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# White Research Programme

2017-2019

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white

# A Catalyst for Advancement

White engages in research that supports sustainable ways of life. With the research programme for 2017-2019, we set out to explore the imperative fields of equitable architecture, resource efficiency and informed design with the aim to better serve users, clients and society at large. We take further steps towards the international research community, and our ambition is to make research an evident part of our daily practice, both concerning our projects and our business.

## CATALYTIC CURIOSITY

White's dedicated practice-based research adds extra dimensions and innovative solutions to our projects. The purpose of this research programme is to articulate our research focus in order to guide our initiatives, decisions, and investments in research during the years 2017-2019.

The document also aspires to encourage curiosity and provide inspiration for further discussions and collaborations with actors in the building sector and the academy.

The research programme presents strategically important standpoints for the development of our most important asset – our collective knowledge. The programme aims at inspiring progress in fields of research with the aim to achieve effectual changes in architectural sustainable development.

## DRIVER FOR DESIGN

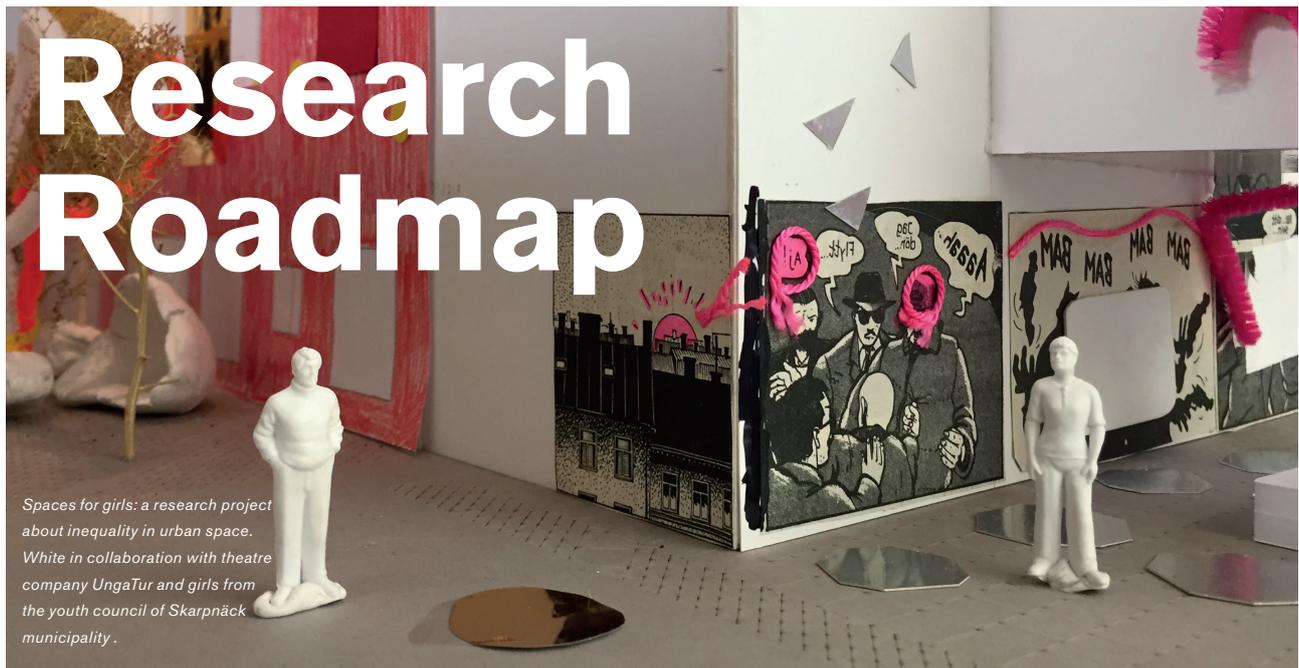
Research is one of the main strategies to achieve our vision of creating architecture with people in focus, inspiring sustainable ways of life. White's business plan for 2017-2019 emphasises three drivers in our practice: to explore, challenge and inspire.

