When the roses came to the city

A techno-antropological action research study, about facade plants in Copenhagen Inner City and Chritianshaven.

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Abstract

This research project is an examination of the subject of facade plants in Copenhagen Inner City and Christianshaven. The project has been inspired by and made in close collaboration with an organisation called Miljøpunkt A21 Inner City - Christianshaven, which themselves have a project called "Roses to the city" which has the purpose of increasing the amount of green facades in copenhagen. We are examining how we as techno-anthropologist using action research as our approach, can contribute into making the process of obtaining facade plants easier for the locals in copenhagen.

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Indholdsfortegnelse

Chapter 1 - Introduction

Green transition in Copenhagen

The way the world is taking up natural resources today, we risk to destroy natures natural ability to provide for us. Our quality of life, health and job depend on the environment. The way we live and consume needs to be fundamentally changed. Our living standards today takes up so many resources, which is more than the planets limited resources can sustainably deliver. Everything surrounding humans comes from the nature and is a part of the environment. The communities we live in is built from raw materials and is crucial to our existence. But our level of resource consumption is weakening the environment and its capacity to provide for us (European Environment Agency, 2018). The ecosystem is changing faster than ever before and is introducing new species that can invade the entire ecosystem. To ensure our quality of life the world needs to transit into green. Denmark has led the way in the global energy transition, with national policy and technological solutions. Denmark is the second best among EU countries concerning energy efficiency (Danish Ministry of Energy, Utilities and Climate, 2018).

In 1992, the United Nations held a conference concerning the environment and sustainable development in Rio De Janeiro. The result of this conference was "Agenda 21" (Københavns Kommune, Teknik- og Miljøforvaltningen, 2016).

Agenda 21, is a plan for the world's countries to work with sustainable development in the 21st century. In this plan, it was put to focus that there was a wish for citizens to be involved in the creation of a more sustainable globe, and a holistic concept of sustainability was formulated (ibid.). Copenhagen's Municipality's Technical and Environmental Administration (TEA) has with inspiration from Agenda 21, made an "Agenda 21 strategy" for Copenhagen, with the visions of facilitating more environmental and climate work in the years 2016-2019. An important condition for this environmental and climate work, is that the citizens of Copenhagen get the opportunity to work and take active part in the changes and their knowledge and experience is put into place. The vision is for the citizens to cooperate with the municipality and to take initiative and be engaged in newly-funded projects. The citizens have to be a part of the development of a sustainable city, because the city is a part of their everyday life. The vision is also that the individual citizen life quality should increase. Copenhagen's Municipality wants to create a

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community revolving around the environment (ibid.). They believe that there is a link between the social act in a community and the acceptance of changes and new habits. Being a part of a community is believed to be highly motivating for the locals and therefore the municipality prioritize this along with responsibility. With inspiration from the municipality's Agenda 21 strategy, organisations like Miljøpunktet (MP) facilitates projects to support green transition in Copenhagen. This is done with various projects evolving different environmental issues. One of MP's projects is called "Roses to the City" and encourages locals to use vertical spaces for planting flowers, in this specific case, roses. It is targeted to local citizens to get them involved at to create a community in Copenhagen, concerning the green transition. In this project we aim to understand and support the citizens process of face planting (Miljøpunkt Indre By & Christianshavn, 2017).

Problem field

As mentioned, the planet is in need of a green transition. Such a transition requires more than "just" a greener economy and large, world-wide changes on a macro-level. The transition also calls for an understanding of the changes that have to be made on a micro-level. In our opinion, the micro-level changes are equally as important as the changes on a macro-level and therefore we identify the project "Roses to the City" as a great project for us to follow. We recognize green facades as an underutilized resource in Copenhagen's cityscape and would like to create more awareness about this particular subject. We are aware that facade planting is just a small step on the way for a greener Copenhagen, but we approach this project with the thought of "*from little strokes fell great oaks*". This project gives us an opportunity to use the approach of *Action Research* in order to make a democratic social change in our quest for answers. In our attempt to sufficiently answer our problem formulation we have chosen the theoretical approach of *Actor Network Theory* (ANT). As the name of the theory proclaims, it focuses on the actors "power relation" with in a shared network. By using ANT, we wish to seek a better understanding of what the network "Roses to the City" involves. Through these theoretical and analytical tools, we aim to shed light on how to facilitate a successful facade plant project.

Problem formulation

How can we as researchers support and facilitate the citizens' planning and establishment process of facade planting?

- What are the locals and Miljøpunktet existing experiences revolving facade planting, both current and former.

- How is the interaction between Miljøpunktet, the municipality and the locals?
- What is crucial for "Roses to the City" to succeed as a project

Project frame

This project frame aims to give the reader a better understanding of the project's context throughout this paper. It is important to keep in mind that during the "design" of this paper we collaborated with MP, who is working in the district of Copenhagen Inner City and Christianshavn. Our project is therefore primarily framed around this geographical area of Copenhagen. We are aware that our findings and conclusions may not be referable to other projects outside of this context.We are aware that there are certain actors that could have been relevant to our study that are not represented in our empirical data collection.
This may make our findings exclude some aspects that have not been articulated by our informants, but for reasons we can not change, it has not been possible for us to access these.

Reading guide

Through this paper the reader will be introduced to the field of study, the actors and the organisations and aspects therein. The use of our methodological and analytical approach will be further explained and argued for. On the background of our methodological and analytical approach we seek to answer our problem formulation, with ideas for future solutions. We have chosen to introduce our theoretical approach along the way, as it becomes utilized throughout the study. By using this method, we seek to give the reader a more fluent and enjoyable reading experience.

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Abbreviations

Technical and Environmental Administration - TEA

Miljøpunktet - MP

General Data Protection Regulation - GDPR

Governmental Agency for Culture and Palaces - GACP

Actor network theory - ANT

Obligatory passage point - OPP

Introduction to the field

In the section below the field of research will be unfolded through the introduction of the actors we ourself have been introduced to during our fieldwork.

Access to the field

Our original thought was that during our 9th semester we would work with either city planning or green transition, and as such we spend a sizeable amount of our initial time on reaching out to different companies operating within these fields through emails and phone calls. We had as an example a lot of contact with the Technical University of Denmark (DTU) regarding a project surrounding electric driverless busses and their implementation. But because the busses first will come into service January 2019 they recommended that it would be more fruitful to wait. During this phase it became a common occurrence where we would try to tag onto a project that was either too early or too late in its progress for the organisation to be interested in what we had to offer. We finally got in contact with MP and through phone calls we established our first connection with our future informants.

Our first meeting with them was scheduled to be on 19 September during one of their city walks, which is a type of event, that they offer in conjunction to many of their projects, where citizens can join MP representatives on a stroll through the streets of inner Copenhagen and thus learn about specific topics, in this case facade planting. We met with two of our future informants Malene and Peder in a backyard filled with different plants. We initially had a hard time finding the meeting spot because the house number was covered in plants. We discovered to our surprise that we were the only ones to show up for the event even though there were over 50 attendants on the events' Facebook page. This gave us a unique opportunity to

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get close with the informants from the beginning as the setting became very intimate, which we had not expected. As the city walk unfolded we got our first insight into some of the different problems and themes surrounding facade planting in inner Copenhagen. Themes such as illegal planting, prejudices against it and one of the driving forces behind a successful facade planting project.
:

> *"You have got to have the motivation to keep facade plants"*
> • *Peder*

Peder was the first to introduce us to the notion of motivation as a driving factor for a successful facade plant project. This notion ended up being repeated through other interviews and fieldworks to a point where ignoring it would be impossible. The city walk concluded at a small park where we had the opportunity to sit down and have some coffee. The information that got exchanged during this conversation became the groundwork for our future collaboration with MP as well as our initial interview guides.

Timeline 1

The "timeline 1" is to give an understanding of the process, from the Agenda 21 declaration, to the Copenhagen Agenda 21- strategy and MP's project with inspiration from these.
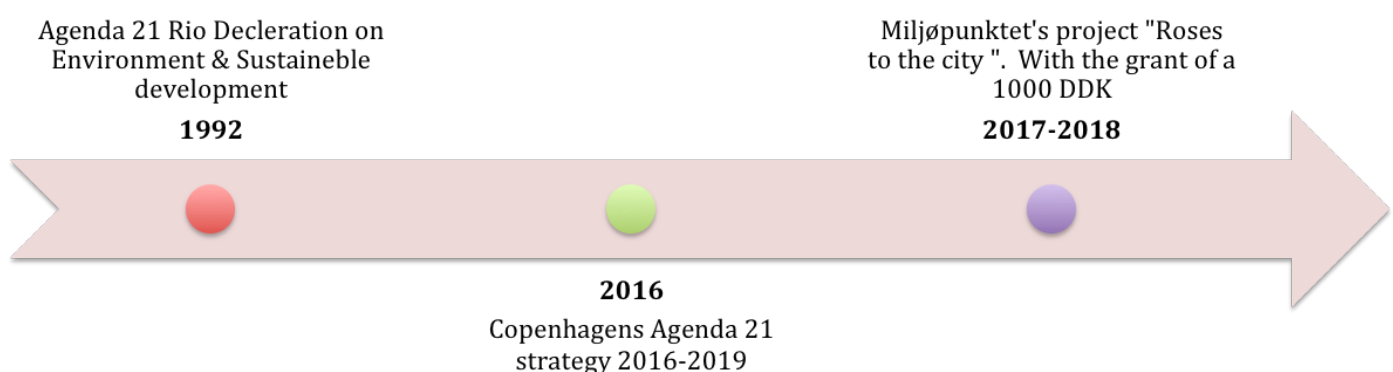
Illustration 1 shows a rough time frame from when Agenda 21 was formed to the establishment of the "Roses to the City project.

Miljøpunktet

MP is a self-governing fund with its own board of directors. MP supports, develops and facilitates local environmental work. This is done by initiating corporations between local citizens, volunteers, institutions, organisations, Copenhagen Municipality, universities and the inner city local committee.

They work with cross-cutting projects and cooperate across other environmental organisations and districts in Copenhagen. Through this work they ensure a safe dialogue and development within environmental, cultural, and sustainable projects. The centre advises and involves local citizens and local institutions, to develop a more sustainable and green Copenhagen, by leading projects and ensure a highly qualified team, with great expertise.

MP's visions are to create a foundation for a higher living standard for the people living and working in Copenhagen. This is done by initiation projects that will improve issues like clean air policies, noise policies, green transition, garbage sorting and the valuable use of this.

Every year an annual plan is published. In the "Annual Plan 2018" (a21.dk, 2017) MP has outlined upcoming projects, that all are for the purpose of green transition in Copenhagen. MP is financed be the Inner City and Christianshavn local committee, Copenhagen Municipality, but is for specially selected projects financed be external funds (ibid).

At the moment MP has five ongoing projects, see *Illustration 2*

Project	Purpose
Clean air in the City	Create and maintain focus on the subkect of air pollution, and thereby contribute to an environmentally friendly Copenhagen
Less nioce in the City	Advocate focus on the negative health effects that noise can lead to.

Green City	Establish green facades and roses. Increase focus on climate adaptation, urban nature and its importance to health and quality of life.
Waste sorting and disposal	Communicate opportunities for sorting recyclable waste in home and in the public room.
"Communication, visibility and networking"	Making MP acknowledged and well known in the local community, different district and on the social media.

Illustration 2: The illustration above show the different project associated to MP in 2018

Roses to the City

MP's projects "Roses to the City" is 1 of the 4 subcategories to the main project "Green City". A good environment is according to MP is more than just clean air and less noise. One of MP's visions is to make more room for "green spaces" in Copenhagen. These kinds of green spaces will increase the quality of the city and contribute to a happier and healthier life in the city (a21.dk, 2017). Studies from 2013 shows that the view of plants has a positive effect on people's work behaviour. Not only citizens and tourists will benefit from the green spaces, but it will also contribute to an increased biodiversity, which benefits animals and other plants. In densely populated cities we will benefit from the plants natural attribute to help solving different environmental and climatic problems (ibid.). Metropolitan cities often have a higher average temperature and less air quality than the surrounding smaller cities (ibid.). The plants helps to cool and improve the air. This is due to evaporation from the plants and the ability of the plants to utilize the sun's energy to grow while they form oxygen. Trees, green roofs and green facades, helps cooling the city, absorbing rainwater, delaying the rainwaters path to the sewer, isolating buildings, cleaning air and reducing noise. MP finds, that the horizontal surfaces in Copenhagen are mostly taken up by cars, bicycles and pedestrians. Therefore, they argue that using plants that grows on vertical surfaces will result in a greener city. Vertical planting also decreases issues like graffiti.

The campaign "Roses to the City" is funded by the Inner City and Christianshavn's local committee. The campaign encourages locals, companies, and other kind of building owners, to be a part of creating green

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facades in Copenhagen with the help and in some cases financial support from MP. If the locals are interested they can download a catalogue from MP's website, where they can find information about the planting process, plants in general, pictures for inspiration and other kinds of information. In the catalogue MP encourages the local to be a part of a community with a shared goal for a green city and a higher life quality.

