 2008 and one of six programmes at that moment aiming at systemic changes in different sectors of society (Sitra, 2008, pp.10-12). The Energy programme was run by Jukka Noponen, but the execution of the Low2No competition was in the hands of Marco Steinberg, the Director of Strategic Design at Sitra (Noponen, 2022).

*The Design Team, groups 1 and 2*

The design team was an international group of consultants responsible for the design of the project, chosen through the Low2No competition.

The design team (group 1) included ARUP, Sauerbruch Hutton Architects, Experientia and Galley Eco Capital. The design team was to realize the project goals with the developers of the block. During the process, the design team was reduced to only Sauerbruch Hutton Architects (group 2), represented by Carlos Alarcón Allen, at that time running his own firm ALAS Alarcon Linde Architects (Allen, 2022).

*The Local Consultants, groups 1 and 2*

Local consultants were the designers and engineers working in Finland, that were legally required for producing and signing official design documents and advising the design team on regulatory requirements.

During the process, several local consultants were involved: first (group 1) SARC Architects, Vahanen Group, Granlund (Menna, 2013, p.39) and later (group 2) Optiplan and MA-architects. Optiplan took over several of the roles of the local consultants (architecture, structural engineering, building services) during the building permit phase of the project, and was the Architect of record for the work. MA-architects acted as the landscape architects for the project in the final phase (Allen, 2022). The local consultants had a double role, from the vantage point of Sitra – they would take care of signing the required permit drawings for the Design Team, and they would also “be infected” by the sustainable thinking provided by them (Bechthold and Kane, 2010, p.27). The Local Consultants were proposed and retained by the developers.

*The Developers: SRV, VVO and Sitra*

The developers were the clients in the project, retaining the services of the design team and the local consultants. The Low2No block would have had a mixed program of offices and housing, initially Sitra would have acted as the developer of the office part, while the Finnish firms SRV and VVO would have acted as developers of the housing part, with SRV having a leading role.

For Sitra, being one of the clients in the project gave them opportunities to directly influence design and development of the office part of the block, and involving the developers SRV and VVO was seen as a route to ensure the economic feasibility of the project, as Sitra’s goal was that “sustainability ... had to be based on profitable business models, not altruism.” (Bechthold and Kane 2010, p.13). During the process, Sitra exited the project and SRV became the lead developer for the whole block.

*The City of Helsinki*

The City provided the plot for Sitra and through its Planning Department altered the detail plan in regard to the site to accommodate Sitra’s wish for a blank slate.

The City made the site available in the developing area of Jätkäsaari, with the understanding that Sitra would re-locate its offices there; the plan for the site was amended (Helsingin Kaupunkisuunnitteluvirasto, 2009, the old plan can be seen on page 106. and the new on page 99.) according to Sitra’s wishes, as “The provisions of the [detail] plan were highly prescriptive, but Sitra convinced the city that the detailed provisions were counterproductive for their needs.” (Bechthold

and Kane 2010, p.7). The active role of the City was thus limited, and relegated to its bureaucratic functions (Menna, 2013, p.42). The City was happy with a set FAR for the block, that would provide an urban density, whatever the specific design (Kaijansinkko, 2022).

#### *SAFA, the Finnish Association of Architects*

SAFA represents architects in Finland, and one of its core functions is arranging and consulting in architectural competitions. SAFA was initially involved in the project.

SAFA's role was minimized by Sitra in the process – instead of conducting the competition with the association, Sitra designed its own set of procedures. Harry Edelman, the competition secretary of SAFA at the time, as well as Steinberg's acquaintance from his time in the US, took part in devising the competition brief, as well as partaking in the jury of the competition (Edelman, 2022). This resulted in a perceived conflict of interest from the side of SAFA, as Edelman had also his own consultancy that was involved with sustainability issues, and led to Edelman cutting his ties with SAFA, and joining the Low2No project (Edelman, 2022). SAFA was thus not actively participating in the designing or running of the competition.