The notion of exploring leads us to engage in dedicated applied research that supports all aspects of sustainable development. By integrating research and practice, we challenge ourselves to take our projects to higher levels of sustainability; through collaboration between our different disciplines, we find the keys and constraints that make our design relevant to push our knowledge forward. Just as we are inspired by others, our own research is communicated according to an open access principle.

## RESEARCH WITHIN REACH

Development of knowledge has been a fundamental part of our working culture since White was founded in 1951. Our structure of employee-ownership allows us to grant support to research and development activities on a broad basis, from bottom-up initiatives in our assignments to practice-based research in collaboration with the academy; all of which are organised and supported by White Research Lab (WRL).

A network engaging in active transfer of knowledge and experience, WRL is the spine in our research structure. Since WRL expanded its activities in 2012, from heading the competence networks of White to adding a highly approachable structure for internal seed-funding of practice-based research, the growing interest in research activities inspires us to increase our ambitions to collaborate with clients that share our curiosity.



# Research Roadmap

*Spaces for girls: a research project about inequality in urban space. White in collaboration with theatre company UngaTur and girls from the youth council of Skarpnäck municipality.*

## THE BUSINESS OF RESEARCH

Knowledge and curiosity to learn more are our assets in business. We strive to increase the share of external funding of our research and to collaborate with clients who share our vision of founding design on knowledge and creativity. During the programme period, we intend to launch three new PhD projects within the strategic areas of research.

## RESEARCHERS IN PRACTICE

We will continue to develop the interface between research and practice through our in-house researchers and PhD students, who not only spearhead knowledge initiatives but also possess theoretical and methodological competence that is invaluable for a truly informed contemporary practice.

## INTERNATIONALISATION

We aim to further develop our international research engagement in the context of firm practice as well as academy, extending our networks into universities and national and global organisations. Our research results will be made available to an international audience by the use of white papers and the policy of open access.



*A thousand lanterns crafted by children in Bergsjön is one of the results of the Light Lab research project: a collaboration initiated by White Arkitekter, GöteborgsOperan, the Swedish Exhibition Agency and the Cultural Affairs Administration, among others.*

# Research Themes 2017–2019

With the themes of equitable architecture, resource efficiency and informed design, we approach strategic fields of research with a strong potential to achieve effectual changes to society by means of architecture. Our research aims to support the overall vision of White Arkitekter: creating architecture with people in focus, inspiring sustainable ways of life. The questions presented in these themes are suggested as entry points into deeper understanding by research.

## GUIDANCE AND INSPIRATION

The research themes are intended to inspire our research across all our platforms, as a guide and orientation towards research initiatives in close relation to architectural practice. They are formulated in response to macro changes on a global scale – such as urbanisation, climate change and digitalisation – that affect societies in both local and global contexts.

Research questions are found at all scale levels and can be combined and further developed in relation to our previous research programmes and our ongoing research projects.

The main themes in our previous research programme – complex programs, sustainable urban planning, technique/design – are continuously carried forward in our projects and in our PhD candidates' studies.

## IN RELATION TO SOCIETY

The research themes align with articulated goals on a national and international level. The official proposal for a new policy for architecture, form and design Gestaltad Livsmiljö (2015) presents the wide range of impact from architecture, planning and design on society, which is further developed into the main challenges described in the Swedish government proposal for a national research programme (2016). The national research proposition identifies three main challenges: related to climate (sustainable built environment), health (safe and inclusive society) and digitalisation (applying digital solutions for a sustainable development).

## IN RELATION TO GLOBAL GOALS

At all levels in our practice, we find support for our ideas in Agenda 2030, adopted by the UN for Sustainable Development in 2015.

