The Invisible Infrastructure

Parking as Place-Maker in a Motorised Urbanity

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The Invisible Infrastructure: Parking as Place-Maker in a Motorised Urbanity
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Abstract

Parking, a seemingly mundane topic, have a huge impact on peoples right to the city. This thesis aims to explore the effects of the regulatory space created by parking norms and policies within the urban landscape. Parking is in this thesis identified as an active form, drawing from the work of Keller Easterling. Being controlled and regulated at the municipal level, parking is a question of local politics. This opens up possibilities for reorganizing parking as a tool for planning and place-making. By rewiring the organization of parking, from an individual property into a cooperative infrastructure, parking becomes a platform for generating local communities in the mid-sized Swedish city.
Introduction
The city as an ideal, even the very word "urban", have become a mantra in planning, architecture, marketing, fashion and music. But is this an ideal or just a nostalgic image? A representation, of the traditional city, a longing or "a cry", to paraphrase Lefebvre, after a certain street life that maybe never was? The "traditional", "the dense", "the sustainable" and "the authentic" have turned into a product, an image, that can be marketed and sold in the increasing competition between cities. This representation of the urban has in turn become a cheap trope, a bizarre mirroring of the right to the city. Neil Brenner states that cities, nations and even the UN are trying to co-opt the term "urban" in their hunt for turning cities into successful creative-driven growth machines as popularized by Richard Florida in his book "The Creative Class".

In this idea of the city, urbanity seems to be perceived as a linear process with New York or Paris as the apogee of city-ness, the state that all others should strive for. But what does this mean for places like Umeå or Skellefteå? Cities in a country with one of the lowest population densities in the world, cities that hardly can be called cities when compared to New York?

Even though small in comparison, they are undoubtedly cities, just with a different kind of urbanity and this urbanity and its citizens right to it must be taken seriously. So what does the term "right to the city" stand for?

According to Chris Butler, Henri Lefebvre suggests that "the right to the city can be best understood as a ‘transformed and renewed right to urban life’, which links it to the essential characteristics of the urban as both a creative work and a space of ‘centrality’, ‘gathering’, and ‘convergence’", the urban is more than a product that can be produced and marketed for increased capital accumulation, it is "more or less the oeuvre of its citizens" as Chris Butler explains it: "a work of art constantly being remade" and that "the prevention of certain groups and individuals from fully participating in this collective, creative act constitutes a denial of the right to the city".

The one-way urbanity of images and buzz-words creates a debate caught in binary views; centers versus peripheries, walking versus driving, "good" versus "bad" urbanities, and so forth. Instead of getting caught up in this simplified rhetoric we should look at the performativity of the everyday city and work toward a multitude of different street lives coexisting within the city, created by and for its inhabitants - the local conditions and concerns of this urban vernacular.
“the right to the city is like a cry and a demand. This right slowly meanders through the surprising detours of nostalgia and tourism, the return to the heart of the traditional city, and the call of existent or recently developed centralities”

Henri Lefebvre

September 2013, 200 berrypickers from Thailand occupied a central parking lot while demanding salary for the work they had done.

Image: Swedish Radio
Stage of the Urban Vernacular

"Everyday" speaks to this element of ordinary human experience and itself conveys many complicated meanings. At a common-sense level, everyday describes the lived experience shared by urban residents, the banal and ordinary routines we know all too well. (...) Everyday space stands in contrast to the carefully planned, officially designated, and often underused public spaces that can be found in most American cities. These monumental spaces only punctuate the larger and more diffuse landscape of everyday life, which tends to be banal and repetitive, everywhere and nowhere, obvious yet invisible. Ambiguous like all in-between spaces, the everyday represents a zone of social transition and possibility with the potential for new social arrangements and form of imagination."

- Margaret Crawford

Parking is an invisible infrastructure, invisible in the sense that it is seldom mentioned or problematized in the same way as the car. It is white noise; mundane and invisible due to its sheer vastness. Parking tends to be seen as an effect rather than a cause in itself - a necessary evil, a product of the car.

Car parkings have the characteristics both of a designated, functionalistic place (in the sense of separation by functions) and of a tactical place as described by Michel de Certeau. Parking is a flat, hard surface reserved for leaving cars in and on an everyday basis it is only used for that. Occasionally, something else might happen - there is a music festival, or a circus or a market in town. Suddenly there is a need for a big, flat and hard surface and the parking lot, for an afternoon or a few days, becomes something else. Its intended function becomes obsolete, what matters is its performativity and the possibilities for it to become a stage for the urban vernacular.

Barbara Kirshenblatt-Gimblett bases the idea of the urban vernacular upon Michel de Certeau’s distinction between the strategic and the tactical. The urban vernacular is the opposite to a master plan, “a local improvisation; not a strategic plan, but a tactical strike”. She continues by claiming that performance, or everyday activities such as playing games, hanging laundry, etc, “produce distinctive spatial forms, some which acquire independent architectural manifestations.”


Even though parking has huge potential it also creates many difficulties for architects, developers, planners, and users. Still, few seem to really interest themselves in the question, maybe because parking is seen as a functional equipment of the city, an in itself innocent effect of other activities and objects. I would argue that this is not true, parking is not planned and conceived as object-form but it rather functions as what Keller Easterling describe as active form, more specifically as a multiplier. This makes it more discrete and treacherous than a carefully planned and conceived form. The unquestioned parking regulations causes parking to “just happen”. An active form is a parameter, a sort of ”spatial software” - design as an apparatus for shaping and interacting with many forms over time in opposition to an object form that just ”is”. A clear example of active form is the repetitive field of suburban space where the design of one single house, an object form, have little effect in relation to an alteration to one of the many multipliers that shapes the whole field of houses and activities. As Keller Easterling describes it: “when the car arrived in suburbia, it was a multiplier that required a garage to be attached to every house, and today recalibrating or reconcieving the car and its garage would multiply and spread spatial changes throughout a field of houses. More powerful than a single object form in these landscapes, multipliers piggyback on repetitive components.”

Parking is treacherous in the sense that it makes itself unseen by reproducing itself in a fragmentized way as an appendix to every single project. Many municipalities have identified parking as a problem thought the general way of attacking this problem is not by questioning the multiplier that makes up the parking norm and the parking policy. The method is instead reviewing the knowledge at hand (what is the car ownership ratio? What is the availability of public transport and services? What is the distance to the centre?) and with this review information the numbers that makes up the active form, the parking norm, is lowered. Changing the parking demand from 1.0 to 0.7 per apartment reduces the effects of the active form but it doesn’t question the spatial software as such. A more radical approach would be to question the multiplier, how it works, what it produce and the necessity of it. When the problems are identified the multiplier should be altered in such a way that it could start generating something else, in the sense of parking a more sustainable and egalitarian strategy for urban mobility and land use.
The parking requirements are based on the idea that parking is a must. Something that has to exist in varying amount with every type of building. This imperative has created a big variety of parking typologies that, almost always, are designed and constructed with the goal of being as cost-efficient as possible. It has sometimes generated odd constellations, almost always from a seemingly “rational” standing point.

“(…) within urban studies, infrastructure [such as water, sewage, electricity, gas-pipes, subway lines, high-speed trains but also parking] has been completely neglected. The analytical interest have been considerably directed towards socio-cultural phenomena - identity, representation, meaning is everything from urban economics to architecture. There has for long existed an anti-technological bias even within the social studies of urban development. (…) But that is not even half the truth. Instead of analyzing technological systems as symbolic expressions of social injustice and hierarchies maybe infrastructure should instead be seen as concrete tools for power and prioritization, which they actually are.”

Håkan Forsell

With the planning tools and processes utilized and encouraged in planning today, parking easily becomes a destroyer of public space and obstructor of people’s right to the city. It is a construction that doesn’t create new places but demands the deconstruction of already existing places. They shreds cities into pieces, working according to a singular and smoothing logic where every new unit contributes to an increased homogenization of the existing urban fabric. But at the same time as parking has a destructive potential it also contains the potential of intensity as all drivers needs to park somewhere. As a part of the spatial infrastructure supporting the automobile travel, it forces drivers to visit them in order to “get rid” of the car. By making an active decision, this intensity and site-specificity could be directed and taken advantage of in the process of generating place. Parking could work as a place-maker, an enabler of the urban vernacular.
What would happen if parking requirements, as a multipliers, were reprogrammed with consideration to the urban vernacular and the potential parking has of generating place and intensity? Could it become a creator of collective identity, or of ‘publicness’ within areas that today have little of this quality? Car travel is today perceived as a solitary mode of transportation, what would happen if the place of departure and arrival were a place of community and publicness?
The Swedish city is strongly characterized by the post war boom and its car optimism. After the Second World War a house and car of one’s own became a realizable goal for the masses. The detached house with a green lawn and garage is still the most popular residential typology in Sweden.