"When you can create a green space and shape the place where you live and work, we hope it helps to support the quality of life in the city and gives a greater ownership and connection to our common community" - Bent Lohmann Chairman Inner City Local Committee & Marianne Spang Bech. Center Director, MP Roses to the city, catalogue

In the catalogue, the local will find a section called "How to get started". In this section, the local is amongst others informed about "Where are you allowed to plant", the local is informed that;

"The Municipality of Copenhagen must approve planting on public sidewalks and safe passage on public road. Therefore, you should send an application for permission for facade planting to the municipality of Copenhagen. You can do that by mail: vejaendring@tmf.kk.dk - you should get answers within a few days." - MP - Roses to the City, catalogue

This process was later confirmed by the municipality at an interview with them
The catalogue also inform the locals about the financial application process, under the section "how to apply for financial support". This section links to a website where the locals can apply for DKK 1,000 as financial support. In an interview with Marianne we asked if she thought the financial support was a motivation for the locals to apply for the "Roses to the City" project and she replied:

"As we can see, it's not what people have been attracted by" - Marianne Spang Bech. Center Director, MP

In the last section in the catalogue the locals are encouraged to "Inspire their neighbours". In this section MP states that;

"When one citizen first starts to plant in an area, it inspires others to get started"
- Miljøpunkt Roser til byen, catalogue

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Beside MP's website and catalogue they offer help from their plant expert, Peder, who volunteers as a green consultant at MP. If needed, he will follow and guide the locals through the planting process and later on in the process if needed, he will be available for further questions regarding maintenance of the plants.

Roses to the city catalogue

In addition to knowledge gained through interviews and ethnographic fieldwork we owe a large part of our knowledge on the subject of facade planting on various reading materials we have encountered in the process of making this project. One of our preliminary readings was the catalogue called "*Roser til byen: Inspiration til dig, der gerne vil skabe flere grønne facader i indre by, København.* It has been created by MP as a "free to everyone" catalogue, in their efforts to create awareness of their project and facade planting in general. The catalogue highlights several plant options and their properties summed up in short text. It also delves into how to get started in ones facade planting endeavour, introducing the reader to many of the things one must consider when wanting to plant vertically, such as where to plant what to plant and how to plant. This is all done in brief fashion though and is accompanied by colorful illustrations and pictures serving the purpose of creating inspiration for the reader.

Previous research

We wanted to engage in literature that expanded upon and went into more detail on the subject, and we came across a book called *"Facade Beplantning: en undersøgelse af fordele og ulemper"* (Attwell, 1993) The book was suggested to us by one of the employees at MP. It is written by Karen Attwell under *"Forskningscentret for Skov og Landskab, Statens Byggeforskningsinstitut og Dansk Teknologisk Institut"* to be used by *"Boligministeriet, Bygge- og Boligstyrelsen"*. The book is a thorough description on the properties of various facade plants as well as the walls they are to be planted on. But as the title suggest it outlines the many positive environmental aspects of facade planting as well as functioning as a de-bunking of some of the negative popular notions surrounding facade planting.

With an outset in this book we would like to present a brief summary of properties of facade planting.

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Facade planting, positives and negatives

One of the most popular notions surrounding facade planting is that it retains and accumulates moisture, which damages the walls, but this proves not to be the case, and in actuality the study finds there to be less moisture under the cover of facade planting than in the surrounding air (Attwell, 1993).

Some wall surfaces can be negatively affected by "driving rain", depending on the constitution of the wall. This is both because of the moisture which can damage the surface but also due to acid content in rain, often found in bigger cities, which negatively affect surface materials such as mortar or limestone. These effects are lessened through the use of facade planting, depending on which sort one uses (ibid.).

Another aspect in which facade planting can positively affect city environments is due to noise dampening properties since the plants absorbs sound waves lessening the bouncing effects of sound waves in parallel building scenarios.

They also reduce heat loss in buildings, although this is context depend upon, which sort of plants are used especially in regards to its density.

In terms of sustainability, city climate is improved since harmful airborne particles such as heavy metals are absorbed by the plants, in addition to oxidation of air in general, in transforming CO_2 into oxygen, this is of course a trait found in all plants (ibid.).

An increase in plant life in cities would generally be beneficial for biodiversity. In terms of facade plants the study finds that bird life specifically could see an improvement due to its properties of harboring nests.(ibid.)

Some plant types such as Hedera helix, which is one of the most common facade plants can in some circumstances negatively affect building surfaces. This is specifically the case if the given surface is in an already poor state. This is because of its properties of seeking away from light, causing it to grow inside cracks and other dark places, which can cause further damage to structural integrity, i.e. if the wines of the plant grow in thickness to a point that causes stress on other materials. The risk of facade plants causing such problems can be completely negated if they are regularly maintained though and the scheduled maintenance requirements varies depending on the sort.

The study also found a small risk of the roots of the plants damaging drainage tubes if these are small in diameter and also not well sealed (ibid.).

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Copenhagen Tree Policy

We were interested in obtaining a greater understanding in regards to the municipality's overarching goal for the planting of green spaces in Copenhagen, especially in terms of understanding whether or not facade planting fit into these plans. One of the primary sources of information in this regard, is a document called *"Københavns træpolitik"* (The tree policy of Copenhagen) in which the goals for the interval of 2016 to 2025 is explained in detail (the municapality of Copenhagen, The technology and environment Administration, 2018).

One of the opening statements of the document reads that by 2025 the combined number of trees should be increased. The vision is that 75% of the citizens should perceive Copenhagen as green and 20% of Copenhagen's area, should be covered in treetops, if assessed from a bird's eye view. These are ambitious goals and somewhat reflect those that have for some time been prevalent in the neighboring municipality of Frederiksberg, in which it could be argued that a relatively progressive tree policy has been a local trademark (Vej, Park og Miljø By- og Miljøområdet Frederiksberg Kommune, 2018).

All through the 18-page document, facade planting was not mentioned once, which there is a reason for. One of the biggest obstacles for facade planting in terms of being considered as a valid part of a public sector strategy, is the fact that in many cases facade planting is on private property and is therefore not considered as part of a top down strategy which pertains to public city spaces.

Nevertheless, one of the illustrations found in the tree policy outlines what Copenhagen Municipality finds to be the positive aspects of trees (see. picture 2). We find that many of the positive aspects are directly transferable to positive statements about facade plants. In the illustration the municipality have separated the positive facets of trees, into two categories; one for amenity values (on the left) and one for utility values (on the right). In terms of amenity almost all of the listed values are directly transferable, values such as aesthetics sensory experience and identity. In terms of utility values such as the improvement of air quality, reduction in noise pollution and contributes to added biodiversity all fit as well. This is worth mentioning, because it shows that facade planting can contribute to the same goals, as trees in general.

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Illustration 3, pictured above, shows the municipality's view on how trees in the cityscape can contribute to the community and environment.

Contact to the locals

During our stay in the field we experienced the effects of a new European law enforced from 25 May 2018. This law is called The General Data Protection Regulation (GDPR). GDPR affects citizens within the EU, by giving them the right to have complete control over their personal data, and how it is being used by third parties (EU GDPR, 2017). The main feature is the option of complete data erasure from any data controller. Further it pressures the data controllers to keep the use of personal data to an absolute minimum. This means that establishing contact with past users of MP's facade planting project would be

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more complex since a person from MP had to contact each user and ask for permission to give their personal data to us. This was quite new for us, and we did not expect it to be such a long drawn process. A large problem with this was that our contact with the different types of informants became severely limited. Before GDPR we would have contacted every user presented for us, and even though they would have different degrees of participation, they would all ad to our collection of data and through that our understanding of the field. All this is lost when relying on others to establish contact. Because it is not us who contacts the users but instead we have to "instruct" a third party in how and what we want with the users, essentially making MP a middleman between us and the users. In the end, we did not get any informants out of these phone conversations. The way we came into contact with users that had tried to get facade plants through the "Roses to the City" project, was by gathering all the emails kept by MP in different digital files and unify them, in a single spreadsheet that made contact information more manageable.

Some users only had a phone number associated with them, which meant that we had to get an employee from MP to call each of them and ask if they were willing to be interviewed by us. In terms of the other users, we then had the Center Director of MP send out a email on our behalf that introduced us and asked if they would like to participate in an interview and if we could contact them ourselves. More than 30 emails were sent and we received 15 responses that gave us permission to contact them. 10 of them did not want to participate or they did not have facade plants and therefore they could not see why we would like to talk to them and we could not convince them otherwise. But through our email correspondence we got some insight in why these processes failed. Out of the five informants left four wanted to meet for an interview while one wanted to participate over the phone only.

Contact to the Technology and Environment Administration

Right from the initial phase of this project we had a idea that we wanted to include Copenhagen Municipality since it is them who issues the guidelines for where you can plant, and they also need to give their permission before any project officially can be realized. We initially wanted do all of our interviews with the users before doing the interview with the municipality, since we wanted to be as informed as possible on the problematics of facade plating in order to have a constructive dialogue with them. But since the process of establishing contact with users ended up taking longer than we anticipated, the eventual interview with the municipality ended up being done while we still had other interviews left with users.

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We used our already established contact with MP as a gateway to come into contact with the municipality. During our previous interviews with MP we realized that it was the branch of the municipality called Technical and Environmental Administration which were primarily responsible for the handling of applications for facade plating, hence they were the ones that we needed to come into contact with. We decided both internally amongst the group members but also with MP, that the initial contact with the municipality should come from them. This was due to the assumption that contact would be more quickly established if it came through a source which had more weight behind it, than 3 unknown students from AAU, and that this would give our inquiry more credibility. MP equally saw a potential meeting with the municipality as an opportunity that would be to their benefit, and they wanted to participate in the meeting as well.

Marianne from MP handled the initial mail correspondence with the municipality figuring out who exactly were internally responsible for the subject of facade plants. She was directed to two people working in road authority in the unit of "permission for road change" where they handle applications for urban nature and facade planting.

Subsequently we took on the job to write a mail, which in this instance took on a more formal character than we had previously been used to, since we knew that this was an opportunity we absolutely could not miss out on. This posed a challenge since we also wanted to illustrate our findings to them, which meant that in doing so, inevitably also meant being critical of them. Therefore, we included the questions we wanted to ask them in an email in order to give them the opportunity to be prepared beforehand.

As previously mentioned MP functioned as a middleman in our contact with informants, and in this instance this proved to have some negative side effects, stemming from what we judge as miscommunication between us and MP, which made the process of actually getting the mail sent longer than it was intended. This was of course a learning experience for us, since it illustrated well the need for clear communication as to avoid misunderstanding. These bumps in the process were eventually resolved and the following process went smoothly, since the two representatives from TEA, to our relief were accommodating of a little critique and were equally interested in a meeting to further shed light on the problematics of facade planting.

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Informant introduction

During our time in the field, we came in contact with key informants that helped guide us through the field. These actors consist of both locals that have used the resources provided by MP as well as representatives from MP and the municipality.

MP informant introduction

Marianne: Marianne is the Centre Director of MP in association with Copenhagen Inner City and Christianshavn local committee. She has previously been employed by various municipalities as an environmental worker, tasked with the regulation of companies so they reduced their environmental footprint in accordance with the green transition guidelines.

During our project Marianne has helped us with our data collection and pinpointed different problematics. She has furthermore been a gatekeeper for us, since she has helped us come into contact with other important actors within the network.

Malene: Malene started working for MP during an internship as a part of her MSc in Geography. After her master she was hired as a part time employee, where she helps to organize green events, urban walks on trees and facade planting, environmental advice, citizen references, development of roses, report reports, monthly newsletters and website editing. Malene acted as our initial contact to MP and was like Marianne, vital for our understanding of the network they are a part of. She helped immensely with the establishment of contact with the users of the "Roses to the City" project.

Peder: Peder works as a volunteer at MP. Before retirement he was working as a Gardener and landscaping architect. He is responsible for guiding people in their choice of plants, and how these plants should be cared for. He is very passionate and knowledgeable about planting and facade planting is no exception. Peder was crucial for our practical understanding of plants and their different needs when planting. He helped us understand some of the prejudice surrounding facade planting.

The informant above all had substantial influence on how we view the field as they were the first we came into contact with. It is also through these informants that we established contact with the locals that have made use of the benefits that the "Roses to the City"project provides.

Local informant introduction

Jens Hvass: Jens Hvass is an architect, and the former Center Director at MP, and a flower enthusiast. In the last couple of years, he has been working on different projects that validates plants in the cityscape. His knowledge range from the practical care of plants, to the environmental impact the plants can have, including the bureaucratic steps needed to acquire these plants. He has furthermore been through the process of acquiring and maintaining facade plants himself for his apartment building, which means that we see him as both an expert and a user.

Ditte: Ditte has an education in sociology, but has more than 30 years' worth of experience working with plants. She is employed by *Sølvgadeskolen* in inner Copenhagen to be the head of a project, which goal is to incorporate more trees and plants in their schoolyard and other outside areas connected to the school. Ditte has in this context applied to the "Roses to the City" project and been approved to get the financial support. This is only a small part of the overall project associated to *Sølvgadeskolen*..