The proposed research questions are reflected in the Sustainable Development Goals (SDG). Among these interconnected goals, our research relates mainly to the following paragraphs:

SDG 7: Affordable and Clean Energy, SDG 11: Sustainable Cities and Communities, SDG 12: Responsible Consumption and Production, SDG 13: Climate Action, SDG 15: Life on Land, and SDG 17: Partnerships for the Goals.

**EQUITABLE  
ARCHITECTURE**

**RESOURCE  
EFFICIENCY**

**INFORMED  
DESIGN**



## EQUITABLE ARCHITECTURE

*Creating environments in an equitable way means to take individual characteristics and needs into account to bring fairness into practice. We see the need to develop new processes, methods and designs to secure public space as a common good, and we inquire how architecture can support equal opportunities.*

### INCLUSIVE PROCESSES

Architecture and urban design can enable and empower people at all different scales: objects, buildings, neighbourhoods, cities. We strive towards a holistic understanding of how the built environment influences its users and what it takes to create equitable public environments.

We analyse and develop planning processes and study how norms and structures affect the design and use of public space. By supporting research that applies norm creative theory to urban planning we challenge the bias, as a way to develop practice and methods for equitable architecture.

- How can we further develop ways to include users in the architecture and planning process?
- How do we get to know people's needs and desires, and how these change over time?
- How can we challenge norms and prejudices to create more inclusive environments?

### EQUAL ACCESS

Equity in the built environment is imperative for a sustainable society. We are exploring the front where the notion of equity challenges the assumption that all users are able to use and accommodate to the built environment in the same way. We aim to meet the differences by creating environments that are open to a multitude of interpretations, meanings and uses. To design for equal access is to prepare for co-presence and to lay the common ground for a humane and empathetic society.

- How can the notion of equity influence the design and function of public spaces?
- How can architecture and urban design provide equal opportunities and bridge divides in socio-economic structures?
- What is the role of architecture in ensuring equal access to qualitative public spaces?

### TRANSFORMATION OF THE COMMONS

The gradual dismantling of the welfare state is becoming a defining issue of our time. As urban populations grow while the public sector is reduced the pressure on public space increases.

The urban commons are a precondition for an open and tolerant society, thus their present transformation under the economic changes calls for new ways to create and maintain inclusive public spaces. The built environment can be as oppressive as it can be empowering; in our research, we strive to understand how public space can support an inclusive and equitable development, and vice versa.

- How can new collaborations and transdisciplinary constellations contribute to achieve equitable living environments?
- What is the role of architecture, and of architects, in the system of governance of the commons, understood as qualitative public space?



**RESOURCE  
EFFICIENCY**

*Working within planetary boundaries, urban design and architecture should be developed and refined with resource efficiency as an important point of departure for innovative design. We focus on human needs and quality of life when designing the built environment with respect to our basic resources.*

**SUSTAINABLE DENSIFICATION**

While cities and towns are under the pressure of urbanisation, space has become a common resource that must be treasured and shared in more efficient ways. Design of highest quality is our primary goal as architects, and this goes for both buildings and urban space. As human beings we depend on our ecosystem as the fundamental base to provide for our habitat, and the concept of densification must be challenged to include the multitude of cultural, social and ecological qualities that both individuals and societies need.

- How do we enhance biodiversity and ecosystem services in dense urbanity?
- How can we as architects grant access to basic needs such as green spaces, daylight, renewable energy, and water?
- What are the methods to calibrate the relation between architectural quality, livable space and economical means?

**CIRCULAR ECONOMY**

Given the complexity and high resource consumption of the built environment and today's urban lifestyles, there is an urgent need to design buildings and cities that support a more circular economy.