The ever-increasing amount of cars lead to an ever increasing need for parking. In city centres all over Sweden entire blocks were torn down to accommodate this new mode of transport. The culmination of car-focused traffic planning was reached with the SCAF T guidelines, developed during the 1960’s by Chalmers team for traffic safety. The SCAF T planning would ensure maximum safety and efficiency though separation of all actors within mobility. By prioritizing high-speed automobile transport, car dependency increased with segregation as an effect as the distances and barriers between districts grew larger.

The power structures within mobility have been identified and described by the activist group planka.nu in their manifesto Trafikmaktordningen (“The mobility power structure”). The term Trafikmaktordningen is borrowed from the term Könsmaktsordningen in feminist theory (“The Gender Power Structure”). The original theory points out the existing hierarchy between the genders that permeate all parts of the society but also enhances the differences between the genders.

Trafikmaktordningen makes the car and its driver superior to all other actors in traffic. Owning, driving and parking a car is almost seen as a right, connected to the freedom of the individual. The problem is that this “right” intrudes on the right to mobility for all non-motorists in the city. Contrary to Könsmaktsordningen where the profiteers are a product of the unequal structures - the Trafikmaktordningen can be seen as an effect by the interests of the car industry. Even though SCAF T planning has since long fallen out of use, the car still dominates most cities.

Parking is a seemingly mundane phenomena but it is inextricably linked to how we move and organize our everyday lives. Stuck in between mobility, urban planning and architecture parkings spread like asphalt deserts, characterizing the midsize Swedish city where car-ownership is usually high. Especially in northern Sweden where the access to public transit (railway, airplane, bus connections) is less
developed than in the south. Donald Shoup explains in his book “The High Cost of Free Parking” that all modes of transportation consist of three elements: vehicles, right-of-way and terminal capacity. I would like to add a forth one: fuel. Auto-mobility consists of fuel (such as petroleum, diesel, gas or electricity), cars, roads and parking. Two things with automobile terminal capacity sets it apart from all other modes of transportation, first, its enormous demand for space and secondly the fact that most parking is subsidized.

“Free parking helps explain the enormous demand for automobile terminal capacity [i.e. parking]. By shifting the cost of parking from drivers to everyone else, off-street parking requirements provide huge subsidy to motorists, and thus increase the demand for cars, parking spaces, and vehicle travel.

For a typical travel to work, the cost of parking at work (if drivers pay for it) is over half the total out-of-pocket cost of automobile commuting. But most drivers do not pay for parking, or at least not in their role as drivers. Because cost-recovery price for parking is such a large share of the total cost of automobile travel, “free” parking seriously skews travel choices toward solo driving and away from other forms of travel that require less terminal capacity: public transport, carpooling, bicycling, and — the extreme case — walking, which requires shoes and sidewalks, but no terminal capacity at all. (…) Free parking is an invitation to drive wherever we go.”

Donald Shoup

There is a broad consensus about the fact that excessive car use in cities is a problem and should be reduced as it leads to global warming, air pollution, noise pollution, accidents, congestion, sprawl and so on. This problem is often approached as a life style problem; one example of this is the campaign “Be Green Umeå”. The issue with these campaigns are that they mainly focus on the decisions of the individual often with a moralizing tone and flashy graphics. The message is: Everyone can stop driving if they just decide to!

This is an idea built on the liberal conception that everyone always
has a free choice. By accusing the individual all troublesome criticism of the system; the power structures and the economic structures that contribute to the degradation of social, mental and environmental ecologies are avoided. The focus on the responsibility of the individual also contributes to the opposition between the center and the periphery and class prejudice.

The renaissance of the traditional mixed-use city has increased the focus on the city centres, often planned and built long before the car made its entrance, this is the place where the urban notion makes most sense, the place that is the closest to the image of the urban.

Surrounding the centre is the middle city, this is where most people live and where everyday life occurs. Cities consists of annual rings, the old centre is often based on a grid system, the middle city closest to it is a mixture of different time periods and ideologies; areas with small detached houses, apartment houses from the welfare society, ‘million-program’ areas and suburban areas, the periphery… The “border” often contains old industrial areas that have been retrofitted into external shopping areas, outside is the hinterland with suburban areas and smaller villages.

The middle city is characterized by being almost purely residential, like commuter towns within the city. When it was built, the middle city contained some basic services like grocery stores and smaller businesses. As a result of the increased rationalization and centralization of businesses selling everyday commodities the availabilities of services in the middle city has gradually diminished. The commerce and services (legal, health, knowledge, culture, recreation and so on) are centralized to the centre (shopping as an experience) and the periphery (cheap and easy accessible by car).

We end up in a curious situation. The selection of services and experiences expand and are concentrated to the centre (shopping becomes an experience) and the external shopping areas (cheap and easily available by car) while the services in the middle-city and the hinterland diminish. At the same time, individuals are suppose to have the free will to “be green” and opt out of the car even though the whole system - the layout of the city, the location of everyday necessities, the cost of housing, the mobility power structure, subsidies and privileges - encourages them to do the opposite.

People are, in fact, driven into driving.
Fuel

Looking at the list of the countries with the highest consumption of oil for road transport per capita, one can see that most of the those countries either produce oil or have a large domestic car industry. Sweden is placed relatively high on the list, at place 15, this can be explained by both a history of a strong and important car industry and relatively large distances within the country combined with a underdeveloped railroad network. Petroleum and diesel is heavily taxed in Sweden, partly to keep down consumption.

Eight percent of all consumed fuel in Sweden is renewable7 (2012). Even though much emphasis is placed on making a “green change”, from non-renewable to renewable fuel to avoid an ecological crisis, this has been proven to be difficult since the global and highly complex fuel market makes it difficult for an individual country to make the switch.

**Origin of imported raw oil consumed or refined in Sweden in 2013.**
Source: Svenska Petroleum och Biodrivmedel Institutet, SPBI.

**Road sector energy consumption per capita 2010-2014, in barrels of oil.**
Source: The World Bank
Even though it is more aerodynamic, use new materials and move faster and more efficiently today, the car as a concept hasn’t changed much since it’s invention in the late 19th century. It is still a vehicle on four wheels, operated by a driver using a steering wheel, propelled by an internal engine. It is owned individually, it sits unused most of the time and it needs somewhere to park.

The technical innovations that are made, such as more efficient electric drive lines and cleaner and other renewable fuels do not change these basic concepts.

The taxation of cars is based on it’s CO₂ emissions in relation to it’s weight. Cars with low enough emissions can be classed as “miljöbil”, and gets an extra low tax rate. If the emissions are low enough the car is classed as a “supermiljöbil”\(^8\), this means that buyer gets a refund of 40 000 SEK and the car is not taxed for five years. This system has been criticized as it is most beneficial to large cars.

A small car with lower absolute emissions can be rated as worse than a large heavy car with higher absolute emissions. This is due to the fact that weight is factored in. It is easier for a heavy car to get a lower emissions to weight ratio, skewing the market towards heavier and larger cars, no matter that that a large car has a larger environmental impact than a small.

This has led to rather bizarre situations such as Hyundai adding a 100 kg to their i30 model enabling it to get classed as a “miljöbil”\(^9\).
### Amount of newly-registered “super environmentally friendly” cars per county (län) 2013 eligible of the 40 000 SEK subsidy.

<table>
<thead>
<tr>
<th>County</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stockholm län</td>
<td></td>
</tr>
<tr>
<td>Västra Götaland län</td>
<td></td>
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<tr>
<td>Skåne län</td>
<td></td>
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<tr>
<td>Jönköpings län</td>
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<tr>
<td>Uppsala län</td>
<td></td>
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<tr>
<td>Östergötlands län</td>
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<tr>
<td>Hallands län</td>
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<tr>
<td>Jämtlands län</td>
<td></td>
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<tr>
<td>Västernorrlands län</td>
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<tr>
<td>Dalarnas län</td>
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<tr>
<td>Gävleborgs län</td>
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<td></td>
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<tr>
<td>Örebro län</td>
<td></td>
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<tr>
<td>Västmanlands län</td>
<td></td>
</tr>
<tr>
<td>Norrbottens län</td>
<td></td>
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<tr>
<td>Kronobergs län</td>
<td></td>
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<tr>
<td>Södermanlands län</td>
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<tr>
<td>Kalmar län</td>
<td></td>
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<tr>
<td>Västerbottens län</td>
<td></td>
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<tr>
<td>Blekinge län</td>
<td></td>
</tr>
<tr>
<td>Gotlands län</td>
<td></td>
</tr>
</tbody>
</table>

215 million SEK

The most sold electric car in Sweden, 2014. Tesla Model S, 780 000 SEK

The most sold “super-environmental” car in Sweden, 2014. 50% of the market. Mitsubishi Outlander Plug-in Hybrid, 409 900 SEK

Will the future automobile transport be driverless? Google claims that 90% off all traffic accidents, wasted commuting time and cars could be reduced with driverless car technology.
Most roads are either state or municipally owned in Sweden. They are financed by taxes paid mostly by those who use them. A strategy for reducing traffic in central Stockholm and Gothenburg have congestion fees and toll roads to lower the amount of traffic.