#### **Non-human Actors**

Design documents played pivotal roles in the process, in particular the competition design and the design draft documents of various stages, the detail plan, and the building permit material. The detail plan and the building permit material provided the infrastructure for the whole process and the grounds for the eventual realization of the block.

#### *The Competition Design / Design draft documents*

In architectural competitions organized by SAFA, entries are typically submitted as a set of design documents aiming at finding providers of design services or design solutions (SAFA, 2008). The winning entries can then be used as a basis for further work: the preparation of a detail plan, the redrafting of an existing detail plan, or a set of permit drawings. The duration of competitions is usually several months.

The design documents in the case of Low2No were different, as the goal was in finding proposals that provided strategic vision, instead of detailed designs – this was problematic especially for competitors familiar with the SAFA model, as stated by one of the competitors, "You can't have both detailed building design and innovative vision/strategy in one month." (as quoted in Bechthold and Kane, 2010, p.13). The competition design formed the basis for the design draft documents that evolved during the process. The design documents were central to Sitra's idea of creating a compelling vision, but they had no fixed relation to documents codified in the Finnish planning system.

#### *The Detail Plan*

In the processes of the production of the built environment, the multi-tiered planning system aims at creating possibilities for development, that gain articulation when moving downwards the tiers. In practice, this means that the upper levels (regional plans) create opportunities or hindrances for land use, that can then be exploited by the municipality in their general plans (master plan, city plan) and further drawn out in the detail plans of the blocks and plots. The detail plan describes the possibilities and limits for developing a certain site, and the permit drawings for buildings have to adhere to these stipulations (MRL 1999/132 § 58). The detail plan can be very specific in its demands – for example stipulating building sizes, forms, use of material, color, etc.

The detail plan for the district of Jätkäsaari (11770) had been drafted during the early 2000s and ratified in 2009, with the site for the competition freed from many



of the constraints affecting other blocks in the area, even though the general guidelines regarding the whole area also affected the site. Typically, after a competition a new detail plan for the site is drawn up, but this was not done in the case of Low2No.

#### *The Building Permit*

The permit drawings in areas with a detail plan regulating building are connected with the plan documents, as they have to be in accordance with each other (MRL 1999/132 § 135). The plan documents describe the range of what can be built on a given plot, the permit drawings specify exactly what is to be built. Large deviations from the permit are not allowed, so the material describes well the project as realized.

The building permit drawings in the case of Low2No (at that time already called Airut) offer a comprehensive documentation of the building plans, and the project as realized. They are in accordance with the detail plan (as the detail plan was practically without specific constraints regarding the site). The permit drawings reveal a discrepancy between the published documentation of the project, that relies on design draft documents of the third iteration of the design, rather than the actual realized project.

### **A narrative of the process in six phases**

#### **I PHASE. Brief: Low2No.**

Actors: Sitra (lead), the City, SAFA, The Detail plan (11770), the Competition Brief.

The phase is defined by Sitra, the definition of the general goals of the project are articulated through the competition brief (Sitra, 2009b). The City is a neutral actor, providing the site and a Detail plan that allows for a wide variety of solutions, with the stipulation that the level of urbanity is in accordance with the district. SAFA was first considered as an ally, but conflicting visions of competition mechanics resulted in Sitra proceeding alone with organizing the competition (Edelman, 2022; Steinberg, 2023).

#### *Description*

Low2No started as a competition and ended up as a realized urban block of housing and services in Jätkäsaari, Helsinki. As the instigator of the process, Sitra had as its goal the facilitation of systemic change in the Finnish building industry (SITRA, 2009a, p.8) and the competition was described as a possibility to develop a model for sustainable planning and "to make the Low2No project principles universal operational methods in Finnish construction." (SITRA, 2009a, p.13). The competition was part of Sitra's five year Energy Programme (2008-2012) led by Jukka Nojonen, and its main architect was Marco Steinberg, Director of Strategic Design at Sitra.