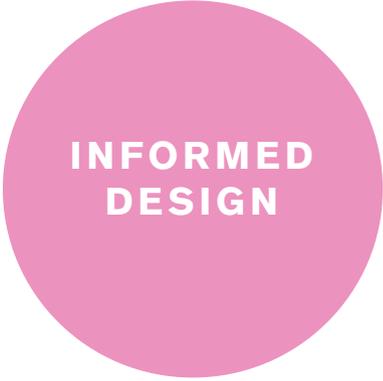
By investigations in spatial implications of sharing, reuse and recycling, innovative material use and regenerative design, strategies and methods can be developed, introduced and refined, such as Life Cycle Analysis and other systems of analytics and feedback of performance.

- How can we further develop our knowledge about the true, short and long term, effects from different design alternatives?
- How do we couple economical knowledge to aspects of longevity, adaptation and designing according to the life cycle.
- How does a resource efficient approach affect the process of design and construction?

**ENERGY FROM ARCHITECTURE**

Along with a necessary shift to reliable and renewable sources of energy, it is crucial to reduce the use of energy in all aspects of human activity. The built environment has great potential to develop from an energy dependent to an energy generating entity.

- How do we add more quality to the built environment while using less resources and lowering environmental impact?
- How do we make better use of daylight and other free energy resources?
- How do we optimise conditions for renewable energy generation from activities and surfaces in urban and architectural design?
- How do we create a turn towards multi-space and high quality architectural solutions in order for people to use less resources?



## INFORMED DESIGN

*With ever more complex contexts and conditions for our projects, informed design can make relevant information readily available to the architect, and give feedback on the consequences of decisions during the design process. Traditional design expertise, experience-based knowledge and computational design methods can provide an intersection between qualitative and quantitative modes of design and evaluation.*

### ENHANCED ARCHITECTURAL PERFORMANCE

Architecture comprises our world; it is where we live our lives. It affects our actions as well as our reactions to global changes. Architectural performance encompasses all aspects of a building's functionality, from experiences to its use and the way it operates climatically. New understandings of our environment, as well as digital and computational methods, affect all stages of architectural creation – from design to fabrication, construction, maintenance and reconstruction. An informed architecture may perform better in all these regards, and may also allow its occupants to affect this performance based on different preferences.

- How do we combine immediate feedback with long-term experience?
- How is the constant changes of technology taken into account?
- How can we best combine adaptable approaches with high architectural quality?

### INTERDISCIPLINARY RESPONSE TO COMPLEXITY

Our design processes become more informed by new methodology, but also through the collaboration in our interdisciplinary design teams. With the continued focus on architecture as a stabilising factor in an environment in constant flux, this provides new opportunities and an expanded role for architectural practice. We see new hybrid cultures emerging, where classical architectural approaches are informed by praxis from other fields.

- How do we combine traditional and new knowledge into the design process?
- How do our work cultures evolve as part of this transformation?
- How can our new hybrid practice have a positive influence on society beyond our projects?

### ORGANISATIONAL LEARNING

Enhanced design processes may provide valuable data in the technical performance of a building once completed, but this is also complemented by feedback from owners, users and neighbours. Our practice becomes informed by new conditions as well as by lessons learned from previous projects. Once architecture is inhabited, we can return to investigate if our designs are being used as expected; we take note of changes and we learn for the future.

- How do we combine measurable data with qualitative feedback from the occupants and users of our projects?
- How can "revisits" to completed projects be conducted and the findings transferred in a systematic way?
- How do we interpret and translate all feedback into valuable intelligence for future development?

# Research from Initiative to Practice

Our knowledge networks and focus labs are the spine in our research structure, engaging in active transfer of knowledge and experience. Our research is a bottom-up structure where initiatives rise from, and feed back into, our networks and daily practice. This provides a reliable and up-to-date base of relevance. White Research Lab provides support to our in-practice researchers, our focus labs in strategic fields of development, and our knowledge networks that reflect the width and depth of our architectural practice.

## HOW WE DO IT

White Research Lab (WRL) reflects our intense curiosity and creative capacity. Our research organisation is not a separate unit but a network-based, distributed dynamic structure that reaches all across the company. WRL is lead by a small management group that overlooks 15 open competence networks of varying sizes, four focus labs, and our different research projects.