Roads are complex infrastructures heavily regulated and surveyed to ensure safety and efficiency. All drivers and vehicles need to be approved by the state to use the roads through drivers licenses and regular car surveys.

The density of the Swedish road network roughly corresponds to the population density, with a denser road network in southern Sweden. In northern Sweden the roads are sparser and concentrated to the coast. The rail network is similar in its configuration, but especially in northern Sweden, underdeveloped. The main trunk railroad of northern Sweden (norra stambanan) is located inland north of Umeå, and thereby making Skellefteå and Piteå the largest cities in Sweden without a functioning railway station. Norra stambanan is today operating at maximum capacity. This combined with large distances makes northern Sweden extremely reliant on road transport both for industry and people.
Parking is almost without exception subsidized. The costs are hidden in the price for everything else - within rents for housing, in municipal taxes and in the price of goods and services. Cars are on average parked 95% of its lifespan, this makes parking into the by far biggest subsidy within automobile transportation.

The strange thing is: All other parts of automobile transport are discussed and criticized but for parking the case is the opposite. It is argued that drivers cannot be expected to pay the whole cost because it would be impossible. The true cost of parking is regarded as too high.

A parking space is most often 12,5 square meters in Sweden (2,5x5 meter) but the required space is often much larger, except for curb parking. Off-street parking requires more than twice the size for every parking space and a private garage about four times the size (see next page). Multi-story car parks are a good alternative for a low use of surface area as they the surface per space can, with the right design, become relatively low. It also requires little land and is cheap compared to underground parking solutions.
<table>
<thead>
<tr>
<th>Type of parking</th>
<th>Building cost/space</th>
<th>Total cost/space and year</th>
<th>Total cost/space and month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off-street parking</td>
<td>15 000</td>
<td>8 000</td>
<td>700</td>
</tr>
<tr>
<td>Carpark</td>
<td>120 000</td>
<td>20 000 - 25 000</td>
<td>1 500 - 2 000</td>
</tr>
<tr>
<td>Garage story -1</td>
<td>250 000</td>
<td>30 000 - 35 000</td>
<td>2 500 - 3 000</td>
</tr>
<tr>
<td>Garage story -2</td>
<td>350 000</td>
<td>35 000 - 45 000</td>
<td>3 000 - 4 000</td>
</tr>
<tr>
<td>Garage story -3</td>
<td>450 000</td>
<td>45 000 - 55 000</td>
<td>4 000 - 4 500</td>
</tr>
</tbody>
</table>

37 m²/space
81 spaces on 3 stories
Ekorren, Skellefteå.
AIX Architects
Sweden’s first (?) multistory car park with a timber structure. The glue-laminated beams and pillars are provided by the local company Martinssons.

Below: A rough calculation of costs (2009) for different types of parking solutions from Malmö municipality’s parking policy. Total costs include an estimated land price, interests, depreciation and operating costs. Co-usage is not considered.
Curb 12.5 m²
All areas surrounding the curb parking is co-used (sidewalk, road, neighbouring parking spaces).
Though efficient with space, curb parking is limited to the amount of street available. Also require a wider the street (potentially narrower side-walk).

Off-Street 25 m²
The required space grows quickly when placed in off-street locations as surface parking. The singular-use road and surfaces necessary to reach the parking spaces increase the size.

Private Garage 50+ m²
The largest and most inefficient typology is the private garage, often connected to a single-family house. Each car have two parking spaces, the garage and the driveway.
Multi-story Car Park 20-40 m²

Car parks vary greatly in surface area per space. A quick comparison of three car parks with 81-525 spaces showed that the bigger car park had a lower surface area per space than the smaller ones.

31 m²/space
210 spaces on 3 stories
Vallentuna Centrum, Vallentuna.
Kjellander + Sjöberg Architects

20 m²/space
525 spaces on 7 (half) stories
Nanna, Umeå.
Unknown architect
A parking space is 2.5x5 meter, but how big is that? How much will it fit (except one car and space enough for getting in and out of it)? I explored the scale of the parking space by drawing on it with chalk. White on black.

Three parking spaces together make up 37.5 square meters, the same as a good sized apartment for one person or a couple living together.

The parking lot I was drawing on is located along the river on biking distance from the center, the airport and the university. It is used as parking during the opening hours of the mall it serves, between 10AM-19PM, a total of nine hours or 37.5% of the day.

A few days a year, this space becomes a Trunk Flee-Market, and its potential for being something else is made clear.

**Recipe: Space Exploration Crayons**

**Enough for one large crayon**

**Materials:**
Plaster (1-2 dl), water, empty kitchen paper roll, 2 disposable containers (e.g. plastic yoghurt cups), something to stir with, plastic foil, tape.

1. Prepare the cast. Cover one of the paper rolls ends with a few layers of plastic foil. Attach with tape. Place the cast in one of the plastic containers.
2. Put plaster in the other plastic container. Add water until the plaster is fully fed (add as little water as possible). Stir until the mixture is smooth.
3. Pour the plaster in the paper roll. Leave to dry.
4. When completely dry, remove paper roll and start exploring!
Bakluckeloppis
The same parking lot a couple of weeks later. The parking spaces are market stalls for selling toys, used clothes and nick-nacks out of their trunks. A sign of spring.
The building is becoming the tip of the iceberg. The current planning and realization of parking often demands the parking to be solved within the lot. Where land is scarce, this demand turns architecture into “carchitecture”, placing the car underneath, above or beside the “actual” program of the building. This both affects the physical layout and function of the building as well as the economy and program of the activities taking place in the building.

Walt Disney Hall in Los Angeles is the most famous example. The underground parking beneath the concert hall is as the rest of the building and the number of concerts given is function given by the cost of paying for the cost of the garage. The new bathhouse in Umeå or the cultural house in Luleå are two Swedish examples of carchitecture. These buildings are almost as much parking facility as they are public buildings.

The parking is almost always hidden to keep the huge amount parking from spoiling the impressive image of the building it serves, but even though parking is hidden still everything seem to revolve around the car.

Even the in buildings such as the “Mountain Dwellings” by BIG, where the car park is the most prominent feature of the building, the car park is covered by a scenic motif of a mountain landscape.

The spaces created by architecture make it possible to move from interior space to interior space. Carchitecture thus removes the need (or excuse) of being and moving in public.
Mountain Dwellings, Copenhagen. Bjarke Ingels Group. **480 parking spaces.**

The volume of the parking is used to create a terrace housing on top. The parking is hidden behind a perforated steel facade. The program is 2/3 parking and 1/3 living.

"**The car would visually be banished, and tarmac would be replaced by greenery, and car parks by jogging and bicycle trails. (...) you won’t look out of your window and see row after row of parked cars,**”

- Foster, about Apple’s new Campus

Apple Campus, Los Angeles. Foster + Partners. **4,600 spaces**

Walt Disney Concert Hall, Los Angeles. Gehry Partners. **2,500 spaces**

Umeå Badhus, Umeå. LINK. **213 spaces**

02 The Car and the City
Density, both in regard to built form and to population density, have become the answer to most problems in cities. Density is sustainable as it concentrates people on a smaller area and thus reduce distances, it creates street-life and it generates economic growth. But is it really this simple?

The theory that high density is the most sustainable urban form to reduce automobile travels goes back to a well known and largely accepted study (in 1989 and 1999) by the environmental scientists Peter Newman and Jeffrey Kenworthy\(^1\). In their study from 1989, they compared 32 cities in North America, Australia, Europe, and Asia and the result showed that dense cities had lower carbon dioxide emissions from the transport sector than spread-out cities. The study have since then become a trend-setter in the discourse but it has also been widely criticized. The relationship they point out is clearest when comparing cities on different continents with totally different histories and cultures, for example dense cities in Asia with sprawling cities in North America. It has also shown that the same results could be achieved by comparing gasoline prizes as much as the densities of the cities built form.

Petter Næss complicates the issue in a comparative study of research carried out in the Nordic countries on “the influence of various aspects of urban form and settlement patterns on travel behavior [in relation to] studies carried out in other European, American, Australian, and Asian countries.” \(^2\)

Næss thinks that more concerns, not only building density, must be taken to account when evaluating mobility patterns in urban conditions. He states that the effects caused by density are not the same in the Nordic countries that does not have the same metropolitan areas as those areas compared in other studies. His study shows that the effect on mobility patterns in provinces with one large city is double, within and in close proximity to the center the road sector energy consumption is lower but at the same time the consumption is greater in the peripheral areas as more people are willing to commute longer distances to large city. As he puts it:

\[ \text{The above-mentioned studies of traveling distances at the regional or provincial level clearly point at “distance decay” in the attractiveness of a large center. Beyond the range of} \]
influence of the largest centers, most people are likely to orient themselves to a greater extent to smaller, more local centers, even if the job opportunities and selection of service facilities are narrower than in the big city.3

Næss conclusion would mean that even tough the center is dense and have a strong local public transport system, still it would not necessarily lower the amount of traffic considerably as many people still are bound to the car. This means that centrally located projects (especially those with public importance) easily turns into islands surrounded by traffic as their publicness demands accessibility (which is equal to parking). Densification projects becomes almost impossible since there often is no available space for the increased parking “need” that follows.