Inger: Inger has lived in Copenhagen most of her life, and is now the facilitator of a "Roses to the City" project. Her own interests in making Copenhagen a greener place to live made her enroll in the board connected to the owner's association, in an effort to mobilize the network and make her dreams of a green facade a reality.
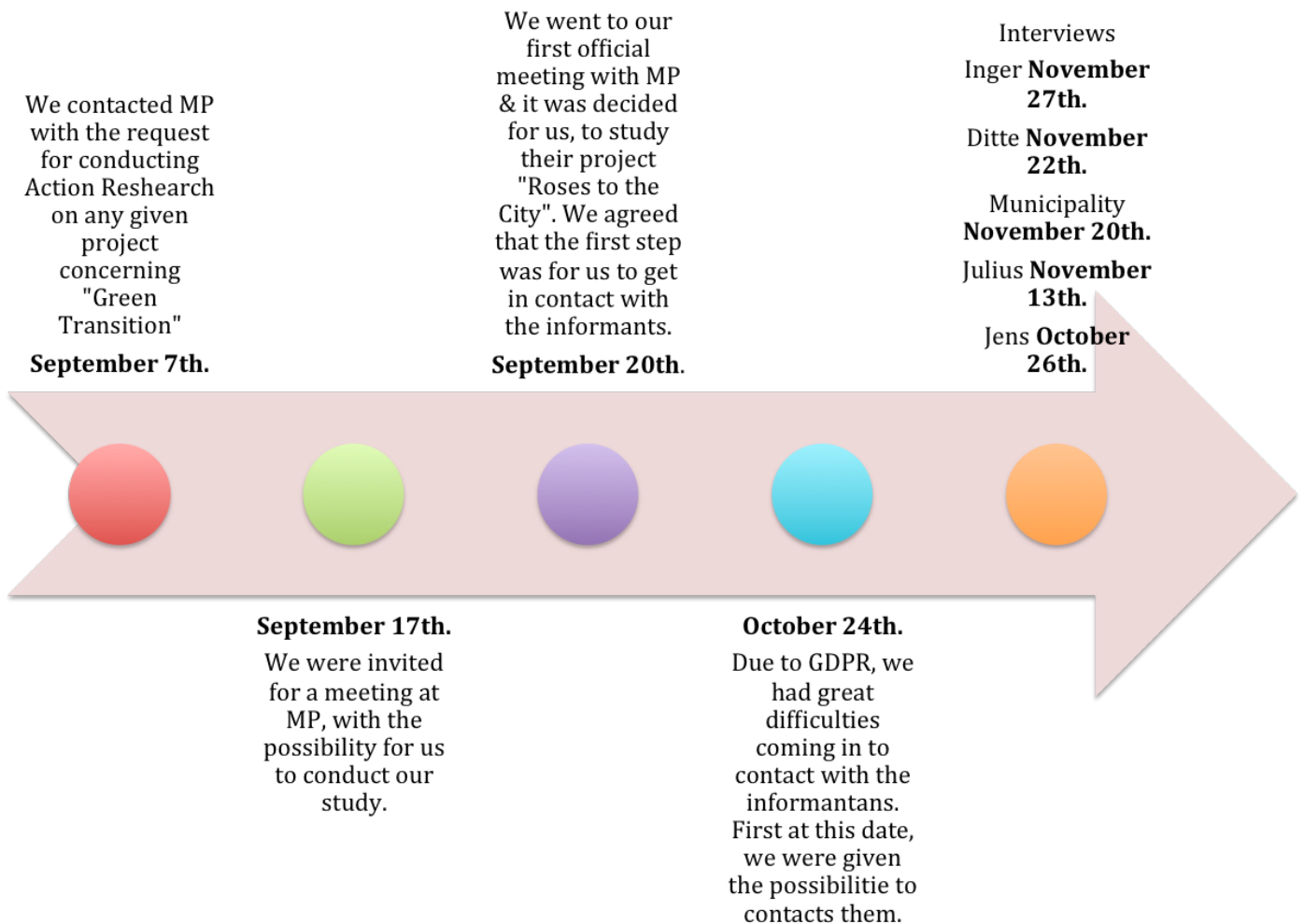
Julius: Julius have together with the rest of the board made plans to renew their facade. during this they chose to incorporate facade plants. The idea came from another board member. Julius tells that this person is obsessed with perfection, and wanted the plant to make the facade look a beautiful as possible. This project got financial support from the municipality as well as the "Roses to the City" project and besides Peder they got an attached architect that helped us going through the project.

Jonas: Civil Engineer at Copenhagen Municipality Technical and Environmental Administration

Sabine: Sabine chef consultant at Copenhagen Municipality Technical and Environmental Administration

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Timeline 2

This illustration is to visualise the process we have gone through during our fieldwork. It is to give a better understanding of the timeframe we have been working through. We came in contact we MP on September 7 th., but due to GDPR and miscommunication, we had to wait to November 27th. to conduct out first interview.

We contacted MP with the request for conducting Action Reshearch on any given project concerning "Green Transition"
September 7th.

We went to our first official meeting with MP & it was decided for us, to study their project "Roses to the City". We agreed that the first step was for us to get in contact with the informants.
September 20th.

Interviews
Inger **November 27th.**
Ditte **November 22th.**
Municipality **November 20th.**
Julius **November 13th.**
Jens **October 26th.**

September 17th.
We were invited for a meeting at MP, with the possibility for us to conduct our study.

October 24th.
Due to GDPR, we had great difficulties coming in to contact with the informantans. First at this date, we were given the possibilitie to contacts them.

Illustration 4. The second timeline is an illustration of our time in the field.

Part conclusion

During Chapter 1 we have introduced the field, including the most important human actors, organisations and groups. In addition we have introduced the reader to why facade planting is a subject of interest for us, and tried to set the stage for later analysis.

Chapter 2 - Method

This chapter introduces our methodological approach. We will explain and argue for the way in which we have used different interview strategies during our action research and how action research has worked as a research tool for us in correlation with autoethnography.

Action Research

Action research, is research based on democratic and inclusive values (Andersen, 2014).
Action research can contribute to strengthen various actor's capacity to influence the development of society and better social conditions. By this kind of research, democratically knowledge is developed, which contributes to social and collective actions. Researchers and practitioners, work together to make a democratic social change. As a researcher one can choose between various methods to participate in a project or investigate it. We have chosen the approach of action research because it gives us the opportunity to work side by side with the practitioners. As we conducted the study our primary contact was with MP but as the study progressed, our collaboration with other actors expanded (ibid).
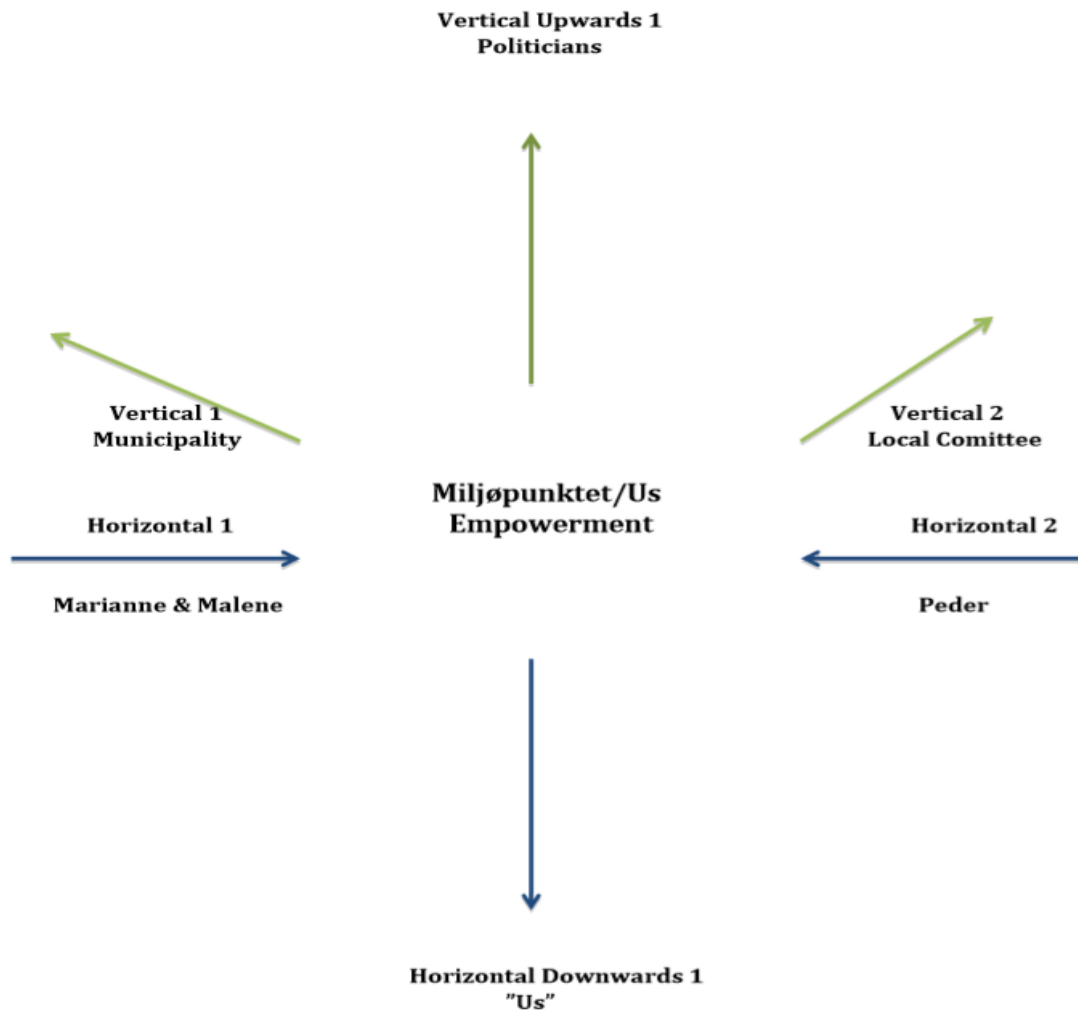
Action research made it possible for us to involve local citizens in the process of developing new knowledge and practice in the democratic social change. When practicing action research, our research question and agenda for the collective actions, is based on the needs, experiences and visions of the practitioners and participants. When practicing action research, the best knowledge is generated through shared learning cycles. This can be achieved by approaching the issues with the creation of knowledge between social actors and actions researchers by co-production and thereby achieve democratic change, based on the participants needs and visions (ibid).

When initiating this project, we had in mind that is was with the approach of Action Research. Our problem formulation, was formed together with MP. This is an important "step" during action research, because action researchers have to co-define their research question together with the participation

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practitioners (Andersen, 2014). We ended up with a mutual agreement and understanding of the issues, which we were to study and taking part of facilitating and solving.

MP expressed their need for us to help them improve their catalogue, which gave us the opportunity to make a collective action, based on their needs experience and vision. Together with MP, and the locals, we wanted to co-produce knowledge concerning how to facilitate the process of the "Roses to the City" project. The knowledge we produce together with MP concerning the "Roses to the City" project, can create some self-reflection, which can be linked to actions and can contribute to the social mobilization and empowerment of the different actors (Andersen, 2014). Levin states that empowerment can be "divided" into two. First the horizontal empowerment and secondly the vertical empowerment. The horizontal empowerment strengthens trust, commitment and networks, inwards and downwards between actors at the same workplace or community. Vertical empowerment concerns strengthening power and the possibilities of multilevel influences outwards and upwards, to power centers outside the workplace or community, including governmental policies. Successful actions research can lead to great empowerment, with a mix of horizontal and vertical empowerment. The empowerment strategy, can be used on both a micro, meso and macro level (ibid.).

If one were to understand ways for MP and "us" to mobilize and empower ourselves regarding knowledge and the Roses to the City project, one could approach it with Levin's idea and understanding of horizontal and vertical empowerment. We refer to the *"illustration 5"*. This illustration has not taken all the aspect of the empowerment "process" between MP, us, the locals and the municipality etc. into consideration, but gives an idea of empowerment as we perceive it.

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Vertical Upwards 1
Politicians

Vertical 1
Municipality

Vertical 2
Local Comittee

Horizontal 1

Miljøpunktet/Us
Empowerment

Horizontal 2

Marianne & Malene

Peder

Horizontal Downwards 1
"Us"

Illustration 5 showing horizontal and vertical empowerment

The green arrows are to illustrate the "outwards" and "upwards" vertical empowerment, while the blue arrows illustrate the "inwards" and "downwards" horizontal empowerment. As we perceived it, MP as an organisation horizontally empowers and mobilizes themselves, by enrolling certain actors into their network. Here we refer to the inwards horizontal arrow "Horizontal 1", "Horizontal 2" and "Horizontal downwards 1". MP is empowered by enrolling specialist, who can help and contribute in creating a foundation of knowledge concerning their projects. The "Horizontal downwards 1" arrow, illustrates how MP has empowered themselves additionally by enrolling us into their network. By co-producing knowledge together with us, MP increases their chances of understanding the locals. When understanding the locals and their needs better, MP can do various things to enroll other relevant actors and mobilize themselves better.

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An example could be the catalogue. By having us read, and "descript" MP's catalogue, together with doing interviews with relevant informants, they might self reflect and get a better understanding and knowledge about their project. The new understanding and knowledge gives MP the opportunity to improve their catalogue, so the locals get a better understanding of the process and maybe a higher success rate in applying. This empowers "Roses to the city" as a project and thereby empowers MP as an organisation. It also empowers us as action researchers, if one were to look at "our empowerment". Here MP could be seen as our internally horizontal empowerment, who empowered our actions research question, which made it possible for us, later in the process to get vertical empowerment, by other institutions, like the municipality.