WRL is a catalyst for triggering advancements in all projects. We support bottom-up explorations, which means that all employees can apply for funding in a simple and fast procedure, and also get support and guidance through the whole process from application to presentation and implementation.

The many forms of engagement encompassed by WRL place us in a key position in the context of practice as well as academy, extending our networks beyond our business, in academia and higher education, as well as in national and global organisations.

## COMPETENCE NETWORKS

White's practice covers most areas and sub-disciplines of architecture from urban planning to interior design. WRL is the organisational node for the wide competence networks that support all our different kinds of projects and assignments. The networks, that largely parallel our business areas, are responsible for development of competence and exchange of experience and skill-sets within their respective fields of practice. They also maintain a communicative and explorative agenda, presenting strategic observations of future markets, analysing global progress and taking active part in the public debate.

Each network has a head of development, who ensures the knowledge exchange between all involved throughout the distributed practice of White. Yearly network meetings are mixed with more frequent events, often involving our clients. The heads take part in the overarching planning of White Research Lab, and are responsible for the gathering of intelligence within their field.

## FOCUS LABS

Our four focus labs are creative clusters that operate in direct relation to practice and help us achieve depth of knowledge within important transdisciplinary fields of research. The focus labs are centres of excellence formed in response to challenges in the society, the market and the subject of architecture.

Dsearch develops architecture with computational design, using for example prototyping, parametrics and explorative iterative design processes. Light focuses on the architectural qualities of daylight and lighting design, taking into account health aspects as well as energy and quantitative analyses of light in architecture. Wood discovers environmental and design aspects of wooden structures, as well as design strategies. Tectonics is where building and construction details and architectural key features are developed to meet new functions and sustainable solutions.

# Focus Labs

The focus labs are initiated with the vision of achieving supreme quality of architecture through deep understanding of methods, craft and applications.

## DSEARCH



Dsearch was established in 2010 as an environment for digital design development, addressing computational design in particular. With over 50 commissions so far, Dsearch has developed new design approaches in scales from urban planning to detailed fabrication, as well as a number of related research projects.

## WOOD



White has a long tradition of building in timber, being the first architects to draw tall timber constructions in Sweden. We aim to contribute to an increase of use of wood in buildings, for both residential and other types of projects. The development in timber building is in fast progress and the focus lab takes us to the forefront.

## LIGHT



Daylight has always been at the core of architecture. We design it in response to our needs as human beings, and use it as a central quality of the architectural design. The focus lab contributes with competences of daylight design and computation through research, exhibitions, every day involvement and development of daylight methodologies.

## TECTONICS



We constantly seek improvement in today's technology and find innovative ways of constructing elements, from the scale of a building to the leg of a chair. The combination of technical and poetic solutions results in design that facilitates carbon neutrality, allows a unique aesthetic, or simply keeps the rain out.

# Extended Networks by Research

Our knowledge production is nurtured by the interesting and often complex assignments that are carried out in the collaborative and interdisciplinary practice of White. We take active part in academic contexts, allowing for an up-to-date knowledge exchange between research, practice and education.

## ACADEMIC POSITIONS

White has a long history of collaborating with academic institutions, both within education and research. We encourage employees to teach when opportunities arise. This goes both for occasional engagements as lecturers, tutors and critics and for periods of part-time leave for positions as artistic professors/lecturers. We invest in adjunct professors and PhD candidates in fields within our practice.

The PhD candidates combine doctoral studies with practice on a 50/50 basis. To have academics in-house means that we as a company get access to both new knowledge, academic networks, and state-of-the-art methodology. The PhD candidates' readings feed into the competence networks through reports and presentations and we invite their academic tutors to seminars at the office where colleagues from the practice comment on work in progress. We have found that the

benefits are mutual. We intend to increase the researchers' availability as specialists in assignments and to disseminate their readings and findings on a regular basis through network seminars, publications and digital media.