Lars Marcus, professor, and Meta Berghauser Pont, associate professor at Chalmers University of Technology, take the density discussion one step further by claiming that proximity is a better measure than density4. They criticize the general simplification of the geographical measures of density (density as amount of built-form or population) present in the urban discourse and request a more nuanced view on density and more importantly, that the discourse of the urban must be widen. To understand the city we must understand that the availability to different places vary depending on the structure and layout of the urban space and question what structure generate street-life and accessibility. What makes people find certain places “attractive” to live in is not as connected to density as it is to nearness - to family, friends, work, school, services (commercial, knowledge, health, culture, recreation) and so on. If the location of services are concentrated to certain places some areas might become isolated if they also have poor connections to other places, no matter how dense they are (some millionprogram areas in Sweden are examples of this). These areas often become places for less resourceful groups, proximity becomes a subject closely connected to gentrification and marginalization.

“The crux here is to seriously look at density as a architectonic variable where we in city-making can structure and allocate not only buildings as such but their effect in the form of movements in the streets and squares, which in its

3. Ibid.
turn creates different forms of locations with big significance for where different activities or businesses locate themselves or are best situated. Different kinds of qualities are consequently created so that different forms of city-life can find their natural abiding-place.”

Lars Marcus and Meta Berghauser Pont

Lars Marcus and Meta Berghauser Pont points out that proximity can be bought by the affluent and it can be argued that it does not only comply with centrally located apartments. The car have the potential of creating proximity despite large geographical distances allowing people to “drive until they qualify”. The location of their residency to become what economists call a rational choice. They live where the size of their wallet allows them to and commute to work, friends and services.

The simplified view on density today lead to an almost obsessive focus on the necessity of a strong center for economic, population/other growth causing surrounding areas, both on city and regional level, to be forgotten. We should look at density in a wider perspective, more into the sense of complexities, not either or but both and; density, information, diversity, compacity and equality. A more equal distribution, or density, of services, green areas, housing etc would allow the city the develop in a more egalitarian way. We should stop trying to find a singular formula for creating a successful city and instead allow urbanity to express itself in different ways. Instead of focusing on numbers of volumes and densities we should interest ourself in what different places actually produce and what the conditions for that production is.
Parking typologies in Northern Sweden

Parking has been a major problem in most residential projects since the car became affordable for most people in the 50’s and 60’s. This problem has been dealt with in different ways depending on the current ideal of urban and residential planning and design.

In larger projects, common in the 60’s and 70’s in Sweden, parking was often collected in large parking lots according to the SCAF guidelines. The parking lots became a barrier between the buildings and the street with the consequence of an undefined urban space.

In smaller projects, more common today, the need for parking tends to be set against the need for shared open spaces in connection to the dwellings. What is the effect of this in relation to the right to the city and the possibility for people of inhabiting spaces outside the walls defining their dwelling?

Svartöstan


Svartösten is a housing area in Luleå mostly consisting of older detached wooden buildings. The area started to be built in 1894 as living quarters for the workers of the steel harbor, long before the entrance of the car. As cars have become more common, parking have been solved ad hoc, in the street and on the private yards. There is often no clear division of open space and parking.
Svartöstaden
Image: Luleå Kommun
Ålidhem

Ålidhem, Umeå, was built in the 60’s as an effect of the founding of Umeå University. The area is one of few areas in Sweden that completely follows the SCAFT-regulations. Ålidhem is characterized by a network of car-free streets and courtyards in the center and large parking spaces and roads in the periphery. The buildings are three to five stories tall.

The car was seen as the mobility of the future and one parking space was constructed for every corridor room, something that is considered alien today.

The large parking spaces and roads are barriers causing the area to become very inward facing, feeling like an enclave or “student-ghetto”.

Anderstorp

Anderstorp was built in the 70’s and another example of “dense-low”. Almost all building are two stories, row houses or apartment buildings, with green yards in between. The parking spaces are collected in long narrow strips in the fringes and the middle of the residential areas. The area surrounds a big park with open spaces and sports facilities.

Anderstorp have been criticized for its monotony, both in design and program. The first part of the project had poor contact between the dwellings and the outside spaces, something that was improved in the later stages.
Mariehem

The architecture of the later stages of the millionprogram was more and more adapted to meet demands of quick, large scale production. This often resulted in large towers.

Mariehem, Umeå, is from this period and consists of a mix of residential towers and lower three story buildings. The houses are arranged around shared yards but the scale of the building and the open spaces make them windy and difficult to use. The parking lots are as big as the housing area and creates a wide barrier towards Mariehemsvägen.

Tomtebo

More “city-like” qualities became the ideal as a reaction the production focused million program era. Tomtebo in Umeå was built in the 90’s with three to five story buildings placed towards the street. The area is characterized by monumental motifs: block structure, wide streets lined with trees, symmetries, diagonals and portals.

The parking, that must be solved within the property, is placed in the courtyard creating an odd constellation. The monumental streets are empty, as all cars and entrances to the buildings are hidden within the blocks.
Öbacka strand

The current residential construction is characterized by building dense and “economically” in combination with a large focus on the individual. Projects are not seen as collective entities but rather a group of individual living units with everything they need within the apartment. The (water) view and big glazed balconies have thus gained an increased focus while shared spaces have been reduced.

Öbacka Strand in Umeå is a good example of this. Residential towers are placed so that each apartment will get maximum river view and minimum views of the neighbors. The parking is placed between the towers in a two story car park. The little place left, shaded by the surrounded buildings, is the neglected shared space.
Obacka Strand during construction.

Parking is Local Politics

The four parts that make up automobile transportation: fuel, cars, roads and parking, all have the potential of affecting the way we use cars, they can increase or decrease our use. The different elements present different interests, some of which are global and complex by nature.

What sets parking apart is that it is a relatively simple and straightforward element in relation to the other elements. Parking is not as slow, costly and strongly regulated as roads are, and it is not a highly political and conflict-charged topic like fossil fuels and cars. Parking is on the contrary, local and site-specific in its nature.

The Swedish planning and building law states this regarding parking:

"In a detail plan the municipality may decide:
the demands in regard of arranged space for parking, loading and unloading with respect to 8 chapter, 9 §, first section 4,
the location and design of parking spaces, and
that some land or some building cannot be used for parking."

And

"An unbuilt lot that are to be built upon should be arranged in a way that is appropriate according to the city- and landscape and to nature and culture values on the site. The lot should be arrange so that...
4. there, on or in proximity to the lot in reasonable extent exist suitable spaces for parking, loading and unloading of vehicles, … If there are not enough space for both open spaces and parking according to the first section 4, open spaces should be prioritized."

Parking is where local concerns and decision-making have the greatest impact and large effects relatively quickly on urban space and mobility. Parking is local politics.

As a municipal concern is it easier for citizens to be close and part of the decision making process (in relation to national or even international (for example EU decision making). As a spatial (and political)
element in the urban landscape, parking is also a subject very much related to the practice of architects.

When someone wants to construct a residential building in Sweden she needs to follow regulations and requirements set up by the state and the municipality.

- The building is heavily regulated by the state through the Planning and Building Law to ensure a certain standard, level of safety and accessibility. It regulates room sizes, construction and uses.
- The plot is regulated mainly by the municipality through a detail plan that describes where the building can be placed, its volume and which areas should not be built on and in some cases also where the parkings should be placed. The lot and the building is the responsibility of the individual developer and it is owned privately.

The infrastructure, roads, pipes and so on, is often a municipal concern and it is own collectively. The infrastructure is planned and constructed before the building and is often part of a bigger long-term vision of a whole area.

Parking does not belong to this category. It is seen as property. Unfortunately, parking is today handled as a matter that is solved when the need emerges by each individual developer within her own lot. This view is changing, especially in large to medium sized cities where the land is becoming scarce in the centre, still many municipalities use it as their preferred method.