Steinberg had a degree in architecture from Harvard University Graduate School of Design (GSD) and a background as associate professor in the same university. Typically, competitions are organized with the Finnish Association of Architects (SAFA), but Steinberg was skeptical about the suitability of SAFA for organizing the competition (Steinberg, 2023). Steinberg saw a need for a new kind of competition so that restating known facts and the production of standard results could be avoided (Bechthold and Kane 2010, p.8). Accordingly, Sitra created and managed the competition process independently, with Steinberg hiring Justin Cook (a recent Harvard GSD graduate) to develop the competition – Cook in turn took input from experts: the partners of international engineering firms Transsolar (Matthias Schuler) and Arup (Jean Rogers), who contributed to forming the competition brief (their involvement in contributing to the brief would have made them ineligible to take part in the competition itself, had it been run according to

SAFA guidelines) – the competition process was executed with input, but without formal approval or involvement from SAFA (Bechthold and Kane 2010, p.8-9).

The competition was announced in March of 2009, and the brief of the competition called for innovative and broad strategies for sustainability while also developing a realizable design. Detailed programming was left to the contestants, but a rough division of functions for the site were given, totaling 22000 sqm, these were divided between housing 13200 sqm, offices 8000 sqm and commercial space 800 sqm (Sitra, 2009b). The space allocated for offices included the HQ of an “innovation-driven organization”, as the former president of Sitra Esko Aho (2004-2008) had envisioned a space for Sitra more suitable for dynamic collaborative work than the office tower (by Helin & Co Architects, 2000) housing Sitra’s spaces in Ruoholahti, Helsinki (Bechthold and Kane, 2010, p.4).

#### *Competition phases*

The competition was run in two phases. In the first, seventy four teams from several countries provided submittals for a Request for Qualifications (Sitra, 2009c) and of these, five finalists were chosen to provide proposals. Each team was awarded 50 000€ and given five weeks for completing the work (Bechthold and Kane, 2010, p.14). The proposals were anonymous and all were evaluated by a jury of experts according to the criteria stated in the brief. The chosen winner was the proposal *c\_life*, with Arup (London) leading the team, comprising of Sauerbruch Hutton (Berlin), Experientia (Milan) and Galley Eco Capital (San Francisco). The other proposals and their leading offices were Low Carbon – High Urban (Lead: Peter Rose & Partners), Cradle of Innovation (Lead: WSP Group), Rebuilding 2.0 (Lead: Rex) and ReciproCity (Lead: BIG). People involved in designing the brief had roles in several teams (J. Rogers taking part in proposal *c\_life* and M. Schuler in the proposals Low Carbon – High Urban, Reciprocity and Rebuilding) (Bechthold and Kane 2010, pp.14-15).

#### *Selecting the winner*

The jury process was limited to one month: the jury was presented with the competition materials and a technical report on the feasibility of the proposals, and the final decision was made through a set of votes. The balance between strategic aspects (systemic change, replicability) and site-specific solutions (urban and architectural design) proved to be a challenge for the teams (Bechthold and Kane, 2010, pp.14-15). The winner was announced in September of 2009, and even though *c\_life* had fared worst in the technical report, the jury awarded it first place after two rounds of voting on the strength of its qualities concerning the following six criteria: "Low2No carbon solution, general approach to sustainability, sustainability indicators, urban and architectural quality, replicability and feasibility." (Bechthold and Kane, 2010, pp.16,18).

### **II PHASE. Design 1. Competition proposal.**

Actors: Sitra (lead), Design Team 1., The Detail plan (11770), The Competition Proposal (*c\_life*).

The Design Team (1) for the project is chosen and the phase sees the articulation of the general goals set out in the brief, in the form of the Competition Proposal documents. The Detail plan is not in conflict with the proposed solutions.

#### *Description*

*c\_life* is presented as a A3-format manual of hundred and one pages, and six A1-size boards with distillations of the requirements of the competition (SITRA, 2009b, p.21). The proposal straddles several scales, locations and durations. The features of the competition proposal are here categorized as: Systemic aspects, Urban design, Building & Construction, and Lifestyle.