We once again refer to the *illustration 5*, and this time to the green arrows, which illustrate the vertical empowerment. When MP together with us and the locals, has been empowered horizontally, and the "bonds" have been strengthened by trust and there is a committed network, it is "time to get empowered" upwards and outwards. This gave us the opportunity to reach out, and come into contact with the municipality as illustrated in "Vertical 1". We had specific questions and an actual proposal for a solution, on the background of the knowledge we created with MP and the locals. This vertical empowerment, does not only seem to benefit MP, but also us, the locals and the municipality. In this network, it is in everybody's interest to strive for a greener Copenhagen and by reaching understandings on a multilevel, actor and actor between increases the chances of success.

The knowledge created also gave MP the opportunity to make a clear annual status with the Local Committee as illustrated in "Vertical 2". MP can take the project to the Local Committee and ask for more resources or for relevant changes to be made by arguing that they are aware of, which issues lies ahead for the project to succeed fully.

The empowerment between all the actors is not a structured process (Andersen, 2014). Actors will empower themselves crisscrossing through the horizontal and vertical empowerment (ibid.). Through our time in the field, we perceive it, as we have been empowered by MP, by allowing us to come into contact with the locals who have made use of the "Roses to the City" services . At the same time, the locals have empowered us, so that we in some cases, could give "critical" feedback to MP. Another aspect is that MP and the locals, together has empowered us to reach out to the municipality. Therefore, empowerment is happening in various ways, between various actors.

Semi-Structured Interview

During the collection of our qualitative empiric data for this project, we have conducted interviews with relevant actors within our field of research. We have primarily used semi-structured interviews, because we wanted to investigate the field and spread some light on the different actor's narratives and understandings. The open questions the semi-structured interview entails, helps make the interview feel less formal and more like a normal conversation (Brinkmann & Tanggaard, 2015).

To achieve this, we made use of an accompanying interview guide to help us make sure that we got insight in the informants' practices, and understanding of the subject. This was done with the use of WH-words, like how, who, why, when and where (Brinkmann og Tanggaard). The use of WH-words made it possible to get a deeper insight in narratives and stories about facade planting, and took us closer to the informants' view of life. The flexible structure of the semi-structured interview, makes it possible to ask follow-up questions, that have been formed during the interview. It is very important to make sure before the interviews is conducted, that there is time for this type of questions. The follow-up questions, was used as a tool to go in depth with different thematic uncovered during the interview. The semi-structured interview relies greatly on these unprepared questions, which is why it is up to the researcher and their ability as an interviewer to maintain the professional level during the interview. When using the semi-structured interview form, we experienced how the loose structure of the interview, made some informants sidetrack, and talk about "off topic" themes. This can in the meantime be valuable because it can open up for the informants' way of life and often provide narratives, questions or answers that we would not otherwise have uncovered. But as an interviewer one has to be able to handle the situation as it comes with the craft (Brinkmann og Tanggaard, 2015).

Interview guide

During our semi-structured interviews we made use of an interview guide, that was made before each interview. These interview guides was made on the background of our already existing knowledge on the subject. Each interview had its own interview guide, made specifically for the informant, in an effort to get the most data out of each informant. The interview guides became more specific as our knowledge on the subject grew. This is because we chose to expand the guide through the hermeneutic spiral, as we evaluate bolster our existing interview guide based on the data the interview has provided

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Roles during the interview

During our interviews we made sure that every group member present, had a designated role. One was in charge of interviewing, with the primary function of leading the conversation based on the interview guide. This person was to use the tools the semi-structured interview possesses, to make sure that the informant expanded upon the themes introduced during the interview. Besides the interviewer there where either one or two group members which took notes but also supplemented with questions when it was relevant. In this way they acted as a safety net, that could make sure that we gathered the most relevant data possible. A criticism of the semi-structured interview is that the data becomes clouded because the informant easily becomes sidetracked as a result of the loose structure. Another major criticism surrounding this data gathering method is, that the collected data is not able to be recreated identically. We have tried to accommodate this by recording the interview with the informants permission. By doing this the data gets preserved, and makes further work with the data easier to conduct (Brinkmann og Tanggaard, 2015).

Transcriptions

As stated above the interviews were recorded to make further work easier. These interviews were then transcribed in their entirety. This made it easy to extract the quotes needed during the writing process. In the past we have experimented with different ways of transcribing the recordings, and we have concluded that the full transcription is the only way to ensure the gathering of all relevant data. The downside of transcribing the full interview is the added difficulty of sorting through the data as the transcription grows, which potentially clouds our overview as a result. The data used is primarily qualitative, so we chose to recorded and transcribed our interview to get better access to our empirical work. We are furthermore aware that our data is based on a specific case and our results therefore only applies within that context. Our results alone cannot be generalized but through our use of method and theory we hope give a better understanding of potential problem arenas when working with facade plants.

Unstructured interviews

During our time in the field we got unlimited access to MP offices in the heart of Copenhagen. This meant that we spent a lot of time at their office and had a lot of conversations with the employees working there. These conversations ranged in length and relevance. The conversations concerning our project where all based on broad questions. But all added to the narrative surrounding MP. We did not record these

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conversations, because of their casual nature. This made is hard for use the information and knowledge during our project, due to the fact that we did not have any recordings of the conversations.

We tried our hands on an unstructured interview. Here we met and interviewed an actor without any interview guide, and without knowing how much time we would have with the actor. The reason we tried this method was for us to attain as much insight as we could into this person's way of 'life' (Brinkmann og Tanggaard, 2015). Since his knowledge was so broad we thought that we would let it be up to him where to start and where to end up. In this way we would end up with what he thought was the most important aspects surrounding facade planting and MP. Unstructured interviews are generally speaking, one of the more difficult interview methods, because it places a lot of pressure on the interviewer, as you have to let the informant dominate the interview, while maintaining some degree of thematic consistency (ibid.). The downside to this method is that it can be hard to maintain the conversation within the relevant themes. We choose this method for the interview because we had a conversation beforehand with one of our actors, which had interviewed the person in another context, and therefore could give us some insight about who this informant was as a person. The actor were described as a person deeply invested in green architecture. This knowledge is what made us confident enough to try our hands on the unstructured interview method.

Autoethnography

As a part of our methodological approach to this project, we originally wanted to become part of the process of a specific users endeavour in facade plating, being part of the process all the way from its beginnings, getting a glimpse into the interactions an actor has to go through in order to further their goal of eventually planting facade plants. One of the specific reasons for this, was because we wanted to observe the locals in their interaction with these aforementioned difficulties of figuring out how to apply correctly for facade plants. This however proved to be difficult for multiple reasons, which has previously been discussed, in relation to contact to the locals. To make sure that we had some "hands on" knowledge about the process, we decided to get some inspiration from the qualitative practice called Auto Ethnography (Brinkmann og Tanggaard, 2015).

Ethnography, is synonymous with anthropology and usually relates to the study of other people and their practices (Brinkmann og Tanggaard, 2015). Auto ethnography however reverses this focus, so that the researchers themselves becomes the object of interest. We wanted to observe ourselves in relation to the practices of acquiring these facade plants in order to better relate to the presumed experiences of the locals.

In practice there is various ways of applying but in most cases it can both be considered an exercise in empathy and self reflection (ibid.).

Part conclusion

Our approach of action research in combination with our qualitative data collection has given us not only a better understanding of the network between locals, the municipality and MP, but it has also given us a clearer picture of what we perceive as reality. Action research has given us the "tools" to work closely with actors in the network and to produce knowledge concerning the specific project "Roses to the City". The method allows us to further analyse the research subject with terminologies from ANT.

Chapter 3 - Relation analysis

This chapter marks the beginning of our analysis. In it, we will address some of the identified thematics in regards to facade plants that has been unearthed through our field work. These themes will be analysed by using different theories presented throughout the chapter.

MP's catalogue as an intermediary object

In the compilation of essays *"A Sociology of Monsters, Essays on power, technology and domination"* (Law, 1991)*,* Callon states that there are four main types of intermediaries. First there are *literary inscriptions*, this includes texts, reports, books, articles, notes etc. These are materials for they are inscribed and are relatively immutable medias, that resist transport (Law, 1991). Then there are the *technical artefacts*, which is scientific instruments, machines and structured groups of non-human entities ect. The third type of intermediary is according to Callon the *human beings* and the skills, knowledge and know-how they incorporate. The fourth type of intermediary is *money* in all its different shapes and sizes. Callon argues that intermediaries define their network in the literary sense and compose them by giving them form (ibid.). Callon states, that texts are methods in which one can define and build an interested audience.

With this in mind, one can think of MP's catalogue as an intermediary between themselves and the locals. The catalogue is a literary inscription defining and building interest in the audience of the locals. This is both done by scientific knowledge and in pictures. Callon states that:

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"The list of authors tells of collaboration and of the relative importance of each attribution" -
Law,1991

MP's catalogue, is packed with expert knowledge, both seen from a scientific perspective but also from an organisational one. Callon argues that this is the start of a network, because new actors are linked together. He also argues, that these texts are objects that define actions, like how MP through their catalogue encourages locals to "plant" and "inspire their neighbours" and that they are objects that defines relations of heterogeneous entities and that they define skills, like how Peder Clement knows everything about plants (Law, 1991).

MP's catalogue as a script

Texts can be perceived as a kind of device, which moves actors, and devices can be seen as texts being read by users. The texts moves the actors who is reading it, and is at the same time being translated and given meaning (Jelsma, 2003). A text is "designed" to point an actor in a certain direction and is designed to hit a certain "target", by encouraging the right actors. This can be put in relation to MP's catalogue, which is designed to guide the recipients, through the initial phases of facade planting. The catalogue is directed towards citizens within the district of Copenhagen's Inner City and Christianshavn.

 To understand the "design process" behind e.g text, *Akrich and Latour* uses the term *semiotics* and as a subcategory for this, they talk about terms as "*inscriptions, scripts, prescriptions, and descriptions* " as a way of relating the design, the product and the use of it (Jelsma, 2003). Scripts are structural features of an artefact. Artefacts can be devices, machines, appliances and so on. A script is encouraging certain kind of actors actions, while "excluding" others. Once again, one can refer to MP's catalogue, which encourages citizen within the district of Copenhagen Inner City and Christianshavn, but is excluding locals, outside of this district. Before the designer designs the script, he or she will have a prescriptive force. The prescriptive force can be seen as e.g. which goal, idea, vision or understanding the designer had before "writing" the actual script (ibid.). The prescriptive force, can be the thought, visions, and goals MP had, when they initiated their project. This prescriptive force, have been a part of the shaping and designing of the catalogue.

In the process of inscribing different values leads to different scripts, which the different actors will translate into different understandings. The individual translation each actor makes is defined as a description. While inscribing the designer might have made a persona to get a better understanding of how to shape the script. But this does not mean that the script created by the designer is perceived the same way by other actors. For this reason, the concept of scripts, is not to be seen as deterministic but more as mediating (Jelsma, 2003). When MP initially shared their catalogue with the locals, they had an idea of how it would be perceived. But through our fieldwork, it seems as if the recipients did not perceive it, as MP has expected. The locals "description" of the script, did not seems to match MP initial thought about how it would be perceived when "inscribing" their script.

The relation between the municipality and MP

In this section, we will go through the process of applying for facade plants. This will be done by pointing out the relevant actors and their role in this process.

The application process through Technology and Environment Administration, Governmental Agency for Culture and Palaces and MP.

Our knowledge is mostly restricted to the TEA, since they are the only ones which we have been able to conduct an interview with. Through research, this interview, combined with the interviews with all of our other informants, we are nonetheless capable of outlining their roles in regards to facade plants.

During the process of this project, we have come to find, that there is no department of the municipality, who has complete authority on the handling of citizen inquiries on the subject of facade planting. Depending on a multitude of factors, ones application has to be handled by either the municipal department TEA or by the *Governmental Agency for Culture and Palaces* (GACP). If one wish to make changes to a building, which is worthy of preservation for historical or cultural reasons the department in charge of handling it is the GACP. If it is a general request it would be handled by TEA. It is also worth mentioning that facts like whether you live on a privately owned road or a public one has a say in whether or not a citizen have to apply through the municipality.

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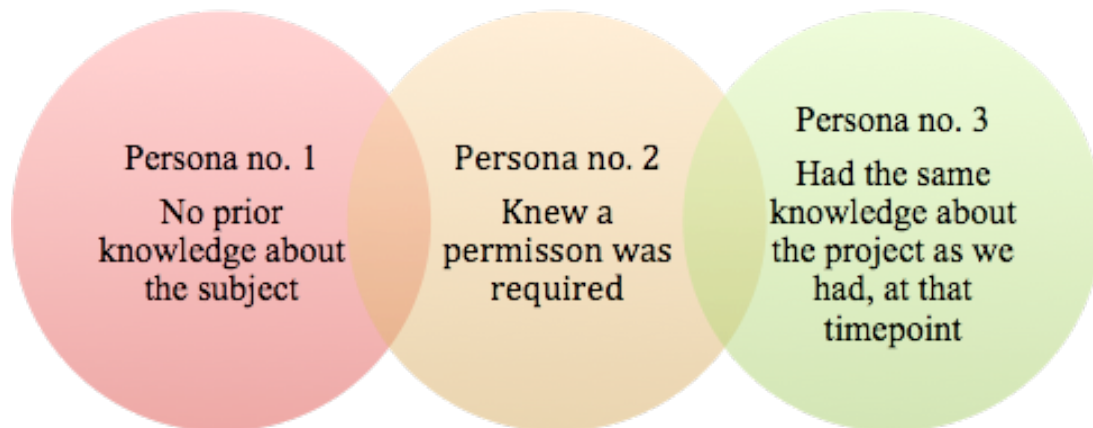A. Reffeldt , M. Helmershøj-Johnson, M. Rasmus Loldrup

From our first interview with MP, we were introduced to the notion that navigating in the information needed in order to succeed in ones facade planting endeavour might prove a somewhat difficult venture. We were told, that there was no existing application form for facade planting, and that the municipality referred one to the same application form that existed for bike racks. This was later fully confirmed in our interview with the representatives from TEA.