**The land has become too valuable**

The consequences of parking in city centres have become apparent for municipalities in Sweden. Many municipalities have or are currently reviewing their parking regulations and policies. A more sustainable future is often emphasized as the reason for the new policy as it would make people opt for other modes of mobility like walking, biking and public transport. Though all of this is true, the reason to redo the parking policy could also be explained by the increased demand on the non-built land in the most central areas. The land has become too valuable to use as off-street parking and the municipalities must engage more with parking issues in order for it not to become a problem in the
future. As civil servant and architect Enar Nordvik in Skellefteå, a mid-sized town in northern Sweden, explains it:

“If you look on an aerial photo of this town with buildings you can see that there are plenty more car parking than buildings, even in the areas that are the densest. Until recently land in central locations have had the highest and easiest obtainable yield as parking.

But now, the land have somehow become too valuable for parking and we have more people coming in that want to discuss future development (…) This means parking will disappear and we have to know how and where we can create new parking in its place.”


At the same time, parking is an extremely sensitive subject, especially in areas with high car use. The merchants in the centres see parking as a necessity for their survival in the competition against the expanding external shopping areas with a seemingly endless supply of free parking. A common way for the municipalities to go around this problem is by starting to separate between beneficial parking and less beneficial parking. Usually it is divided in three main categories: residential parking, visitors parking and work place parking. Visitors parking refers to that for visitors to commercial spaces, services, residential buildings, and culture, leisure and so on.

Work place parking is seen as the least beneficial category as its exchange rate and co-usage rate is low in comparison with visitors parking. Cutting workplace parking would also not have a negative impact on commerce. Some cities experiment with more innovative strategies to cut the amount of workers commuting by car, for example through green parking norms, park and ride concepts, discounts on public transport and so on.

Residential parking is usually seen as difficult to cut as people must store their car somewhere and a insecure availability to a parking space could mean that more people would drive to work just to have someplace to store it during the day. Some municipalities are applying different parking norms for different sized apartments or are starting to promote compensation fees, where the developer pays the municipality to solve their parking for them, to lower the parking supply.
As a consequence of the current parking requirements, parking is almost always subsidized. Meaning that the majority of the cost of parking is not payed by people in their role as motorists but in their role as consumers, residents, workers and so on. This encourages people into car ownership and leads to an inefficient use of the existing parking spaces. Municipalities and developers are aware of this subsidy but the cost is considered too high and so drivers are not expected to be able to pay more than a small part, something that would be unacceptable in any other transportation system.

Donald Shoup claims that in order for visitors parking to work well they must be adequately priced\textsuperscript{10}. The right price is when there is an easy to find a parking space close to the destination at the same time as the occupancy rate is high and constant (the right price is not equal to market price). He argues that the right price is reached when parking lots have a constant occupancy rate of 80%, that is, in a parking lot or on a street with ten spaces eight should always be full and two should always be vacant. This removes cruising cars searching for parking and at the same time prevents the price from getting so high that people are reluctant to park there. He also argues that the money collected through parking fees should be reinvested in the area, for the upkeep of the side-walk, public green and lighting. To reach 80% occupancy different parking spaces must be priced differently and the costs must also vary if the demand changes during the day or over the year.

Parking in the Planning Process

The overall strategy for parking is for the individual to fulfill the parking requirements decided by the municipality within their own property. Recently this have started to create more problem causing a need to review and question the parking norm in relation to other interests.

All parts of the property is regulated by the state and/or the municipality. It is the responsibility of the individual developer to follow these rules and the municipality to control and approve that the developer follows the regulations. Parking stands out in the way that it is the only part entirely decided by the municipality (all other parts are regulated by the Building and Planning Law (PBL)).

A property is not only the built form and the piece of land it rests on but also the infrastructure it is connected to. The infrastructure is own collectively through the municipality. Parking could be seen as infrastructure as it is part of the automobile transportation system but it is cut off and instead made into an individual responsibility, part of the property.

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Parking regulations in Sweden

A study of Swedish municipalities’ parking regulations for residential buildings shows that a building in the central parts of a city in Sweden consist of 19% parking facility (median value). Going thorough the regulations, I was struck by the seemingly random amount of parking requirements as they seem to have no bigger connection to the location or the size of the municipality. Eskilstuna have the lowest requirements (12% of the building is parking facilities) and it is a city of about 65,000 inhabitants, roughly 15,000 less than Umeå.
**Legend**

**APARTMENT BUILDING**
Located in the center  
**2,200 m²** total floor area  
**24 apartments**  
  6 x 1-room apartment  
  6 x 2-room apartment  
  6 x 3-room apartment  
  6 x 4-room apartment

**MULTI-STORY PARKING**
Calculated based on each city’s parking requirement.  
1 parking space = 30 sqm

Different municipalities parking requirement differ greatly. Some use the total floor area to calculate the need for parking spaces, some use the amount of apartments, often with different requirements for different sized apartments. And some have even more factors such as lower demands if there are good public transport and so on. There are also different requirement for different city districts, lowest in the center and higher towards the periphery.

A fictional building was the best method I could come up with for making a good comparison though some parts like green parking norms (Malmö for example) was difficult to apply even to this method. The numbers are based on the requirements but not absolute.
03 Skellefteå
Skellefteå is the largest coastal municipality in Sweden. It is also the second wealthiest municipality in total assets, due to the municipally owned power company Skellefteå Kraft. The population boomed during the 50s, 60s and 70s but have since then stagnated. During the recent years the population have again started to grow. Out of the 72 000 inhabitants, roughly 33 000 live in the city of Skellefteå.

The size of the municipality and its many villages and small towns combined with an undeveloped public transport system has made the car a necessity for many. Skellefteå is also the largest city in Sweden without rail traffic.¹

In an interview with two civil servants of Skellefteå kommun, architect Enar Nordvik and planner and engineer Richard Widman, it became clear that parking is an important and complex issue. The planning office is currently working on a new comprehensive plan which the parking strategy is part of. The parking policy had to be separated from the comprehensive plan because it became too big, which they argue shows the importance and level of complexity of the issue. Parking is a crucial element in both planning and individual projects but few architects are engaged in the subject, despite the complications parking often has for city-making and architecture. They also suggest that there is a change both regarding the view on land use in the centre and the opinions of the politicians and that these changes open up for a new set of parking regulations.

The interview took place in the planning office of Skellefteå Kommun, April 2. Björn Ylinenpää, master student in architecture, where also present.
Ida Wänstedt (I): My thesis work is about parking spaces and their effect on urban landscapes. Parking is interesting as it is a completely municipal responsibility in relation to many other parts of building that is state regulated through the Plan and Building Law (Plan och bygglagen, PBL). I am interested in how the parking policy in Skellefteå is working and what it generates.

Enar Nordvik (E): It is interesting that someone wants to look at this topic as it is very few people that have any understanding of the great consequences of parking politics/policies.

Richard Widman (R): It is certainly a timely issue as most municipalities are working with parking and parking regulations at the moment.

I: I think it is a central question in the city making discourse. Many municipalities are focusing on sustainable development though densification and it feels like parking is overshadowed even though it is key in people’s choice of mobility and how dense you can build. I also think it is connected to the housing politics and costs of housing. My first question is how the parking policy of Skellefteå is configured today and why it is being replaced. How has it worked until now and what have been the effects of it?
E: Working is a strong word (laugh).

R: We have a very aged parking regulation from early 1980’s that has been unable to stay up to date. It is too stiff and if we were to follow it strictly it would mean that we have a large deficit on parking spaces in the city center. It also strikes especially hard against some businesses.

E: And it is mostly for businesses the regulation can be changed right?

R: Yes, that is where we have most problems. It would be impossible to transform a shop to a café if we would follow the current regulations because you wouldn’t be able to fulfill the parking norm. I wouldn’t say that it has impeded the development here in the center but if we would have followed it strictly, then it would have.

E: Yes, absolutely.

R: So the building and environmental board [in Skellefteå municipality] have for a long time been blind on one eye when someone wants to do something. They have instead been looking at the specific cases - what is just their need for parking? An inventory of the parking spaces was made in 2005 and I think according to the assessment a bit over half of the blocks in the center had a shortage if we were to follow the parking regulation. But, even though we are not following the regulation we have no shortage. Everyone that needs a parking space, no matter if you are a resident, worker or visitor here in the city, you will find a space for your car. And that is a sign that the current regulations are not really working.

R: Another thing is parking for workers. We have a lot of off-street parking lots for workplaces in the more central areas. The municipality might be the biggest sinner, we have an amazing amount of parking spaces for our employees and we are quite affluent when it comes to visitor och public parking too. There are multistory car parks, there are big off-street parking lots, and there is curb parking. According to studies that have been made these last years the occupancy rate is not that high, not even during visitor intensive days. You do not need to look for long to find a
It would be impossible to transform a shop to a café (...) because you wouldn’t be able to fulfill the parking norm. I wouldn’t say that it has impeded the development here in the center but if we would have followed it strictly, then it would have.

space so there are many things we can do to make the existing parking spaces work more efficiently.

I: What are the old parking regulations based upon?