#### *Systemic aspects*

Energy is going to be produced off-site with windfarms, systemic change is to be achieved through the national establishment of a Green Building Council (GBC),

and more locally, by founding a Climate Neutral District (CND), an economic and governance framework, that would support, facilitate and initiate efforts towards carbon neutrality. Part of the plan for achieving systemic change is also a push for low carbon urban lifestyle choices. (Arup et al., 2009, p.102, the boards).

**Urban design**In the overall composition, importance is given to clearly delineated urban spaces and the street as the theaters of urban (Edelman and Kirkinen, 2010, p.29); the buildings themselves are hybrids, with a variable massing of low towers and podiums enabling a mix of functions and with a few accents to enliven the block in the larger cityscape; terraces and pedestrian pathways knitting them together create boundaries and connections between the public and semi-public outdoor spaces of the site (Arup et al., 2009, p.29).

**Building & Construction**Building design takes into account issues like ventilation (cross ventilation), lighting as well as flexibility, with the width of building masses between twelve to fourteen meters, and a generous three meter deep Winter garden on the southern sides (Arup et al., 2009, p.45). The use of natural ventilation (with mechanical support) is proposed for the buildings (Arup et al., 2009, pp.70-71); timber frame construction is the primary choice for the low residential towers (Arup et al., 2009, pp.20,72).

#### *Lifestyle*

Concepts having to do with lifestyles and consumption include Pocket balcony greenhouses in the residential units for small-scale vegetable production (Arup et al., 2009, p.76) and fifty technology centered proposals – most of these proposals are built on the premise that active monitoring of the effects of our actions on our carbon footprint, will lead to insights that help us choose low carbon lifestyles. Typical examples are making energy consumption visible in your own unit, but also in the whole block (Arup et al., 2009, pp.84-87).

### **III PHASE. Design 2. Residential + Sitra HQ.**

Actors: Sitra (lead), Design Team 1., Developers SRV+VVO, Local Consultants 1., The Detail plan (11770), Design draft documents of design 2.

The Developers and the Local Consultants (1) are introduced in the process (the Developers had been chosen already earlier as partners), and the design draft documents of the project are reworked to narrowly fit only a development of a city block (the Systemic Aspects are left out of the process) and to concur with the Finnish National Building Code and the programmes of the developers Sitra, SRV and VVO (some Urban design and Building & Construction features are excluded). The Detail plan is not in conflict with the proposed solutions.

#### *Description*

Before the design team was chosen through the competition, Sitra had already vetted a number of possible partners that could take up the role of developers for the housing part, choosing SRV (Bechthold and Kane, 2010, p.10). SRV brought VVO into the project, but retained the role of leading local developer for the housing part.

Initial discussions on the scope of work to be carried out by the design team lead to the jettisoning of the systemic aspects of the proposal (i.e. like the CND), with Sitra as the sole client for these parts of the proposal and SRV & VVO limiting its involvement to the development of the block (Bechthold and Kane, 2010, p.27). A set of local consultants was proposed by SRV (Jokinen, 2010, p.47). As the design had been quite general in the competition phase, it was now to be developed towards a solution that would be acceptable for all the parties – with Arup leading the design work and Sitra facilitating the building of trust and mutual understanding between the designers and the developers (Bechthold and Kane, 2010, p.26). The block was renamed Airut (Vanguard) in 2011.

**IV PHASE. Design 3. Residential.**

Actors: Developers SRV (lead) + VVO, Design Team 2., Local Consultants 2., The Detail plan (11770), Design draft documents of design 3.

Sitra exits the process, the Design Team (2) is reorganized according to the new scope of the project (only residential, solutions towards BAU) and the Developer switches Local Consultants (2). The design features of the project are reworked towards a residential city block (major Urban design and Building & Construction features are excluded). The Detail plan is not in conflict with the proposed solutions.