## RESEARCH NETWORKS

Through active partnership in research networks and organisations, we strengthen our connections to creative and competent environments in the academy and in the building and planning sector. We collaborate with a wide range of actors from business and academia: internationally in EU funded research projects, and on a national level in projects funded by Swedish research councils and innovation agencies.

Nearly five percent of our employees are assigned as experts in panels, boards, councils and committees connected to organisations that build and use knowledge, spanning from local NGOs to governmental level.

## OPEN ACCESS

We communicate our findings in many channels, from the brief tweet to scientific papers. There is a strong tradition of publishing our knowledge, assisted by both internal and external research fundings as well as publishers. The internationally established format of 'white papers' provides a disposition and a model for distribution that is both informative and extensive.

We aim at making our research available for an international audience. White papers will be published online without restriction, as will our research reports in general. We will continue to take an active part in forums for knowledge development. Our specialists are often invited for key note lectures or panel participation when urgent issues within their fields are discussed in local or international contexts. We have increased our participation in research conferences, with several peer-reviewed papers published every year and will keep up that ambition.

# Methods and Means

**Our internal research currency is time. White Research Lab supports internal research initiatives, to which anyone can apply at any stage in a project. The funding aims to connect us to partners in the building and planning sector that share our curiosity and interest in moving forward towards a more sustainable society.**

## DESIGN AND BUILD

We continue to gain experience through projects where we act as both architect and real estate developer. White Research Lab assesses the potentials and conditions for each tentative project. The main objective for these investments is to use the projects to advance our knowledge, to be able to develop and directly implement new innovations, and to control the quality of the final outcome.

## PROTOTYPING

To prototype means to test, modify, and test again. It is inherent in our design processes where we sketch, model, evaluate and refine continuously. It is also present in the way we do research, as more design driven processes are initiated. As we explore the full potential of materials and structures, as we construct them in full scale, prototyping plays a role. Rather than painting the complete picture ahead of time, to prototype is to propose, discuss, evaluate and elaborate.

## INTERNAL CALLS FOR ACTION

As a complement to our bottom-up approach for research initiation, we add the operational strategy of the direct internal calls for action, for example commissioned research. This allows us to present strategically identified issues and opportunities to the complete agency of White – the complete body of staff – which in turn provides new discoveries in the intersection between planned activities and individual initiatives.

## RESEARCH SUPERVISION

From application to the finalisation of projects, WRL supports beginners as well as more experienced research-oriented practitioners. By employing our network, we can match our researchers with advisors in thematic and strategic issues. We arrange seminars and workshops to assess research work in progress, and as an opportunity for exchange of experience and feedback from seniors and colleagues in addition to the academic framework.

## FURTHER FUNDING

Our knowledge networks and focus labs are the spine of our research structure, engaging all staff in active transfer of knowledge and experience. Furthermore, a substantial number of employees are involved in WRL funded research initiatives that may span over a week or several years.

The independent research trust ARQ, financed by White, offers further research funding in architecture, urban development and planning, with the objective of linking academic research with practice in interdisciplinary activities and projects. ARQ is accessible for external research applications. Between WRL and ARQ, White covers funding possibilities for every stage of the research and innovation process, from prototyping in ongoing projects to extensive collaboration projects with national and international co-funding.

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*White engages in dedicated applied research that supports sustainable ways of life. Research at White is closely connected to our practice and manifested in our assignments. Our research provides quality in our projects and collaboration between different parts and interests.*

*By integrating our different disciplines we contribute to higher levels of sustainability in our projects. The three fields we present for the period 2017-2019 are guided by our business strategy, with the overall vision of contributing to a sustainable way of life by creating architecture with people in focus. A curious and informed organisation, empowered by strategies for production and management of knowledge, are the preconditions of our research and development.*

WHITE RESEARCH LAB  
JUNE 2017

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GET IN TOUCH!  
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