R: We don’t know in detail since they are so old. It follows other regulations of the same period [1980’s]. As I see it, the only regulation still up-to-date is the one for residential parking. 8 spaces per 1000 square meter of BTA [total floor area] is close to one parking space for each apartment and it is hard for us to get below that. It is possible that we in the future in very central locations could go even lower if the property owner also agrees on doing certain things. But the big change would be for workplace parking, commercial, cafés and restaurants. We are currently working on a document for the politicians concerning a total review of parking. We will of course go over the regulations, compile new regulations and also some kind of strategy or policy for parking.

We will also review the municipal workplace parking. It is amazingly cheap at the moment and presumably we will increase the fee to lower the demand. We might also move some of the workplace parking to less central locations. Finally, we will revise the fees for the public parking lots. The parking pass we have today needs an alternative as it is not working very well today. It costs 600 SEK and is valid for one year, with it you can park for free in two hours every time you visit the center. Many people that work here in the center buy these passes and use them for workplace parking. It has happened systematically on some workplaces that people go out during breaks to rewind the parking disc.

E: I have also heard about some nice and creative solutions where some have assembled a cheap clockwork from Clas Ohlson on the back of their parking disc. (laugh)

R: Urban Pettersson, the head of the board of Swedish Trade Federation [Svensk Handel] in Skellefteå, that also happens to be the business manager of Clas Ohlson, have observed this problem for the CK-parking which some mornings can be half full already at 8AM, long before the shops have opened.
E: This is where we need to make much larger difference, I’m not going to say between good and bad parking, but I will say between parking that move the city forward in a way and parking that is merely storage. I mean, those that come in [by car] they contribute to commerce when they buy stuff, even if you think that some should bike instead off course. But those that only park in the morning give nothing back.

R: Exactly. The documents we are handing the politicians regarding the parking regulations, they will contain a sketch for how to finance some larger multi-story car parks that we want to build to enable central residential developments. The thing is that we do not know exactly how to finance the car parks, those things cost money…

E: But of course, the future surrounding developments will not cover the costs for the car parks but we can at least try to get as much partial funding as possible.

R: Yes, and we will examine mandatorship: who will own the facilities and who will run it? Today we have a ransom fee for property owners that are unable to build sufficient parking within their property. They have then the choice to pay, today it is about 100 000 SEK for each parking space, to pass over the responsibility to the municipality. That money was planned to be used for parking facilities but today we actually do not have any money left.

E: And i guess the fee is only sufficient for roughly one surface parking space?

R: Yes, 100 000 SEK is maybe half of the cost for one parking space in a multi-story car park but we are not sure, this is what we will look at. The idea is that with new regulations we might find a model where the private property owner can buy into these parking structures. We want to gather as much parking as possible in structures so that we can remove curb parking but also surface parking on land that we want to use for future development. The problem is that we have used the ransom fee [friköp] as the last resort. There are municipalities that have this as their first choice as they get more control with all parking in shared parking garages.

E: The set-up until now has been that when someone wants to do something we make a new detail plan, and then our preference has been for the property owner to work out the parking within their own property. That is a really bad idea where space is limited.

I: Do you think there is a relation between a buildings typology, size and amount of apartments and the parking regulations and requirements in some way? If you build a tower then there will be more space left for cheaper surface
parking compared to making a more traditional and lower atrium type of building.

R: It is usually only with entirely new developments that property owners have the possibility to make it work financially. It is much harder adding new development on properties that already contains buildings. There, all ground surface is usually already committed [to usages such as parking] and if you want to add some stories, a new building or whatever, that is usually where problem emerges and that is when we would like to have the alternative to solve the required parking in a bigger parking structure.

I: When you work out parking regulations in what regard do you consider the costs? For example, when it is decided that there has to be one parking space for each apartment that must have an impact on the final cost for the future resident?

R: We are thinking of making the new regulations more flexible as properties have different conditions and needs. But sure, parking is incriminating residential buildings but the problem is more general, that the user of the parking space is never really paying its cost. It is a cost we all have to pay.

E: That is a bit counterproductive. A flamboyantly modern person that even manages to live in Skellefteå without owning a car is punished. He has to finance other peoples car ownership.

It is usually only with entirely new developments that property owners have the possibility to make it work financially.

R: And you [as tenants] have to collectively finance the parking spaces the property owner have, as a hidden cost.

E: Are there openings for discussions concerning car pools and other ways to lower the requirements except ransom fees/compensation fees?

R: We will look at all alternatives. Umeå have tried something, “green parking requirements”, but there are question marks concerning tax and so on. One option for the property owner is to arrange a car pool or give reductions on public transport and through that you are suppose to lower the parking demand. There are very little experience of how that works, but the thought of making the developer responsible for finding solutions for lowering the demand is exciting. My guess is that green parking requirements are easier in larger cities. We [Skellefteå] don’t have a very good public transportation and has traditionally always had a high rate of car ownership.
E: Looking to parking we [Skellefteå] are in many ways the largest village in Sweden. You want to ride your horse all the way to the saloon, the best thing possible would be if Clas Ohlson had a drive-in. (laugh)

Few people have ever seen a Skellefener walk longer than a block, right? It is a cultural thing of course.

R: As you know, we are working with a new comprehensive plan for the central districts and (laugh) the head of the planning department, Lars Hedkvist, wanted us to take out the parking matter out from the comprehensive plan as he feared it otherwise would dominate the plan.

E: That’s a sign that you are working with a very current topic. The parking policy will be as big as the whole comprehensive plan.

R: Parking is an extremely sensitive topic. Merchants are a conservative group and are very particular about their car-driving customers. As soon as you mention car-obstructing changes they start protesting immediately.

E: And that is why it will be easier for us if we start differentiating between car and car and parking and parking.

R: But I think the merchants have started to let go the demand of free parking in the whole city center. They have realized that free parking doesn’t benefit customers as most spaces will be occupied by workers or other long-term parking.

The important thing we are working with now is highlighting that parking is an integrated part of planning. Regarding the traders, more important than parking [for them] is for them to start working together toward the same direction, including creating a good and attractive streetscape. It should feel good and attractive to be here [in the center]. The experience is the important thing here.

E: Yes. Maybe you have something you have to look up and purchase but at the same time you are in the city, this is were you meet people.

If you look on an aerial photo of this town with buildings you can see that there are plenty more car parking than buildings, even in the areas that are the densest. Until recently land in central locations have had the highest and easiest obtainable yield as parking.

But now, the land have somehow become too valuable for parking and we have more people coming in that want to discuss future development or others that don’t have the fundings to grow by themselves sell to others to develop. This means parking will disappear and we have to know how and where we can create new parking in its place.

Björn Ylinenpää (B): If you had flexible parking policy, wouldn’t it create opportunities for small baugemeinschaft/baugruppen or infill projects? For example, if 5-6
Surface parking in central Skellefteå.
seniors want to build a house together on a small lot in the center with money they got from selling their single family houses. In this case parking could become a big problem for them.

E: But how could we help them? I agree there are sites well suited for small infill building.

R: The large multi-story car parks could contain some residential parking if we are able to build them.

E: But you still have to buy them some way.

R: Yes, and they will rent a space there.

E: And that’s a really nice scenario. It would be really good if people would have their bike in the living room and the car two blocks away.

I: But if you would build shared parking facilities would you then have to pay a compensation fee or would you rent them out for a monthly fee?

R: The compensation cost is only a contribution to the investment, you still have to pay a monthly fee that covers maintenance and so on.

E: But the fee is payed by the tenants not the property owner. And the compensation cost is a blow. These five seniors, merry ladies and gentlemen, wants to build a house and then we tell them: yes, great fun but you have to pay one million

Central Skellefteå consist of two to four-story buildings and a lot of surface parking.
extra to pay for the parking.

R: Yes, yes… But the problem with this compensation fee is that we will never be able to demand enough money to cover the whole investment cost. It will be a subsidy from the municipality.

E: But that doesn’t feel like a problem, in a way, it will be a healthy subsidy.

E: The parking regulations might need to become more flexible. Student apartments don’t have the same parking demand for example. The existing requirement for eight car spaces for each 1000 m² total floor area, no matter if you build small or large apartments might need to loosen up a bit…

R: And therefore we want more freedom or flexibility with the new requirement to be able to make considerations.

E: Going back to work place versus visitors parking, are there any tendencies to go the other way and follow the arguments of the merchants by making it easier for visitors parking?

R: Yes, that is the goal in a way. To free visitors parking by moving away workplace parking. You will have to walk a while to between your parking space and work this will cause people that live relatively central to think before driving to work. At the moment we have a big supply of parking and the availability in combination with the low cost means that there is no resistance for people to drive. I have a parking space here in the center even though I live in Sörböle [south side of the Skellefteå river]. You don’t reflect about the costs and it is really convenient to have, you can drive whenever you feel like it. There is no resistance for having a workplace parking space.

I: It must be the same way for residential parking. Many people might own a car because they don’t realize its true costs. You might mostly use the car to drive to work and the external shopping area to buy food while it would be much cheaper to walk to the nearby Konsum.