*Description*

In 2012, Sitra stepped back from their role as coordinators of the project and from their commitment for developing their own headquarters as part of the block. The responsibility for the project shifted now solely to SRV as the developer of the block, Sitra stated changed investment priorities as the reason for stepping back (Kostiainen, 2012), but the decision revealed a split in some of the priorities within Sitra's organization: as a somber post by Steinberg on the Low2No website attested, the decision came as a surprise for the team involved in the project (Steinberg, 2012). The block was redefined as mainly residential, requiring extensive redesigns, that are reflected in the design draft documents [this iteration of the design was eventually published in the Finnish Architectural Review (Allen, 2019; Sauerbruch Hutton & Optiplan, 2019), even though it was not in accordance with the design as it was finally built. During the work on this paper, the Author commented on the discrepancy to the current Editor In Chief of the Review and the digital edition of the issue in question was amended with a note (Vesikansa, 2023)].

**V PHASE. Design 4. Residential optimized.**

Actors: Developers SRV (lead) + VVO, Local Consultants 2., The Detail plan (11770), Building permit documents.

The Developer required further changes to the design (more Building & Construction features are excluded) and the building permit for the project is applied for by the Local Consultants (2). The Detail plan is not in conflict with the proposed solutions, and the building permit is granted.

*Description*

Once the design reached a form acceptable to SRV the process for producing the building permit began. The local consultants engaged in the project had been switched to an engineering firm (Optiplan, from 2021 part of Sweco) that provided a comprehensive package of design services. The final permit drawings were filed between 2014 and 2016 – the buildings housing now a mix of apartment types according to SRV's wishes and a high enough efficiency of sellable floor space in relation to gross area (Antila, 2022).

**VI PHASE. Building: BAU.**

The block of residential buildings is constructed and the building permit documents are given material form in concrete, brick, glass and steel. The design lacks almost all of the features articulated in the competition proposal.

*Description*

As the Airut-kortteli was erected in 2018, by SRV and VVO, a comparison between the finished results and the goals set at the start can be evaluated. As stated earlier, some of the systemic goals of the brief and the proposal were sidetracked early, like the CDN. The finished project has been described in light of the different types of goals it has achieved, systemic and materially manifested. Below these are outlined, by using the statements from Sitra, the City, and the designers, as well as by analyzing the sets of drawings related to the project.

*Systemic aspects and Lifestyle*

The systemic goals of the project were elusive from the start, but some claims have been made in relation to them.

According to a statement by Sitra "Low2No – A sustainable building design competition that led to the change of the national fire code" (Park and Lee, 2016), the project has been relevant in the legal developments in the Finnish Building Code regarding Fire regulations, and in this way being part of a systemic change – however, this claim relates to processes that Sitra was involved in simultaneously within their Energy programme (Nojonen, 2022). As a further successful outcome, Sitra stated the innovative procurement model of the Low2No competition, a model that seeks "an approach rather than the traditional solution." Was seen as an innovation (Anonymous, 2013a). As this model has not been used since, and as the results of the Low2No-process have been mixed as best, this outcome can not be seen as relevant for future development yet, even though it has been used as a case (Park-Lee, 2020, p.24).

As an integral part of the design proposal, the enabling of low carbon lifestyles was embedded in the project from the start (Arup, et al., 2009). This aspect could also be seen as potentially systemic, as it could in theory be multiplied and deployed elsewhere. A system of metering and smart ways of controlling energy and water use have been described as being part of the finished block by the City of Helsinki (Helsingin kaupunki, 2020) and by the Architect of Record of the block (Sweco, n.d.). However, these features have not been installed or activated broadly in the buildings (Järventausta, 2022; Salo, 2022). There is some local energy production, in the form of solar panels on the roofs and a tenant that is seen as enabling community building, the Uusi Sauna.