As mentioned in our methodology chapter, we made use of the qualitative practice called autoethnography. We conducted an exercise with the purpose of illustrating a scenario locals might find themselves in, in the initial stage of wanting facade plants. In this scenario each of us tried to navigate the internet, gathering information on facade planting, in order to illustrate the transparency of the process of applying.

The way we went about this exercise was to inhabit the roles of different "personas" each of which having different kinds of knowledge about the subject. This was to better represent the various outsets different locals might have. These personas could also be created based on actual locals, which would ideally be the case. Due to the previously mentioned troubles of attracting informants we chose to base them on ourselves in a way that represents the knowledge gained during the course of this project. Each of us then documented the process by writing down step by step what we did and found. This both served the purpose of illustrating the process amongst the group members, but the insight could also be used as a tool to illustrate to other actors the convoluted and difficult process, one had to go through in order to find out what to actually do, when wanting to plant facade plants.

The first group member had no knowledge about the subject, the second one knew that a permission was required and the third one had all the knowledge that we possessed at that point. See *Illustration 6*

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Illustration 6: Visualisation of the three personas we created

Following the exercise, we discussed our findings amongst each other. Two of the group members failed to find the municipality's application form.

The first persona failed due to the fact that none of the google search results indicated the need to use an application form to get permission for facade plants.

The second persona failed due to fact that no such application form existed specifically in regards to facade plating. And amongst the information we could find nothing indicated that the application for bike racks should use for the purpose of facade planting.

The third group member succeeded in finding the bike rack application form but the process of finding it was not exactly an easy one. In order to illustrate this process, we have included it in full below. The purpose was to both find the application form for a grant from MP and the bike rack from the municipality. The first showed to be easier to find than the second. The exercise particularly showed us that one has to have prior knowledge of what and where to look for information, since knowledge in regards to how to attain facade plants is hard to come by, specifically if one is using the internet as a mean to that end.

Process

1) Go to google search engine and write "*ansøgning om facadebeplantning*", and enter the following page;
http://a21.dk/services/tilskud-til-facadebeplantning-roser-til-byen/ *See Illustration 7*

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Supplement til Københavns Kommunes Træpolitik

Roser til Byen-kampagnen er inspireret af Københavns Kommunes Træpolitik, som blandt andet omfatter initiativet om "Partnerskabstræer", der giver borgere mulighed for at få træer gratis, hvis de selv sørger for at plante og pleje dem fremadrettet.

Med "Roser til Byen" vil vi give Indre By´s borgere mulighed for at søge om penge til at plante roser og/eller andre slyng-planter op ad facader, som vender ud mod offentlig vej.

Ansøg og få vejledning

Via ansøgningsskemaet, som findes nedenfor, er det muligt at søge om tilskud til én eller flere planter. Tilskuddet er betinget af, at beplantningen kan ses på offentlig vej og at ansøger indvilliger i at pleje og passe den. Godkendes ansøgningen, kan ansøgeren få råd og vejledning hos Miljøpunktet, som er eksperter på facade-beplantninger.

Ansøgningsskema kan hentes her Ansøgningsskema

Illustration 7 - visualisation of webpage introducing the Roses to the City project

2)Then the application form for a grant of DKK 1,000 in relation to the "Roses to the City"
project is found. It can be downloaded as a PDF. There is no link to the application form, which has to be sent to the municipality

3) Back to *www.google.dk*, to the old search results.

4) Scroll down to find a link to another PDF called, "*Sådan søger du om tilladelse til vejprojekter på offentlig vej og privat fællesvej*"

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5) This form is from the Administration for Technology and Environment. The text is 21 pages long and it takes approximately 15-30 min. to skim it through. *See Illustration 8. screenshot of "sådan søger du om tilladelse til vejprojekter på offentlig vej og privatfællesvej" frontpage*

6) Then find a link in the PDF called *www.vejpark.kk.dk/vejepladser/brug/gravtillad.htm* and enter which will lead to the following webpage *https://www.kk.dk*

Illustration 8. screenshot of "sådan søger du om tilladelse til vejprojekter på offentlig vej og privatfællesvej" frontpage

Illustration 9 Screenshot of https://www.kk.dk webpage

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7) It seems to be a general site, which has a lot of different options, one of which is called *" byggeri og ansøgning om byggetilladelse"*.

8) Enter *https://www.kk.dk/byggetilladelse*. Look through the contents of this page, it does not seem to be related to the search, so return to the previous page. Right below a section called → "t*rafik og parkering"* there is a category called → *"veje" https://www.kk.dk/veje* then press → *"ansøgnings vejledninger til at ændre din ve*j" → then "*ændring af vejforhold*" → then" c*ykelstativer"*

9) Here it is possible to download an application form for "cykelstativer" (bike racks)

Illustration 10. Screenshot of an application for bike racks

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What this process pointed out to us specifically, was two things. Firstly, that there is little to no information regarding the role of the government and municipalities concerning the process of applying for facade plants. Secondly, that although we were able to find MP's application form for a grant they do not initially seem to inform people that they also have to obtain permission through either TEA or the agency for culture and palaces. MP do in fact provide this information but it is located in their catalogue and could potentially be missed, unless you thoroughly read the catalogue or directly contact MP to receive guidance.

The application shown in illustration 10 was up until our interview with TEA, the only concrete piece of information, which communicated the role of the municipality, besides the information which we had obtained through other informants' interactions with them.

It is important to point out that TEA acknowledges that it can be problematic that no official application form exist yet, and that they have to refer to the one seen above illutration 10

"We agree completely that it seems confusing for the locals that there is an application for bike racks which you have to use for facade planting (...) I think it is the application that has reminded the most of…. there are only very small differences compared to facade planting, because if it is just that a bike rack which has to be attached to the facade, then in principle it is the same thing, then we just have to make sure that there is sufficient space for the plant and the pedestrians(...)" - Jonas

As previously mentioned in "Chapter 1" in the section "contact to the Technology and Environment Administration", we reached out to the municipality due to the fact that they are the ones who issues the guidelines and application form for facade plants. Our interview ended up taking somewhat of detour however, when they to our surprise presented us with a draft for a new application form specifically for facade plants. On the background of our critical questions concerning their "missing" application form TEA, had created a new official application form specifically directed at facade planting. This process can also be understood as a part of our action research quest because we as action researchers has made TEA reflect on their own processes and through this empowered them. Not only is this a successful process for us as actions researchers, it is also a successful process in the aspect of ANT's term *"translation"*.

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Callon's Translation

Translations is a term first coined by Callon in his article: Some elements of a sociology of translation: domestication of the scallops and the fishermen of St Brieuc Bay. It is a study, which revolves around the declining amount of scallops in that area, and how three marine biologist seek to create a strategy to conserve the population of scallops. The specifics of what the profession of marine biologist contributed to this process is not what is in focus, but rather how the researchers frame or reframe the problem, through what is called translations

The researchers undergo 4 separate stages of translation:

A.*"Problematization: The researchers sought to become indispensable to other actors in the drama by defining the nature and the problems of the latter and then suggesting that these would be resolved if the actors negotiated the 'obligatory passage point' of the researchers' programme of investigation;*
B.*Interessement: A series of processes by which the researchers sought to lock the other actors into the roles that had been proposed for them in that programme;*
C.*Enrolment: A set of strategies in which the researchers sought to define and interrelate the various roles they had allocated to others;*
D.*Mobilisation: A set of methods used by the researchers to ensure that supposed spokesmen for various relevant collectivities were properly able to represent those collectivities and not betrayed by the latter."*
(Callon, 1986)

In terms of problematization we have defined a problem, being the non-transparency to the locals in the digital realm. The municipality have acted upon this by better defining their role, in terms of what could make the process more transparent for the users by making a new application form (Callon, 1986).
By communicating and defining the problematization to the municipality, the municipality seeks to become more visible to the locals by updating their application form. The municipality have a better chance to strengthen their role as an OPP (ibid.).

In the new application form TEA has mentioned MP if the locals need help from an expert. TEA has made MP visible to others in their network, which could be defined as a certain degree of enrolment (Callon, 1986), and has redefined their roles in the network.

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These prior actions can be a part of mobilising TEA and MP, in the network surrounding facade plants. The new application form can be understood as the municipalities' "script".

We would argue that by having TEA, making an application form, on the basis of our inquiry into the problematics of facade plants we as researchers have been partly successful in a translation process.

Although translations according to Callon is used to describe how the researcher facilitates the translation processes, we would argue that the terminology does not have to be exclusively used in the context of the role of the researcher. In this sense translations can likewise be used to describe the actions of other actors. We would like to use the terminology of translations to describe relations amongst relevant actors in the network of facade planting. We are specifically interested in how and if MP, the municipality, us and the locals are able to establish themselves as an OPP.

The technology and environment administration as an obligatory point of passage

It is likewise important to note that none of the locals, which we interviewed seemed to have used the internet as an access point in their endeavour into having facade plants. When we interviewed the TEA, the way in which they seemed to be communicating with the locals were primarily over the phone. Nonetheless we speculate that having such a common way of gaining information as the internet is for many persons and being as confusing and non-transparent as we found it to be, cannot benefit to any individuals, who potentially wants to start the process of obtaining facade plants. In a translation perspective we find it interesting that in a purely legal sense the municipality is an OPP (Callon, 1986), because they have to give permission for a facade plant to be planted. This does not mean that they are successful in establishing themselves as an OPP in practice. The fact that no, or at best very little information on the internet points to the need of having permission from the municipality, might result in them being skipped entirely as a OPP. This means that the municipality has not yet succeeded in stabilizing their position in the network of facade plants (ibid.).

One of the original reasons MP was interested in having us focus on this project, was because they had observed that locals were planting without permission. The very first face to face encounter we had with MP, was on a city walk in which they took us on a tour to see different examples of facade planting in

Copenhagen. One of the streets we came by, was an excellent example of how the municipality seems able to be skipped as a OPP.

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Illustration 11: Picture of Krusemyntegade in Copenhagen, taken during our city walk with MP

One of the requirements for obtaining permission is that the pavement has to fit certain dimensions, those being that the pavement has to be a minimum of 1.5 meters wide. In addition, it has to have what is called an equalization zone with the minimum width of 0.5 meters. This zone is the innermost part of the

pavement right next to a building's facade most commonly fitted with an assortment of cobblestone. It was easy to conclude that none of these parameters fit with the street we were watching.

In our interview with TEA we presented them with the photo we had taken from the street but they were somewhat hesitant to say whether or not the given facade plants were legally planted or not. In this context they were also quick to point out that they evaluate each case individually,and implies that there is a degree of leeway, in how they handle cases which does not fit perfectly into the written rules, as long as it does not pose any harm or bother for the locals.

"What you have to think about when it comes to road laws, is that it is always concrete assessments. There can be thousands of local circumstances, so it can be hard to figure out, what the reason is for it(...) We are quite at ease whenever possible, but if we experience that something is completely wrong, then we will contact the homeowners, and tell them, that "this is hanging out all over the place, do you have permission and shouldn't we try to make it legal or within the rules" it no longer than that." - Sabine

The municipalities role as a OPP will in the end "overrule" the locals, because they have the "power" of laws and legislations. Both the municipality and their application form can be seen as a OPP. If one were to look at the municipalities application form in the aspect of facade planting one could not get an official permission without filling this one out. On the other hand, the locals can not only contact the municipality for permission, but has to fill out the application form in this process. However, it is uncertain to which degree users or locals come into contact with the application directly since as previously established there is no internet infrastructure, which would point the user to any information pertaining to the role of the municipality in regards to facade plants. Likewise, none of our user informants knew of this application form. Nonetheless the application form exists as a placeholder, which informs the municipality on the guidelines of facade planting and the requirements for permission, which they have to rely on to any potential applicants for facade planting; and it is in this regard it can be considered an intermediary between the municipality and the locals.

During our interview with the representatives from the municipality, Marianne from MP was also present. For us it was interesting to observe the interview in a translation perspective, since it at times, also turned in to a negotiation process, in which the actors present and outline what roles they wanted each other to inhabit (Callon, 1986). Marianne who was representing MP, was interested in solutions to how municipal and governmental entities, could become more transparent in their roles in relation to the locals. TEA

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wanted MP to more clearly inform the locals of TEA's role, in practice meaning directing them towards them. We essentially wanted both.

Locals

The Locals differs from the previously mentioned actor groups MP and the municipality by being the intended recipients of the services that MP and TEA provides, but what drive the locals to commence such a project?