E: It might be like that. We are amazingly good at hiding the costs of the car. Many think their car costs are equal to the gasoline they fill the fuel tank with but that is not even close to the full cost. Working place parking is a very inefficient use of parking. A car is standing there between
8AM and 5PM, totally still. And the rest of the time the parking space is empty. There we would like to find more possibilities for co-usage.

R: It is also important to understand that all of these changes can only happened over a longer period of time. There has to be a change in people’s attitudes.

E: At the same time as we look at parking we also need to look over the public transportation system.

R: Everything is connected. Regarding politics, only a few years ago it was impossible to discuss any change regarding workplace parking. It then felt like all politicians of importance were car-drivers. Now it feels like there has been a generation shift among the politicians, I can feel a new attitude toward parking…

E: I think it is easy to focus too much on parking fees while the ease and availability is a bigger factor. Sure, I can pay 5 SEK more for a parking space but it would be so much better if these 5 SEK just disappeared from my bank account instead of having to hustle and bustle and sending SMS here and there…

R: Still the most central locations, even though they are the most expensive, are the ones with the highest occupancy.

E: Ease beats price in a way.
The construction of a underground parking garage for a future residential project in central Skellefteå.
Skellefteå’s main square today.
Skellefteå City, The centre and Anderstorp is marked out. Image: Skellefteå Kommun
04 Alternatives
Garage areas in Skellefteå

When the workers in Boliden and Skelleftehamn started buying cars in the 1950’s they needed garages. The Boliden company, which operated the mine in Boliden and the smelter Rönnskär in Skelleftehamn, set away some of its land for the workers and miners to build garages of their own. Since then the garages have been inherited and are still used as storage for vehicles and other things. The garage areas are run as associations where everyone has a common responsibility for the upkeep of the area as well as their own garage.¹

Both areas are situated slightly outside both towns, showing that car still had not become the norm when they were built. Maybe because the car was not used for day to day travel in the same way, and instead was used for Sunday outings and longer trips.

These areas are interesting since they are clearly constructed from some kind of common idea of what a garage is even though they are all unique. It is a kind of garage vernacular, an architecture that has been developed and adapted for each vehicle it was supposed to store, but formed by the material that was available: Wooden paneling, corrugated steel, surplus cinderblocks, left overs from the industry and even old rail road cars. The areas have a peculiar character and are considered to be an important cultural heritage both by the architects and planners at the municipality as well as the antiquarians at the Skellefteå museum.²

The way the areas are organized and managed, as an association, is also important. This suggests that parking, today often seen as a private concern, can be organized as a common concern.

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Lincoln 1111, Miami

Lincoln 1111 is a boutique car park along two of Miami’s more upscale boulevards. The building contains, except parking, shops and restaurant spaces and a penthouse apartment for the owner. The architects Herzog de Meuron declares that they with the design wanted to “reinterpret the essence of Tropical Modernism”. The building is a take on Maison Dom-Ino, a concrete structure without walls, sculptural pillars and a big open stair case in the middle. Parking is turned into an experience of an act of exhibition.

It has been used as well as an venue for weddings, concerts and art exhibitions (for a fee of $12,000-$15,000 per night). Owner and developer Richard Wennett even go as far as saying: “This is not a parking garage, It’s really a civic space.”

There is no radical or emancipatory ideal behind Lincoln 1111. The decision to build it was based in the developer calculating that building a car park would have the highest economic yield as the zoning requirements and current lack of parking showed that parking would be the most profitable program. It is also oriented towards an audience that can afford to pay the fees to use it. What still makes this building interesting is how its design (despite being more based in an idea of luxury rather than anything else) with it’s tall ceilings and general feeling of “unfinishedness”, and location encourages people to imagine alternative uses for it. It is not hard to imagine that the structure could harbor something different, and maybe more interesting.

Hageneiland, Ypenburg

Hageneiland, or “Hedge Island”, is a part of “the water district”, a large master plan by MVRDV in Den Haag, Netherlands. The name relates to the tall hedges within the area that are meant to hide the residents gardens from the eyes of outsiders. The area has no parking spaces within, all cars are parked on curb parking around the area, making the internal spaces only accessible by foot. This creates a network of small intimate courtyards where each row house unit have their own private little yard. This gives it the appearance of a village, or maybe of suburbia on a budget.

Not allowing cars within the area is an effective way for reaching a higher density of buildings and more interesting urban spaces. But the parking also marks a clear inside and outside, showing who belongs there or not. The parking and the very particular and unifying design gives the area the character of a closed enclave.
05 Parking as Place-Maker
The word “parking” have the same roots as “park” in the sense of a green, public area for recreational purposes. The word dates back to the 12th century meaning a “large enclosed area of land or woodland where one keeps and raises animals for the hunt”. “Park” has only been used in the contemporary sense since the 17th century when it became “fashionable to promenade” in public parks such as St James or Hyde Park in London. The original acceptation which referred to a private enclosure has been progressively replaced and the word now refers to an area that is open and public.

“The car city”, suburbia, with its strong focus on the right to individual property often lacks shared places where a collective identity can be created. Places where we “(...) confront others unlike ourselves. Only then do tolerance, collective identity, shared values, and social norms evolve” In suburbia, the middle-city, infrastructure (like parking but also the roads and streets, sewage, water, fiber and garbage handling) becomes “the one thing that transcends the local”, to quote Dana Cuff.2

The use of park in the sense of storing vehicles, a car park, originates from enclosed military spaces where ammunition and vehicles where stored. Could the car park go through the same change as the green park, transcend from the private to the collective? In order for it to do so, parking needs to be rethought and seen not as the property of an individual but shared as collective infrastructure, and not as just parking but, in the same way as streets, places where the urban vernacular can occur.


“Only the stupid ones stay”
What does it mean to stay when the everything says you should leave? The screening of the evening was the documentary Apt. + Car + All I Have and Own by film-maker Clara Bodén. The movie question the urban as a norm.
Intervention Exploring performativity

The sun is setting on a parking lot in central Umeå. It is a windy and quite chilly. We push the platform into position and collect a parking ticket for the next couple of hours in the ticket machine.

What is the inherent performativity of a parking space?

A parking space is a flat surface, it is available for rent per hour through a ticket machine. Some places include electricity though the engine heater pole. Together with Nina Bäckström, fellow student, I made an experiment exploring how these materials could be used for something other than parking - a friendly occupation.

Around twenty people defied the cold and saw the movie. The parking lot is a popular short-cut for pedestrians and many people walked by, briefly taking part of the event.
The Site
Materials at the site:
- 25 m2 surface (two parking spaces)
- Electric outlet
- Parking ticket

A Mobile Cinema
The movie set consisted of:
- One wooden platform 2.5x5 meters
- One plywood shelf
- One bed sheet with reinforced corners.
- One aluminum working platform
- Various adjustable straps
- One projector
- One speaker unit
- One microwave-oven
- One computer with movie
- Various cables
- Assortment of rag rugs and pillows
- Three yellow benches
- Popcorn
- Thermos with tea and coffee
Sorry, what did you say? I’m taking a short-cut over this parking lot and there’s are showing a movie here and...
In order to rethink parking, the whole idea of the property must be reconsidered. Today a property consists of the building or the right to build, the plot, and the collective infrastructures that transcends the individual plots - for example water and sewage, roads, garbage disposal and so on. Parking is today considered as individual property and is thus connected to the plot. It is designed and developed the moment it is needed, usually during the construction of a building.

If parking instead was considered infrastructure, a belonging of the collective, it would be planned, designed and developed in a completely different way. Infrastructure is connected to the comprehensive plan, to the long term vision of an area. Infrastructure is strategic by nature. As parking have a big impact on automobile mobility patterns and also have the potential of generating intensities it definitely qualifies into this category.

Today it is the responsibility of the property owner to supply the “necessary” amount of parking to the users of her property according to the municipal regulations. I believe this is one of the biggest reasons why parking ends up being so heavily subsidized. The actual need of the users is taken out from the equation and the parking is forced upon them regardless if they want them or not. It would be better if the parking would be disconnected from the property entirely, working instead as an independent unit, a property of its own. This way, everyone would have the same access and pay the same amount for parking regardless of their form of housing (owned, rental or something in between) work situation or other. The parking could be owned municipally in some places and collectively in most places in the form of a cooperative. This way unwanted parking spaces would not be constructed. It would also make it easier and more attractive to share a car and parking space with others, carpooling, as it would considerably lower the cost for the parking.

The cooperative would be structured so that car owners pay a deposit fee for a “parking right”. This fee is a cost that would cover the construction cost of the parking space. The car owner would also pay a monthly fee to cover costs for electricity, maintenance and other running costs. If the car owner no longer needs the space she returns the parking right to the cooperative and get the deposit back, the cooperative can later sell the right to someone else to the same, fixed price.