*Urban design and Building & Construction*

The built environment of Airut carries only few traces of the goals set at the beginning of the process. With large changes in structural and material starting points, building service principles, massing and the articulation of outdoor spaces, only the vestiges of a few urban ideas have been left – the idea of a courtyard that the buildings share with the surrounding city.

The changes in the design features during the project are summed up in Figure 2., with color denoting the relative presence or absence of features in the different design iterations.



	Systemic aspects	Urban design	Building & Construction	Lifestyle
Design 1. Competition proposal	GBC, CND, off-shore energy solutions	Semi-public spaces Light bridge network Communal gardens Communal courts Mixed functions	Timber construction Communal stairwells Wintergardens Natural ventilation Narrow building frames	Pocket green houses Local energy production Communal services Lifestyle applications Car club
Design 2. Residential + Sitra HQ	-	Central court Mixed functions	Timber construction Communal stairwells Partial natural ventilation	Local energy production Communal services Lifestyle applications
Design 3. Residential	-	Central court	Communal stairwells	Local energy production Communal services
Design 4. Residential optimized	-	Central court	Minimum stairwells	Local energy production Communal services

**Figure 2.** Changes in design features in the different design stages of the project. The different features are derived from the following sources: Design 1. (ARUP, et al., 2009); Design 2. (ARUP, 2011); Design 3. (Sauerbruch Hutton and Optiplan, 2019); Design 4. (permit drawings of the buildings – 2014-2016.)

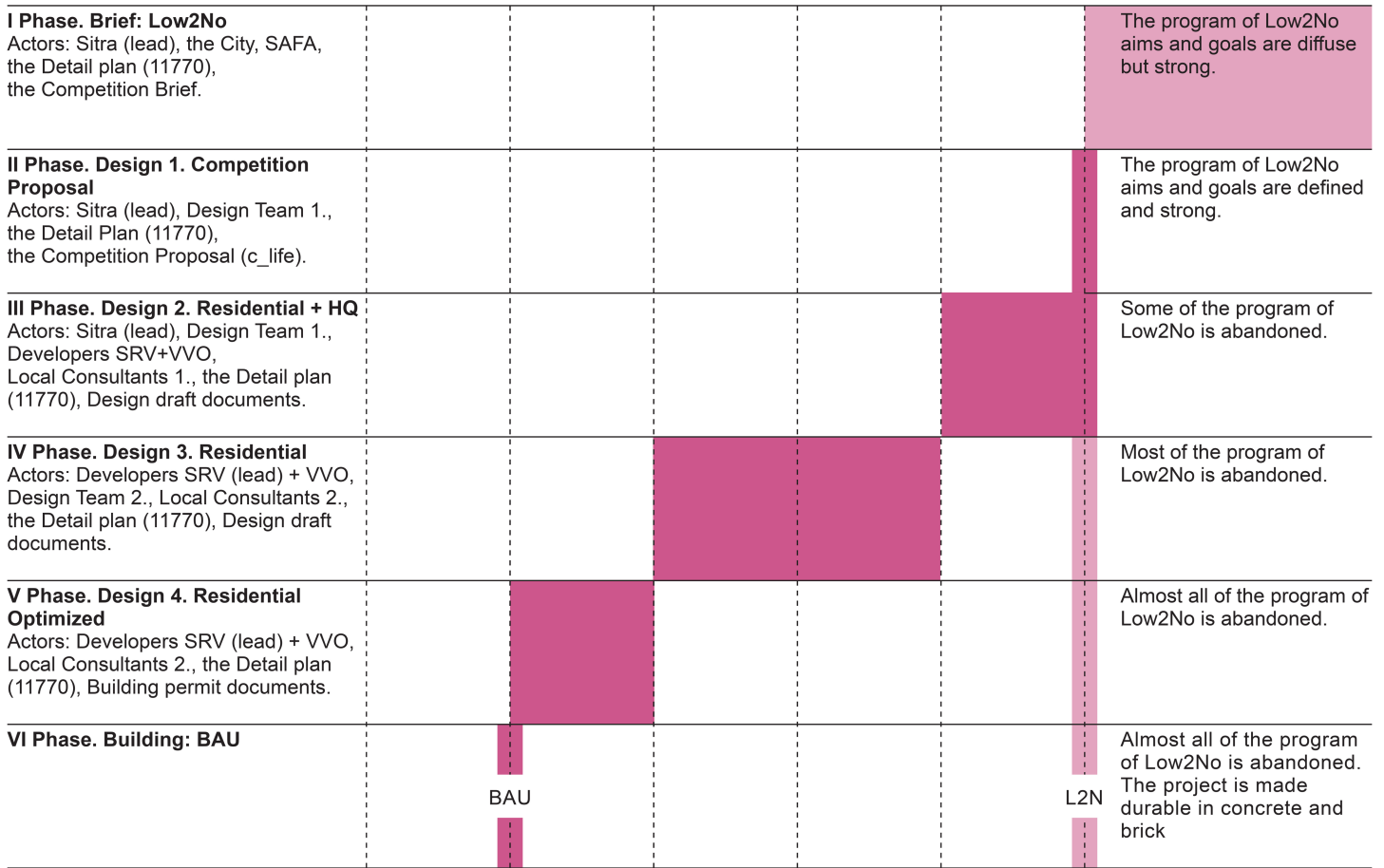
*Instead of building a durable setting of actors, Sitra opted for opportunities to innovate as freely and without constraints as possible – resulting paradoxically in a situation of drift towards BAU.*