Motivation

Throughout the fieldwork multiple participants of the "Roses to the City" projects where visited. A considerable amount of the enthusiasts attached to these projects was motivated by the pursuit of a greener Copenhagen. This project defines enthusiasts as special individuals, that have motivation and the willpower to start and maintain projects such as facade planting. One of the ongoing projects, was taking place at *Sølvgadeskolen* where the sociologist and plant enthusiast *Ditte* was facilitator on a facade planting project supported by MP. Ditte created a community to support and maintain the facade plant project;

"This summer we had parents working shifts three days every week, coming to water it. Otherwise, it would have been for nothing, so there are a lot of processes in landscaping a rose bed. That is the … of it. They enjoyed themselves, they were very nice and there were a lot of things that needed to be watered. Since the schoolyard has multiple green areas. They were ready to be a part of it, because of course they wanted a schoolyard with a lot of green. So there has been motivation." - Ditte

Ditte explained how they during the initial phase of the project enrolled the students and their parents to help watering the plant, during the school official summer vacation. She states that the parents were happy to help during the vacation because they had a positive attitude towards creating a new green space in Copenhagen to the benefit of their children. By enrolling the parents, Ditte created a community. This action, is an example of how the network can be successfully mobilized when the goal is mutual between the actors.

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Ditte is not the only actor who finds green spaces beneficial for Copenhagen. Actors like Jens, agrees with the vision of incorporating more green spaces in the cityscape.

"Do you know cradle to cradle? He says very appealing that you have to move the city back into the forest. In reality I see this as a picture of that you have to move the forest back to the city" - Jens

Cradle to cradle is an approach to sustainable design, in which the goal is to use materials in a way so that they can be re-released into nature. Jens expresses that the person behind this approach states that you have to move the city back into the forest. Jens sees this as a way of how we should move the forest back to the city, which means that plants and trees, should be incorporate in the city planning on a higher scale than it currently is. This indicates that Jens shares the same ambition as Ditte and the enrolled actors in her network, about making Copenhagen a greener city to live in. Through the empirical data collected it becomes clear that Jens sees these plants as a tool to overcome some of the issues that the average metropolis are facing from air pollution and rising temperatures, to less threatening topics, such as graffiti prevention, which Jens also states.

" (..) and they could also save an incredible amount in graffiti expenses" - Jens

Jens tells how he during the initial phase of another project used the roses as a way to overcome issues like graffiti on facades. Due to the fact that it would make it less attractive for the graffiti painters to paint on a facade filled with roses.

Other informants have a more straightforward reason for being motivated to commence a facade planting project.

"I lived in Knabrostræde and there was a place with roses, and when I moved here, there was a wild birch, and I thought it was ugly, I thought we could get roses instead. I'm not an architect but I like that there is green in the city" - Inger

Inger states, that the last place she lived had roses, but when she moved she was not satisfied with the tree in front of her new residence. For this reason, she became motivated to facilitate a facade planting project, because she like Jens, appreciates green spaces in Copenhagen. She differentiates herself by having the

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aesthetics being the primary drive for her motivation. This shows that the motivation of each actor can vary. No matter where the motivation comes from it can be understood as one of the most important factors, for a successful facade planting project. Without motivation the project will literally wither.

Responsibility

The locals like MP and the municipality have their own responsibility areas. They are responsible for getting permission from the municipality or if their building is worthy of preservation they have to get a permission from the Agency for Culture and Palaces. If they wish to get financial and expert support, the locals are responsible for applying for the "Roses to the city" project through MP. Beside these responsibilities, one might say that the most important one, is the locals own responsibility for the continual care and maintenance of the plants.

"Yes, roses do not grow, if no-one is watching them, fitting them and cutting them". - Jens

Jens states, that for a rose to survive and become a successful project for the actors it needs some degree of continuous care. This means that the locals level of commitment has to stay somewhat constant for the project to remain a success. Because of this, motivation plays a huge role for the continual prosperity of their project. This has also been put into speech by Jens:

"I have seen so many situations where you are at least 10 people sharing these sorts of things, and it still doesn't work out because there has to be at least one who takes care of it as a sort of child. So you have to be constantly aware of any signals that might show up." - Jens

Due to the lack of an "official responsible caretaker" of the plant, Jens has seen numerous projects fail. He believes that no matter how many people are a part of the project the project still needs at least one person who is fully committed to care for the plant like it was their offspring. This statement shows the importance of the presence of an enthusiast to uphold the maintenance of their plants through their own skills and the engagement of others. The situation described above, has been identified during multiple interviews conducted with the local actors.

From the beginning they wanted to help, but they wouldn't commit themselves to watering or cutting or anything else. So I take that responsibility … then a new person moves in, and he is the sort of person who knows everything with an electric drill, and he is nice enough to help out with that." - Inger

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Inger explains, that many from her owners' association would like to be a small part of the project, but has a wish for it to be non-committing. Even though Inger has enrolled other actors to get some help with special tasks she still takes full responsibility for the plants. This is not the only case during the fieldwork where Jens' statement about the need for an enthusiast gets confirmed by other actors. At all the interviews that were conducted and which represented a successful facade plant project it turned out that the informant was an enthusiast in one way or another. Because these projects are so tightly bound to a specific person for their continual success, MP's project "Roses to the City" is relying on these actors and their willingness to keep their individual projects alive.

It makes already established projects and the success they entail fragile because it rests on the back of a single individual. If this actor steps out of the network it would endanger the future of that specific facade planting project, because the project relies on the continual mobilisation efforts of the enthusiast actor.

Owners association

During the fieldwork it was experienced through multiple informants how approval from the owners association is fundamental for the establishment of a facade planting project, they can therefore be seen as an OPP.

"Then I also had to bring it up at our general assembly because I might want it but other people might not. The problem for some might be things like "where do we put our bikes?" and other practical questions like that. "If there are roses, are there also lice?"
All these things." - Inger

Inger expresses how she had to convince the owners' association of supporting a facade plant project, since she was aware that there might be others who had a different attitude towards facade plants. This is done through translations, where she outlines the different problematics and prejudice surrounding facade planting and how these can be overcome. This is also the arena in which the responsibility for the plants is being negotiated, this is where actors like Inger has a chance to cement themselves as a spokesperson for the project and to mobilize and enrol other actors that can help to maintain the plants.

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From novice to expert

The importance of expertise to facilitate a successful facade plant project became apparent through our fieldwork. Our project defines an expert as an individual with specialized knowledge and skills, which is acquired to fully immerse themselves in their world.

With each passing interview our knowledge of the field increased. It became evident to us that the realisation and continued success of each individual facade planting project hinged on the work and commitment of specific actors.

What these key actors all have in common is that they knew how to manoeuvre through the underlying systems needed to realise the project. This statement is confirmed on the project where Jens is the driving force. They were initially challenged by the fact that their house was worthy of preservation and therefor they needed further approval from the government:

"Therefore, we started the project and it's a historical rose, handcrafted seams and the like, so there has been a lot of careful consideration before sending it to the Agency for Culture and Palaces, as it's called, for approval. So it's definitely possible, if you argue for the improvement of the house." - Jens.

The above quote shows how Jens and the other actors enrolled in his plant project spend a considerate amount of time creating a narrative surrounding the plants with the hopes that the Agency of Culture and Palaces would embrace their narrative and see it as a natural part of the building and not an addition. As this was approved by the agency it can be seen as a successful translation process, wherein the network represented by Jens made use of plants and nails as a special artefact encrypted with their ambitions and hopes for the future. These artefacts can be understood as a part of a script, which goal is to convince and enrol the agency in their goals (Jelsma, 2003).
It seems like it is necessary for a network to enrol specific expert actors to get access the knowledge they possess in order to facilitate such a translation process.

"This house is protected; we sent an application and got permission and things moved faster from there. But it's not enough just to call them … it's a good thing to get hold of an architect to use conservational buzzwords - I'll see if I can find it in case you need it. It took time to do, but it wasn't insurmountable.

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Now, we have a lawyer on the 4th floor and he works with the municipality, so he was definitely aware that a hole just couldn't be dug." - Jens

Jens describes that because their house is a conservative building a simple phone call would not be sufficient to get permission to make changes. He drew on his own knowledge as an architect as well as the knowledge from a lawyer who also lives in the building. This formed out an application, tailored to make sure that every necessary detail was accounted for. We were informed that the lawyer worked at the municipality, and we therefore assume, that he has some knowledge concerning how the internal processes works.

Actors like Jens and the lawyer with expert knowledge also have responsibilities towards the other actors in the network as they have a considerable impact on the "non-expert" actors in the network.

"We also prefer that it looks nice. It needs to grow to a height of 6 meters quickly, it needs to flower and it preferably needs to be red. So Peder and Sabine come around and Peder tells me which types of roses can grow where and he explains that red roses need a lot more sun than it would be able to get … we removed the birch tree because of Peder's suggestion; I told him we couldn't remove anything green in Copenhagen because there isn't a lot of it, but he told us that it would absorb all the water. So we did, because he told us to.

Inger states how she and the owners' association originally had some criteria for the plants. One of these criteria was that the plants had to be red, but this was dismissed after their first meeting with Peder as the facade would not provide enough sunlight. Beside this, Inger removed the birch tree on Peder's recommendation despite her being hesitant to do so. Peder has a great amount of authority because of his expert status. Due to his authority figure it makes it possible for him to commence a smooth translation process. By having an expert enrolled in a network one can draw experience from the expert actors. This facilitates that actors like Inger can take the first step towards becoming an expert herself inspired by actors like Peder. This transition does not happen from one day to the other and is a process in itself.

In the text *"The five-stage model of adult skill acquisition"* the author Stuart E. Dreyfus explains how a person needs to go through five stages in their journey from novice to eventually becoming an expert (Dreyfus,2004).

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Stage 1: Novice

As a novice you can be instructed to do simple tasks based on a given rule set but without the knowledge context *"like a computer following a program".* To evolve, the novice needs an understanding of the context as well as the facts. At this stage the novices' motivation plays an important role for whether they choose to be involved or not. This motivation is often centred around an end goal as the novice do not possess knowledge about the processes leading up to these goals (Dreyfus, 2004). Most of the informants introduced during this project have already moved past this stage. But through Ditte we were introduced to the parents, that could be seen as novices in the sense, that they are given simple assignments such as watering without having to worry about the context, in which they are performing these tasks.

Stage 2: Advanced Beginner

For a novice to evolve into an advanced beginner, they have to develop an understanding of the context through examples. These examples will unfold additional aspects of the situation. The the advanced beginner will learn to recognize situational aspect. By being aware of these situational aspects the user can start following maxims. Maxims differentiate from rules by being a situational rule and requires some level of understanding. During the interview with Inger, she informed us, that her initial thought about getting roses, was to choose a red one, as refer to earlier in the chapter. But after a meeting with Peder, she learned, that red roses acquire more sunlight that white roses. This was a new "maxim" for her to understand and through this, she gained new knowledge about the specific roses need.

Stage 3: Competence

At this stage the relevant aspects and themes which the actor can recognize, becomes overwhelming since they still do not have an idea of what the most important thing is in any given context. This can make some actors pursue the comfort of rules but by doing this they will never come beyond this stage. It is also at this stage that the actor can become emotional in the choosing of actions. Even though they were invested in the end result in stage one and two, they did not have the necessary knowledge to choose an action. It is hard to say whether a plant enthusiast like Inger "never goes beyond" this stage or not. But the fact that she the opportunity to contact MP and Peder for support can have a certain effect. It can both be beneficial because she can get help "any time" but can also be an obstruction in the context of her evolving as an expert.

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Stage 4: Proficiency

At this stage the user becomes more emotionally involved in the task. Because of this it becomes harder to step back into the detached rule-following stance of the novice (Dreyfus,2004). To ascend into stage five one must accept the anxiety of choice as the person replaces the rules and norms they have relied on with situational discriminations (Dreyfus,2004). These situational discriminations are at this stage still under development so the actor must fall back on rules and maxims surrounding the task. If we take an actor like Jens in to consideration he will in most cases been seen as an expert from the beginning. But even though Jens is an architect and has great knowledge about green transition he has still gone through the 3 prior stages concerning the specific project of "Roses to the City". Jens has due to his prior knowledge moved faster through these stages because his knowledge has given him an advanced understanding of the process. But even though this is the case, it is still worth mentioning that stages where the actor must replace rules and norms they have relied on, was relevant for an actor like Jens. When Jens went through the application process he had to take in to consideration that his building was worth preserving. Because of this, Jens had to ally with a lawyer to apply for further permission and get handcrafted nails and espalier made. Here Jens had to go "against" the norms to get further expertise.

Stage 5: Expertise

Stage five is inhabited by experts that have immersed themselves fully in their field of interest. This person can see what needs to be completed as well as how to achieve this goal. The use of refined discriminations is what separates experts from the past stage as the expert have learned to distinguish between situations that require different reactions (Dreyfus,2004).

Throughout this paper Jens as well as Peder has been described and used as experts regarding facade plants. This viewpoint can be validated by Stuart E. Dreyfus' fifth stage as they can be seen as fully immersed in the field as they have spent both their working life as well as their free time working with facade planting as well as other green transition technologies.

"The entire first year your heart is in your throat as to whether or not some cargo-bike just runs through it all - so there are things like that." - Jens

Jens states that he was afraid that a cargo bike would destroy his plant. This can be seen as an indicator of how Jens is aware of the discriminations surrounding facade plants such as the danger of cargo bikes in the first year of the project. This shows how he is not only aware of the danger but also is aware of the

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timeframe in which this danger can occur. This displays that he is able to distinguish between situations that require different reactions. As Peder's role in the network is to distinguish between different facade plant projects and what reactions makes it possible for the project to succeed, he can likewise be seen as a expert based on the criteria that Stuart E. Dreyfus presents.