In order to prevent an empty car park with many vacant spaces, but
also a car park with a long waiting list (leading to a potential chaos on the streets?) the car park should be able to grow together with the demand. It is designed after the concept of the archetype of all multi-story car parks - Le Corbusier’s Masion Dom-ino. The flexible structure and unfinished character encourages people to “fill in its gaps” and imagine possible alternatives. Temporary or permanent slabs and walls could be added or removed when necessary. The building would work as a vertical street scape, a place inhabited by the collective, where ideas and experiences could be exchanged. The car park could also allow existing garages to become something else - residences, small offices, hairdressers, bike storage and so on. Suburban areas could be densified by the addition of one single structure.
Building Rights

First comes the infrastructure: water, sewage and electricity is dug down, streets are laid out, street lightning is placed out, as usual. The car park is also built, two volumes connected by ramps sharing a stairwell and elevator with a third building containing housing, offices and commercial spaces. The ground floor also contains a large double height space that can be used for building, fiddling with cars and bikes, holding birthday parties, dinners and events, flea-markets, playing, watching, learning, teaching and so on. Activities that can spread out on to an outside square or into the car park. The car park becomes the place-maker, the communal center in the area before any houses are built.

In between the roads, on the old parking lot, the asphalt is removed allowing the green to grow. The lots becomes a system of parks, spaces that can be occupied by the everyday life of the people that inhabit their surroundings; high schooler’s out on a break drinking coke and talking about the local music scene, a women playing catch with her dog during her lunch break, a local resident harvesting vegetables he has grown on a small piece of temporarily occupied land. The area becomes a place before any buildings are there.

The parks, or lots, are common lots. They are to be developed but they cannot be bought by one individual. The municipality sell them as “building rights“ and the lot belongs to all houses erected on the site, like a lot association. Individuals, groups of individuals, small and large developers, institutions and businesses are all welcome to build. The building rights are sold by square meter to encourage an efficient use of the land and prevent sprawling. To create a dense scale, the building height is restrained to three stories in most places and four to five in some places where the micro-climate would benefit from a higher volume, for example to reduce winds and noise.
Walkable Anderstorp

Anderstorp is the largest residential area in Skellefteå, home for about 4500 inhabitants. Originally farmland, the area was built in the 70’s as the result of a competition in 1969 where the winning entry was called Gångbart, “Walkable”. The area has not changed considerably since it was built.³

Anderstorp contains a large high school, an elementary school, a few fast food diners and kiosks and an area with big-box stores. The area is surrounded by large roads, the E4 on the west side and the Skråmträsk road on the north side, both heavily trafficked.

The residential buildings are mostly two-storey row houses and apartment buildings except for one large apartment building and a few detached houses. The big apartment house and the high school are connected to a large parking lot mostly used as municipal workplace parking and some residential parking.
Some municipalities’ parking policies have defined maximum distances between parking and work places, residency and the place for a visit. I have combined them into a “planning tool” that makes it easy to find sites where a bigger parking facility would be beneficial for all mentioned actors.

The area around Anderstorp contains a lot of services, schools, workplaces and Skellefteå University Campus. Locating a Car park in the south-west corner of Anderstorp would mean that alot of surface parking could be removed and the land could be used for something else.
Porosity and greens
By removing the hard surfaces of the parking lot the ground becomes porous again, letting through stormwater and allowing greens to grow. This makes the area more attractive to insects and wildlife.

Proximity and shortcuts
A street grid is added. The grid is homogenous in its structure, the opposite of the corridor-like passages of the existing area. The orthogonal streets encourages people to take shortcuts and make encounters in the yards and bike though the area.

No-parking zone
*Cars are allowed* in the area but *only for passing thorough or for loading/unloading goods or people.*
Parking, for visitors or residents are only allowed in the car park.
Place-makers

Parking is intensity
The car park marks the entrance to the area. It transform vehicles moving on the roads into people moving in the streets. The parking becomes the node in the area, a given center where businesses can establish. The car park contains a community hall for meetings and projects.

Commons + appropriation
The network of green parks are commons until they are built upon, open for temporal appropriation by people and wildlife. The soil is ex-farmland and good for growing food and plants. The parks could also work as outdoor classrooms for the highschool nearby.

Protective volumes
Larger buildings are placed towards the west and north-west to shield the area from traffic noise and cold winds. To the west is a 3-5 story residential building and in the north-west corner is the car park, marking the entrance of the area.
Building Rights

Building rights
There are no lots for sell, instead developers pitch their idea and buy “building rights” equal to the foot print of the future structure. Developers pay per square meter used land. This encourages a smarter use of land, avoids sprawl while green spaces are kept.

Common lots
The buildings are placed on common lots, available for all to use, both the residents and “outsiders” of the lot. The residents are allowed to build co-joint (permanent or ephemeral) structures to inhabit the lots. For example saunas, seatings, grow-beds, playgrounds etc.

Participation & negotiation
Everyone can be part in deciding how the lots should be used. What is needed in the area? The municipality encourages developers that meet those needs. Developers within each lot have to negotiate with each other about where to build and what could be shared (storage, laundry, waste recycling).
Parking Rights

“Parking right”
Instead of being part of each property, parking will be connected to the individual users directly. Parking is only allowed to be constructed on assigned places according to the comprehensive and detail plans.

Cooperative organization
Instead of parking being the responsibility of the developer it will be owned and run by its user as a cooperative. Car-owners buy one parking right/car (= construction cost), a fee they get back when they return the parking right. They also pay a monthly fee for the running costs.

Growing Masion Dom-Ino
The car park is never bigger or smaller than it needs to be. When more spaces are asked for more floors can be added. If there is a low demand for parking the building can easily be retrofitted and used for something else.
Parking Cooperative

- Parking decks
- Entrance Cars
- Workshop
  - Multi-purpose communal space
- Stairwell
  - Shared with neighboring building.
The parking cooperative is more than just a garage, it functions like a community center. The workshop can be used by the residents to prefabricate element for their houses or building pavillions for their gardens. This space can also be used for other activites and by people outside the housing area, for example for parties, workshops, meetings or as an extra classrooms or showrooms for the high school (that has building and art programs).

**Encourages Car-Sharing**
A parking space is expensive, Malmö municipality estimate that one space in a car park costs 120,000 SEK (€13,000). Making the price visible makes it easier for people to reconsider the cost of owning a car (this cost would be payed anyway as increased rent or cost of a dwelling). *It encourages car-sharing as the cost is quickly reduced when it is divided* by two or more people.

**Multi-use**
The parking decks are not only parking decks. They could be used for many different things; sports, concerts, markets, for playing, dancing and so on.
### Building Typologies

**XS**

- 0 units < 50 m²
- Small shared structures

- Joint residential projects

**S**

- 1-2 units 0-150 m²
- Detached houses

**M**

- 3-6 units 150-600 m²
- Semi-detached houses

**Restrictions S-M-L:**

- Maximum 3 stories
- Minimum 2 volumes/lot
- Buildings with several units are prioritized
Usually, individuals and smaller developers that want to build a smaller building are referred to lots in suburban enclaves in the peripheries of the city. The building rights will make the size of the project irrelevant as several developers can share the same lot. This opens up for many different building typologies, mixed uses and forms of ownership. The developers and residents of the same lot can also together build XS structures; saunas, bike storage, sun decks and so on for common use.

Big buildings are also allowed in strategic places where they improve the micro-climate of the area or in any other way brings something to the neighbourhood.
Reflection // Conclusion

This thesis started in a frustration of the seemingly endless space and resources devoted to cars. Parking lots especially, an annoying appendix connected to all buildings, seemed most connected to me in my role as an architect.

The site I have explored have been the legislative and regulatory space of parking norms and policies, an abstract space that have physical effects in the urban landscape. I have tried to understand and alter this space though my interventions and design proposal - imagining ways of rewiring it in order for it to start generating spaces of coexistence instead of spaces of increased homogenization and individualization.

Many different actors are affected by parking: users and non-users alike, developers, planners and architects, civil servants, politicians and so on. Actors that all could benefit from the changes I have proposed in different ways. I see this, in combination with the fact that parking is local politics, as a possibility for making different actors move towards the same goal, though with different agendas.
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Abstract
Parking, a seemingly mundane topic, have a huge impact on peoples right to the city. This thesis aims to explore the effects of the regulatory space created by parking norms and policies within the urban landscape. Parking is in this thesis identified as an active form, drawing from the work of Keller Easterling. Being controlled and regulated at the municipal level, parking is a question of local politics. This opens up possibilities for reorganizing parking as a tool for planning and place-making. By rewiring the organization of parking, from an individual property into a cooperative infrastructure, parking becomes a platform for generating local communities in the mid-sized Swedish city.

The Invisible Infrastructure: Parking as Place-Maker in a Motorised Urbanity
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