## Results

The narrative recounted above, describing the process, the roles of the actors and the vagaries of the changing features of the design itself allows us to sum up the trajectory of the project, and illustrate it with a composite graph recounting the phases (movement along y-axis) and the changes in design features (movement along x-axis). Here the changes in the actors making up each phase are visible and we can see the drift of the project, with the program (Low2No goals stated at the start) giving way to the antiprogram (absence of Low2No features, Business as Usual BAU building practice) as the project proceeds towards realization.

In general, this type of a graph of a building project can be constructed with a prescribed number of settings, that are drawn from the regulatory framework of the location in question. Any project has to proceed through different settings to move forward, towards realization. Each new setting is a transformation or translation, where the actors of the setting change, towards a more durable and firm version of the project – ultimately, the building project becomes a setting of related construction materials, instead of humans, drawings and contracts.

As shown in Figure 3., in the case of Low2No the different settings of actors in each stage defined and redefined the project in a complex fashion. The recounting of the narrative shows us that the competition brief (in phase I) was constructed in a way that precluded the redrafting of a detail plan for the site, as the documents required from the competitors were geared towards the systemic aspects of the project, leaving the demands for building designs intentionally vague. The winning competition proposal (phase II) crystallized the goals of the brief into design features, but as directed by the brief, with a still imprecise design. With SRV and VVO joining the process, some of the systemic aspects that were seen as superfluous to the building project were jettisoned (phase III), but the design drafts still presented a project that retained many of Low2No features, especially in the design of the Sitra HQ. With the exit of Sitra and the lead shifting to SRV (phase IV), most of the Low2No features were removed from the design,



**Figure 3.** The trajectory of the project as seen from Sitra’s point of view - with y axis showing substitutions in the set of actors in the different phases (I-VI) and x axis the relation between program and antiprogram, in this case Business as Usual - practices (BAU) and Low2No aims and goals, (L2N) as stated first (loosely) in the brief, then concretely in the Design 1. (Competition proposal). Light color in the graph denotes the initial goals of the project, the dark color the actual trajectory.

with the loose detail plan allowing for these changes, the project was now practically already an example of BAU design. The final phases (V and VI) saw a final trimming of design features and the construction of the block.

The project thus moved in each phase persistently from the shared Low2No program, towards built BAU. At the end, almost all of the actors had changed and there was almost none of the initial Low2No features left. Two observations concerning the phases can now be made, one obvious and another more subtle.