Through these stages Stuart E. Dreyfus portrays that a person does not go from novice to expert but instead has to go through multiple steps. To commence this journey through the stages the novice needs to be motivated by the goals and as their knowledge increase they will become emotionally involved in the process as well (Dreyfus,2004). But moving through these stages is not an easy task. Because of this MP plays a critical part in this process as they provide the means for the locals to develop their skills through the offers that the "Roses to the City" project provide. By devoting themselves to the development of these skills they are likewise contributing to motivation through their guidance. One could reflect if MP as an organisation to, goes through some kind of experts development, by educating others. In this process, they to, get a greater knowledge of which process the novice is going through.

Illustration 13 Shows Inger scrapbook

During our interview with Inger, she showed us a scrapbook she had made at the start of the project. It illustrates her progress with the facade plant project, as well as her progress in acquiring new knowledge and understanding the processes. *See Illustration 12* The knowledge collected clearly shows how she goes through the first stages as the knowledge collected becomes more specific. At the time of our interview it could be argued that Inger it at stage 3:

"This summer I had a few problems; the leaves had either been eaten or it was so dry that the they just crumbled up ... I also wrote down some notes about how often I fertilize it, where the lice are and what I should do about them."

This clearly shows how Inger is able to see that something is wrong with the plant but she does not know what it is. Inger is aware of how often she fertilizes the soil as well as being capable of identifying lice on the plants. This could be an indication of her being at stage 3, as she is involved in the tasks surrounding the project but she still need guidance for solutions to these issues. All of the above mentioned stages indicates that all actors in their own specific time and way are going on a journey from being a "novice" to becoming an "expert" of a certain degree.

Part conclusion

In this chapter we have established how the process of applying for facade plants has been non-transparent for users, as well as introduced how our interaction with TEA has contributed to the making of a new application form, which will hopefully contribute to making the process of applying more transparent for users.

Based on the qualitative data presented above it can be concluded that aspects such as motivation, as well as negotiation of responsibility, is vital to establishing a successful project. But these negotiations can only take place if the motivated actor allies themselves with other actors in the network and mobilises themselves as spokespersons. Actors do not only need motivation; they also need expert guidance because the knowledge needed to facilitate a fruitful facade plant project differentiates from case to case. This is why MP and their role as a guide is vital for the municipality to have any hopes of relying on facade plants as a part of their green transition strategy. The reconsideration and evaluation of their catalogue and how it is perceived by the locals, seems to be a relevant and needed solution for a project like "Roses to the City" to further its success.

Chapter 4 - Future solutions

In this chapter we will go through some of the aspect we see as relevant for the project "Roses to the City" to be successful on a long term basis. There will be suggestions for how MP can reflect on their method in "educating non-experts" and suggestions for both contemporary and future solutions.

Education Models

Science on global environmental change is a worldwide debate with many controversies. In these debates both specialists and non-specialist are attending. Issues of mistrust between experts and non-experts has the last couple of years become a bigger issue than before (Callon, 1999). There are numerous opinions on why this has happened but one explanation could be that fact that non-experts has become more knowledgeable due to different technologies and the opportunity for a "all times of the day" internet connection. Callon argues that a crisis is emerging because there is happening a separation between experts and non-experts (ibid.).

MP has a vision to create a greener Copenhagen. They are as mentioned before initiating different projects to facilitates this vision. The "Roses to the City" project encouraged local to grow plants of their facades. This requires filling out complex application forms but it also requires a certain kind of knowledge concerning plants and their general needs. The actual planting process and the different requirements each plant has calls for a specialist to guide and share knowledge. Not all plants are suitable for facade planting, some might even do damage instead of contributing to the ecosystem. Unfortunately, is seems as if the complex application process and the lack of response from the municipality leads to the fact that non-experts chooses to take matter into their own hands without guidance from an expert. In some cases this leads to incorrect ways of planting including various "offenses" against laws concerning street safety. Callon explains that the issue with the separation between the experts and the non-experts not only exists in real life but also in models concerning these actors. Callon suggests three different models to make a confused and complex issues between actors both experts and non-experts more convenient (ibid.). Callon argues these models seen from the aspect of scientists and lay-people. We argue that Callons way of thinking of "experts and non-experts", can be transferred to the way as we perceived MP and their way with the locals. We use Callon's three models as inspiration for MP to further educate the locals.

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The participation and involvement of non-experts differs from each of the three models. Callon refers to these models as a tool to look at the different modes of participation of non-expert in a scientific and technological debate, but also refers to them as a tool to convert a confused and complex reality, intelligible, and as reference actors can use when they reflect on practical forms (ibid.). We find these models (some more than others) relevant to use as an inspiration in our project because they can be reflected on the knowledge created between the actors through Action Research and the enrolment of new actors seen from the aspect of ANT. Callon introduces us to the three models *"The Public Education Model"* (M1), *"The Public Debate Model"* (M2) and *"The Co-production of Knowledge Model"* (M3) (Callon, 1999).

"The Public Education Model" (M1) is the most used and is the easiest one to use. The challenge is that this model does not take into account the separation happening between experts and non-experts. When using this model it is in the belief that the experts has nothing to learn from the non-expert. The experts has to protect themselves and their knowledge from the non-expert, neither do the non-experts participate in knowledge production. This model does not meet the requirements and wishes we as "Action Researchers" have to involve the non-experts in the production of knowledge. In this model the aspect of trust is on a thin line because expert in some cases have a hard time dealing with unexpected or unintended results or risks of their actions. These risks exist in two forms. The objective risk, which is described and analysed by experts and the subjective risk described by non-experts without any reference and objective knowledge.

"The Public Debate Model" (M2) is an extension of The Public Education Model. In this model the relation between expert and non-expert is strengthen. Debates are taken to public arenas, which in this model enhances the experts knowledge. This model acknowledges the importance of the non-expert knowledge and argues that experts knowledge not always complies fully to real world cases. This can be compared to the project we are working with. MP (experts) can provide a lot of knowledge and offers to helps the local (non-experts) and guidance through the planting process. However, this does not mean that the knowledge MP offers is the knowledge the locals need and therefore the knowledge non-expert can provide is of great importance.

In the two prior models the non-experts knowledge is not of great importance. In model M1 it is nearly neglected and in M2 the non-experts only has the right to discussion. Even though the two models are not completely similar they share the fact that non-expert are denied to be a part of the production of

knowledge(Callon, 1999). This supports our choice not to use these models as a tool to produce knowledge in our project. Due to our approach using ANT and action research it is necessary for us to keep the non-expert close. The approach of ANT encourages us to use the non-experts amongst others to create and reveal the underlying network of our chosen subject, while action research encourages us to create new knowledge together with the "research subject". This is why the third and last model is better suited for our approach and is in the the non-expert and the experts favour. This model overcomes some of the breaches Callon mentions between the specialist and the non-specialist (ibid.).

"The Co-production of Knowledge Model" (M3) actively involves non-expert in the production of knowledge. In this model the knowledge of non-experts is highly favoured. Parallels can be drawn between this models approach to the creation of knowledge and the way we wish to work, understand and "educate" the actors involved in MP's projects and the issues associated with it. MP visions do not only address organisations and institutions on a macro level, but do also address smaller organisations and institutions as well as locals. These visions derive from laws, guidelines and visions from higher-ranking organisations and institutions. The visions as well as the actions within might not work in practice if organisations and institutions on a meso level as well as locals on a micro level do not share the same understanding and vision. This demonstrates the importance of involving e.g. local in the production of new knowledge because their knowledge can contribute to a better understanding of an issue. The dynamic, interaction and exchange of information between experts and non-experts has to be constant (ibid.). Callon argues that the non-experts works as an OPP and that they have to be organised and have their existence recognised in order to become a research object (ibid.). The objectification process is never complete because when new knowledge is gained, it contributes to new questions and problems. The model also contributes to collective learning due to the fact that the different knowledge is mutually enriching throughout the process of co-production. By being a part of this process the non-experts does not experience issues like mistrust to the experts because they are equal. This approach could be used as inspiration for MP to educate and involve the locals in their process.

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Contemporary solution

In this section we will come with proposals for further solution, for both the municipality and MP.

Updated catalogue

As a contemporary solution an updated version of the catalogue would be relevant. The catalogue must contain the same information as now but also give the reader a better overview of who, where and why. The description of the process has to be more precise and is has to be more clear in what order then local has to apply. In the updated catalogue it will be possible to refer directly to the new application form from the municipality instead of having the locals searching or contacting the municipality themselves. It would also be for the locals benefit to make a "contact information sheet" in the end for the catalogue, containing information about who to contact, when having a specific problem or question. The catalogue also have to contain a "10 good advises section", for the locals to get a "quick" overview of important information.

10 good advice

To motivate and guide the locals further a "10 good advice" section could be relevant. In this section the locals will be introduced to several advices to make their planting process easier and maintaining their plant. The "10 good advice" could be a mixture of new knowledge MP has gathered and experiences from earlier. *See Illustration* 13

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10 good advice

1. Make sure to talk responsibility with the other residents of your household. Have a talk about expectations and make sure to reach a common agreement before buying your plant.

2. Make sure that formalities like the obtaining permission from the correct authorities is taken care of. remember that if your building is preserved then you have to obtain permission from the governmental agency for culture and palaces, if not then You can get the application you need on *www.kk/facadebeplantning.dk*

3. Take into consideration which plant matches your needs. Some plants require more care than

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others. Miljøpunktet can provide you with expert knowledge in this regard. You can contact Miljøpunktet here *www.a21.dk*

4. Before buying a plant ask Miljøpunktet or an plant expert, which plants fit your facade depending if your facade faces north, south, east or west, And if the surroundings match the plants needs.

5. Some plants require binding or support in order to grow up on a facade, while others is well placed on your own. That applies to choose the right kind of tie to the plant you choose.

6. Be aware of what season you wish to plant, contrary to popular believe, summer is the least favorable time of year to plant. fall is the ideal time of year for most plants.

7. Remember watering the plants additionally in dry seasons

8. Remember to fertilize your plants according to their needs.

9. As there is less sap in the branches in the winter months, it is recommend that they will be cut before the spring comes.

10. Plants are living creatures, treat them correct and they will give it all back to you.

Updated application form from the municipality

As was teased in the previous chapter during our interview with TEA we were introduced to a new application form specifically made for facade planting. The interview shifted from its initial focus since this introduction made several of our original questions obsolete resulting in this new application becoming the focal point of the conversation.

After you wrote we thought " oh well, it might be a good idea if we actually made one of those"
- *Sabine TEA*

" and it is also going to be in another format. We have gotten a new format at the municipality, so it is going to be in two columns, with a fact box at the bottom , which will hopefully make it more manageable reading"
- *Jonas TEA*

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We have included this application in full below in a translated version. As stated in the in the above quote this is only a temporary version. The version which we received was a physical copy. The final version is intended to be digital and will have a proper directory at the municipality's webpage.

Application form

Facade planting

Facade planting can be roses, climbing plants or other greenery, which are planted in the pavement and grows on a facade. it is necessary to apply for permission for the facade plant if the holes in which the plant is planted is outside of one's own Landmark number on so called Road space. To learn more, read this application form which is applicable for both public roads and private community roads (privat fællesvej).

How much does it cost?
It is free to apply for permission. all expenses in regards to planning, purchase, setup and maintenance of the plant is paid by the landowner.

Guidelines for facade plantning
When you draw up your application, as a minimum, you have to be attentive to the following.

- That the landowner has given their consent for the instalment of the facade plant
- That the building is not worth to preserve (protected)
- That no emergency exits, electrical cabinets, light boxes, basement shafts, manhole covers etc. are obstructed by the plant
- That there are at least 1.5 meters clear from the hole for the plant to the the road
- That you only use (hand digging) meaning no use of electrical excavator equipment and that the maximum depth of the dig is 0.5 meter and 0.5 in diameter
- That you ensure that facade plant is secured to the wall by either using a creeper mount (slyngplantestativ), espalier or the like

Inspiration for green facades
You can find inspiration for facade planting, varieties and placement in a folder created by Miljøpunkt inner city (can be used in the whole city): a21.dk/portfolio-items/roser-til-byen/

This is how you apply for permission

1. **Write a short application**

Briefly describe your project

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2. Make an illustration

Make a dimensionally stable illustration in the scale of 1:250 which shows:

1. Arrangement of the road space from facade to facade with measurements
2. Placement of the plant holes, which you wish to apply for
3. Placement of existing road instalments such as signs, trees, bike racks, electrical cabinets etc.
4. Placement of staircases, light cabinets etc.

3. Sending the mail

Send the mail including illustrations to vejaendring@tmf.kk.dk and remember to attach the landowners consent if you apply on his/her behalf.
The municipality can depending on the need ask for a physical paper copy of the illustration. In that case the paper copy is sent to traffic and city life, permission for road change, Njalsgade 13, 2300 København S

What does the law dictate?
Look up vejloven kapitel 11 (puplic road) privatvejsloven paragraf 57 (private community roads)

Questions?
Contact the department for traffic and city life, permission for road change (tel) 33 66 36 56 Mail: vejaendring@tmf.kk.dk

- is the given property worthy of preservation, you have to obtain consent from the preservation authorities. contact the Centre for Buildings in Copenhagen Municipality

Last revised 15 of November 2018.

The reason for us to include this application in full is that it represents a major step forward in terms of making the process of applying, more transparent for locals. It is likewise for us a product directly resulting of our inquiry into the subject of facade planting.

As previously stated much of the interview following the reveal of this application shifted from what we originally had planned into a closer examination of the information contained in the application itself. The interview thus became a back and forth discussion, in which we all reflected upon its contents and came with inputs to how it could be made even better.

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At first glance this application shares a lot of similarities in appearance with its previous incarnation, which is the application for bike racks. The visual look and outlay is similar, likely due to the fact that it is a standard format for applications, but as Jonas mentioned in this is also subject to change since they have an updated format.

There are many new inclusions as well such as how specific measurements for the size of the pavement has been included.

Another great inclusion in the new application is that it acknowledges MP by referring to them for practical expertise and guidance with facade plants and also linking directly to their webpage.

As excited as we were due to this new application we also found and discussed some elements, which could be taken into account in the final finished version of the application.

One of the problems we had with both the original application and the updated version was that it there seemed to be some discrepancy between what the application stated as requirements for permission versus the process of applying explained by the technology and environment administration during our interview with them. The application paints a picture of a formal process in which many rules and laws have to be taken into consideration and this seems to be at odds with what we were told during the interview.

"The most common scenario is that it is the homeowners accosiation who wants to have to have a little bit more greenery in front of their door. they then asked "what are we allowed to do and we want this thing", and then we say ok just draw a little dot on a map, and explain how you are going to do it. then we look at the road, in regards to if there is enough space for it on the pavement, or does it block anything. we then then provide guidance on if your building is wothy of preservation, we then inform people that they have to apply at the Agency for culture and palaces, first because everything going up on walls which are preserved has to go through them, and besides that It is not that hard. You just have to remove 3 to 4 stones and put down a rose and a fence. Well, then you'll get a permit and it's going to be a snap, it doesn't take long" - Sabine, TEA, Copenhagen

We would argue that if the above quote represents the process experienced by the Technical and Environment Administration. It illustrates a quick and easy process in which the tone seems a lot less formal than we find it to be the case in both the new and old application form.

Particularly the type of language used in the application was discussed, since one of our worries as researchers was that it might seem alienating to "everyday people"

An example of this is in the "how to apply for permission" section under "make an illustration" which reads "make a dimensionally stable illustration in the scale of 1:250"

We speculated that what this means and how to do it might seem foreign to many people, since they do not normally work with measurement scales and such.

Therefore, we would recommend that they give more specific directions as to how to go through the process of actually producing an illustration containing all of the required information.

During our interview two methods of giving more specific direction were discussed those being Google maps and the Copenhagen map (Københavner kortet). Both offer a top down view of Copenhagen but only Google offers offers real satellite imagery, whereas the Copenhagen map has the advantage of being able to display the placement and highlight some of the existing road instalments.

It is not clear from the requirements if the illustration has to be a top down view or be or illustrate a view at ground level. The 1:250 scale requirements seems to indicate a top down view, but some of the requirements such as "arrangement of the road space from facade to facade with measurements" or "placement of staircases" would be difficult to illustrate with a top down view. A screenshot taken from Google Street View could be an option in this case.

"Send this picture from Google Street View or make a dot on the Copenhagen MAP and send it to the administration for "Road changes" - Sabine, TEA

Both seem like viable options according to TEA but both methods vary in terms of what kind of service they are able to provide. None of the two methods seems fully capable by themselves of fulfilling all of the requirements stated by the application.

We would therefore recommend that the application more clearly states what method to use and how to use it, possibly guiding people through the process as to get a more uniform end result each time.

In the section called guideline for facade plants, one of these guidelines is that as a minimum the applicant should be attentive that the building you wish to apply for is not preserved. This seems to indicate that applying would not be possible, which is not the case. This is in fact also the last statement in the

application which reads "is the given property worthy of preservation you have to obtain consent from the preservation authorities. Contact the Copenhagen Municipality, Centre for Construction.

We would recommend removing the initial statement and replacing it with the latter, so as to not create confusion. A great addition could as well be providing more direct contact information to these authorities.

During our interview with TEA we also discussed scenarios, which is not accounted for in the application such as instead of wanting to dig a hole directly in the pavement, one could instead wish to plant in a pot, and have it grow up the facade. in regards to this scenario we were told the following:

"We do differentiate between if you make permanent changes to the road by digging a hole or if you put something in there, which is not permanent like a pot. but if you let it grow up the walls like a facade plant then it alternates between our department and our neighbour department, which are responsible for temporary permits because we consider it as a temporary thing when it is just a pot" - Sabine, TEA

In this case they do not have complete authority in terms of giving permission. This could also be considered in the application, in the same way as if a building is worthy of preservation, TEAA could direct the applicant to the correct authorities in this matter.

Future solution suggestion

we would in addition to these contemporary solutions, also briefly introduce and discuss some future solution that could be the foundation for further work with facade plants.

Website/App solution

For future solutions we see it as a relevant project to digitalise the application project. This could be done by creating a website or an app for the purpose of "Roses to the City". Where the locals would be able to point out their specific location on a website or via app and through this get an overview of their building a planting opportunities. We would then refer to the "Copenhagen Map". This map makes it possible for the locals to pinpoint specific locations in Copenhagen and apply the map different "layers" depending on what they wish to get an overview of https://kbhkort.kk.dk/spatialmap? Creating a layer concerning

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"plants" hereby knowledge about if a building is worthy of preservation or if the building is placed on top of water pipes etc. could make the process of applying more manageable and give the locals a better overview of their situation. By a digital solution MP and the municipality would also have a better insight knowledge of which areas in Copenhagen tend to be more "greenified" than others. It could also give them a better opportunity to follow the locals in their process and their maintenance of the plants.

We had initially planned pitching a digital application that could guide people through the choice of a facade plant. But as our knowledge grew we came to the conclusion that this process could not be automated. This viewpoint was shared with Jens:

"I don't think you should automate that process. I believe people with experience need to be involved, because you can't ... you have to be patient and you might need to spend an hour more on digging the hole and getting the plant you dream of." - Jens

As Jens is aware of many the situational discriminations, he knows that it isn't possible to convey all the rules and maxims through a digital solution. An expert is therefore needed to help guide the local towards the right choices .

The plant patrol

Another suggestion could be a "plant patrol". This patrol could be comprised of plant enthusiasts from Copenhagen Inner City and Christianshaven who together with MP helped locals around the city with planting the plants but also especially maintaining them. It seems as if one of obstacles for planting is the responsibility for maintaining the plant later in the process. If MP offer the locals to allow the "plant patrol" access to their plants an agreement could be made for the plant patrol to maintain and care for the plants. The plant patrol could be retired or elderly people who needed an agenda for their week. It could be people who had to retire early due to some kind of handicap or stress-related incident, but still needed a sense of fulfilment and purpose during their week. This could not only be beneficial for the locals and MP, but could also be beneficial and health increasing for the people who joined the plant patrol due to the positive effect plants have on human behaviour.

We proposed this idea to marianne From MP but she was somewhat sceptical of the idea. One of the overarching goals with the efforts of MP which links their different projects together is the empowerment through knowledge and responsibility. The plant patrol in her eyes removes responsibility from the plants owners, and transfer it to other people. This statement also aligns with our our current choice of theory in which Taking responsibility away from the local may have some negative consequences as the locals probably won't create the same type of bond with a plant that in their eyes "take care of itself" also resulting in their their level of knowledge to stagnate.

nonetheless the plant patrol could be a positive, in the sense that it could create other communities, and involve other actors in positive ways.

Conclusion

From this process we can conclude that the approach of Action Research has given us the opportunity to work close with the investigated subject, which in this case is MP and the locals. Throughout our fieldwork new actors with a bigger responsibility than first expected has been revealed. The role of the municipality was at first sight "invisible" but it became clear that their role in the network seems underestimated from our initial thought. Facade planting is just a very small part of the really big project concerning the green transition, which is happening worldwide. This does not make it less important because it gives actors on a micro level the opportunity to be a part of a bigger change. One could reflect or argue that a densely built metropolis like Copenhagen could make a greater effort for getting "small" projects like "Roses to the City" mobilised and put in to use, thus the vertical spaces in Copenhagen could be of greater use and make room for more green spaces. But through our fieldwork, it has become clear to us, that what seems to be a "small" project like facade planting, takes more to succeed than first expected. Many individual actors are involved in this network and they have to understand each other, negotiate and mobilise themselves and their projects. This takes a strong force of communication and motivation. The actors have to create a somewhat common ground and understanding. The updated application for facade plants when eventually implemented could potentially be used by other municipalities, if they similar to Inner city/Christianshavn municipality face issues of transparency on the subject.

We can based on our data furthermore conclude that motivation and responsibility plays a significant role for the facilitation and further success of a facade plant project. Through negotiations the motivated actor can realise their goal by taking on responsibility and only enroll other actors to help with extraordinary

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tasks. But by doing this they cement themselves and their role in their network and can end up as a pillar, that the success of the project rest solely upon. The importance of expert knowledge and its impact during the facilitation process of facade plant projects has likewise been highlighted. This project can also address other projects than "Roses to the city" because its gives an idea of how other environmental and climate projects in Copenhagen progresses.

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Litteraturlist

Journal

Callon, Michel: The Role of Lay People in the Production and Dissemination of Scientific Knowledge. I: Science, Technology and Society nr. 4, 01.03.1999, Sektion: 1, s. 1-14Database: https://journals.sagepub.com/doi/10.1177/097172189900400106 - Besøgt d. 03.12.2018 (Artikel)

JELSMA, J. (2003). Innovating for Sustainability: Involving Users, Politics and Technology. *Innovation: The European Journal of Social Science Research*, 16(2), pp.103-116.

Law, John: *A Sociology of Monsters,* ESSAYS ON POWER, TECHNOLOGY AND DOMINATION. Side 132-165. Bind 38. 1. udg. Routledge , 1991.

Website

www.a21.dk: Roser til Byen. Udgivet af Miljøpunkt Indre By & Christianshavn. Sidst opdateret:01.01.2017. Internetadresse: http://a21.dk/wp-content/uploads/2017/01/Roser-i-byen_final_opslag.pdf - Besøgt d. 05.12.2018 (Internet)

www.a21.dk: Roser til Byen. Udgivet af Miljøpunkt Indre By & Christianshavn. Sidst opdateret: 01.01.2017. Internetadresse: http://a21.dk/projekter/groen-by/ Besøgt d. 05.12.2018 (Internet)

Denmark: Energy and climate pioneer Status of the green transition. Udgivet af Danish Ministry of Energy, Utilities and Climate, April 2018. Internetadresse: https://en.efkm.dk/media/12032/denmark_energy_and_climate_pioneer_pdfa.pdf - Besøgt d. 13.12.2018 (Internet)

European Environment Agency: Transition towards a green economy. Udgivet af EEA. Sidst opdateret: 05.12.2018. Internetadresse: https://www.eea.europa.eu/signals/signals-2014/articles/transition-towards-a-green-economy - Besøgt d. 13.12.2018 (Internet)

Fredriksbergs Kommunes Træpolitik
Vej, Park og Miljø
By- og Miljøområdet Frederiksberg Kommune, 2018
https://www.frederiksberg.dk/sites/default/files/meetings-appendices/1092/Punkt_212_Bilag_1_Bilag_1_Traepolitik.pdf

www.kk.dk: Bæredygtige sammenhæng - Agenda 21-strategi for 2016-2019 . Udgivet af Københavns Kommune Teknik- og Miljøforvaltningen . Sidst opdateret: 01.01.2016. Internetadresse:

When the roses came to the city – A techno-antropological action research study
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https://www.kk.dk/artikel/baeredygtige-sammenhaenge-koebenhavns-kommunes-agenda-21-strategi -
Besøgt d. 13.12.2018 (Internet)

Københavns Træpolitik
the municapality of Copenhagen, The technology and environment Administration, 2018)
https://kk.sites.itera.dk/apps/kk_pub2/index.asp?mode=detalje&id=1522

Book

Andersen, John: Action research and empowerment in Denmark - experiences from three different context. Kristiansen, Marianne og Jørgen Bloch-Poulsen: I: *Participation and power*. 1. udg. Aalborg universitetsforlag , 2014. page 99-123

Attwell , Karen: *beplantning - en undersøgelse af fordele og ulemper*. 1. udg. Holmens tryk A/S, 1993

Brinkmann, Svend og Lene Tanggaard: *Kvalitativ metode - en grundbog* . 2. udg. Hans Reitzels forlag , 2015. page 30-50, page 169-180

Callon, Michel: The Role of Lay People in the Production and Dissemination of Scientific Knowledge. I: Science, Technology and Society nr. 4, 01.03.1999, Sektion: 1, s.

Callon, M. (1986). Some elements of a sociology of translation: Domestication of the scallops and the fishermen of St Brieuc Bay. In Law, & John, Power, action and belief: a new sociology of knowledge? (pp. 196-223). London: Routledge.

Illustrations
Illustration 7
http://a21.dk/services/tilskud-til-facadebeplantning-roser-til-byen/

Illustration 8
kk.sites.itera.dk/apps/kk_pub2/pdf/521_sa4n6rJh.pdf

Illustration 9
https://www.kk.dk webpage

Illustration 10

https://kk.sites.itera.dk/apps/kk_pub2/index.asp?mode=detalje&id=1767