*Drift towards BAU by the human actors*

The changes in the human actors in each setting coincided with the projects drift towards BAU – especially as the role of Sitra as a coordinator and client ended and the project was taken up by SRV – where Sitra embodied (for a time) the Low2No program, we can see that the push towards BAU was mostly driven by SRV. As the human actors who were most invested in the project changed, the project also lost its aim.

*The drift is allowed by the non-human actors*

Another observation concerns the non-human actors of the project, the architectural drawings enumerated in the different phases and their relations. The detail plan set up the limits, a drawn cage, within which the other drawings could function, the competition proposal articulated the goals of the project and the design draft documents chronicled the changing features of the design, with finally the permit drawings allowing the project to become realized.

The detail plan was the most consequential actor in all of the settings, even though it literally did almost nothing – in essence, the detail plan was so central

to the fate of the project, because it allowed for so much, the blank slate provided for the project allowed it to evolve in any number of ways, one of which was the drift to BAU, and that was what transpired.

## Discussion and Conclusion

We can now provide answers to our initial questions: *how did the Low2No project end up as the built Airut block, and what role did different actors play in this process?* The narrative of the process, its different settings of actors and changing sets of design features gives a comprehensive description of the project and the transformations it endured during the decade from conception to realization. The actors identified in this process have now also been enumerated and their relations examined, with the non-human architectural drawings of different types taken into account as significant mediating actors in their own right.

Some of the observations concerning the roles of different actors are obvious - through their statements and the actions they undertook, we can single out the drivers of the initial goals of the project (Sitra, until abandoning the project) and the source of a push towards BAU (SRV). This observation aligns with earlier studies, where the differences of the missions and organizational perspectives of the participants have been discussed (Jokinen, 2012), and how a misalignment between systemic and concrete objectives played a part in the difficulties in finding common ground between the participants (Menna, 2013). However, further key findings that emerged from the analysis bring new understanding to this narrative, having to do with the relations of the non-human mediators in the different phases of the process.

It is here argued that the drift of the project was already predetermined by the approaches chosen right at the start – with an outlook that disregarded the role of non-human mediators as potential allied actors in directing the project towards set goals – actors that could have provided binding safeguards within which to negotiate more successfully towards Low2No results. This argument can be made for two of the central drawing types in the process: the detail plan and the competition proposal.

- Sitra saw a prescribing detail plan as a hindrance instead of an ally. Its role was naturally minimized for the competition, but after the competition process, a redrafting of a detail plan for the site was not done. This could have provided a set of agreed upon limits for the further design of the project – a suitably loose cage, setting down for example a framework for urban form, building volume dimensions, construction and material guidelines, etc. protecting several of the aspects that were later whittled out of the project as seen in Figure 2.
- The competition process itself was not adequate for producing proposals suitable for the drafting of a new detail plan. Its timetable and set goals were not designed for that purpose and the proposals provided concepts ill-suited to be set in the terms of a detail plan.

The actors, who could have helped craft documents giving the process more clear direction and limits against drift, were either antagonized (SAFA), kept at an arms length (the City) or defined as passive participants in the design process (the Local consultants) - who could only "be infected".

Instead of building a durable setting of actors, Sitra opted for opportunities to innovate as freely and without constraints as possible - resulting paradoxically in a situation of drift towards BAU. Sitra stepping away from the project in 2012 was

the most visible moment of failure, but the project had been unwittingly abandoned already to the vagaries of power dynamics unfavorable for the Low2No goals from the time the brief for the competition was sketched out.

#### *Considerations for future projects*

In designing similar projects, the mapping out of all relevant actors without prejudice is paramount. Drawing a network that covers the relevant actors – actors that can have a meaningful effect on the project – and their relations will benefit from local knowledge of the context and provide a basis for identifying the possible human or non-human allies that can be mobilized for reaching the goals of the project. Here the basis of drawing the network was the regulatory mechanisms for urban development, and it resulted in identifying types of documents that effected the project, but were employed only as enablers, instead of helpful restraints.

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