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Transportation, Community Design, Art and Social Life: Observing human behaviour in public spaces around transportation infrastructure

Examples of Road and Rail Projects from Sweden
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5119 words, four pictures
Abstract
This paper presents three cases, where social considerations played an important role when identifying innovative and successful solutions to manage transport challenges in urban locations. The lessons learned focus on the importance of both the physical design and on the way the process was managed. Professional design competence and tools, as well as the ability to create a joint understanding of the situation and the future vision among the various partners involved, were crucial. The key was to focus on human biological preconditions and on pedestrian’s or travellers’ needs. The move from coordination of measures into committed partnership was also important. National transport administrations can play an important role in stimulating innovative approaches and acknowledging new solutions, thus contributing to spread new ideas and to enhance legitimacy and status of successful new solutions and approaches.

One Swedish transport administration for all modes and a new focus
Two and a half years ago the former Swedish Road Administration and the Swedish Rail Administration were merged into a joint national transport administration. The ambition is to change perspectives from being national administrations responsible for the road or rail infrastructure into a joint administration with a co-modal and social development focus.

The social perspectives are not new as both former infrastructure administrations were involved in development projects where considerations to social and local interests were crucial. This presentation focuses on three selected examples of local transport projects where skilled architects and other experts have cooperated with transport engineers to define tailor-made solutions, which not only function technically, but also contribute to enhance social qualities in the local urban environment.

One example started as a road project to improve the local environment in the small village Rättvik, the second is a rail project in the city of Uppsala, and the third was a local project aiming at improving transport safety in a historical site in the city of Norrköping. As we will see, the national administrations played an important role in all three projects.

Key questions in this study are:
How can design of infrastructure solutions in urban environments contribute to manage a growing transport demand while also adding social qualities to the local society?

What role can national transport administrations play?

First the three cases are presented. Lessons learned are wrapped up in the final part of the paper.

Selected examples

"Beautiful Rättvik"

Rättvik is a small village and a traditional resort for Swedish summer tourists, beautifully located on a slope overlooking the lake Siljan. In wintertime, during the skiing season, intense transit traffic runs through the village on the way to popular destinations in the mountains further north. The national road passes through the village centre close to the railroad station. The railroad is increasingly used for commuting to jobs and schools in other towns and villages in the wider region.

Challenge

The road and railroad formed a barrier between the village centre and the lake. The shore is a popular recreation area. The popular “Longbridge” is located as an extended axis from the village centre, via the railroad station into the water. Neither fences, nor a ban on crossing the railroad tracks, hindered people from taking a shortcut over the tracks to reach the water.

The road was formed to serve long distance traffic. Too many impressions distracted the drivers. Few of them stopped for a break in Rättvik. The traffic situation caused risks for accidents, an unpleasant local environment and a lot of disturbances to people living in the village.

The challenge was to combine the local community’s demand for a beautiful, safe and pleasant environment with required functions, capacity and accessibility on the rational road and railroad.

Process

The Swedish Road Administration wanted a case to develop and demonstrate a new approach to design of transport solutions in a local urban setting. Architect Johnny Hedman proposed to select Rättvik as a case. He was appointed leader for the first part of the project. The Road Administration dedicated initial resources to define solutions in cooperation with the local municipality and the Swedish Rail Administration. National funding was provided to allow for research and development.

The project was implemented in cooperation between the Road Administration, the Rail Administration and the Municipality of Rättvik. The whole process took ten years from the first initiative 1994 to the end in 2005. The inauguration of the new walkway to the “Longbridge” was made in October 2003. Enquiries to identify values and opinions of the inhabitants were made before, during and after the process.

Several problems occurred during the process, including key persons leaving their positions, legal challenges, and new political leaders without commitment to previous ideas. However, the project leader managed to convince, to inspire and was stubborn enough to stick to the initial vision.

Qualified architects and designers contributed in solving problems. Experts helped in defining the geographical area concerned and proposed a design program for the future investments based on

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1 Vackert Rättvik, Rapport från ett utvecklingsprojekt Bobo Hjort
four guiding principles, forming a joint goal. A group of architects and technicians were invited to a two-day seminar to provide for a broad analysis, new ideas, and proposals. A challenge when defining a new scheme was to manage various transport movements, bus and car parking and to clarify functions and character of public places. One obvious difficulty was to decide which of the parallel streets that would connect to the national road in a traffic circle and how the crossing with each of the two streets should be designed. Four alternative solutions were provided and one of them, an ellipse, was considered just as self-evident as genius, once it was presented.

**Goals**
- a beautiful Rättvik
- a distinct view of Rättvik
- a safe Rättvik
- a Rättvik by the lake Siljan

**Result**
The joint learning process has contributed to develop the central parts of Rättvik and also resulted in interesting experiences of general interest. The results are twofold; lessons learned on ways to develop cooperation, and on the design of a thoroughfare on the local community’s conditions.

Several conflicts and crises arose during the project period. They seemed to derive from various ways of interpreting the design program, but also of interpreting the overall project intentions as such. The main idea, that partners would share a joint responsibility for the total environment, was questioned several times. However, project management, planning process and funding evolved as the various stakeholders implemented their parts. The design program and the experts’ judgement served as a common determinator.

After a series of measures the local railroad station has become the local focal point and the natural place for pedestrians to enter the beach. The design helps the drivers and the passengers on the trains, who pass through Rättvik, to discover the nice local character of the place. The village centre is again strongly linked to the Longbridge and the lake Siljan. Disturbances from the traffic were reduced as speed went down, the light was adapted to pedestrians’ and cyclists’ needs, and it became easier to cross the road and the railroad.
The Beautiful Rättvik project was nominated as a candidate to the Swedish Architects Planning Prize 2004 and received the County of Dalarna’s design award in 2005.

**Transferrable lessons**

Architect Bobo Hjort reflects that all persons involved must learn to understand and make use of drawings and other future visualizations in a better way. He also thinks that it ought to be possible to demand from the persons in charge, that they take a responsibility when promised goals can’t be reached.

If responsible persons do not have a clear vision of what they want to achieve, and strive to reach this, there is a huge risk that something not wanted is created. The persons responsible must clarify for themselves what they want to achieve in a better way, and earlier, than today. To ensure a good quality in the built environment, the responsible persons must be able to imagine the final goal.

The project has demonstrated that good design, based on the local situation and confirming important values to the local population, can be combined with good function on national roads. However, the specific solutions can’t just be picked out from a handbook or database of standardized solutions. Local adaptations are necessary.

**Summary recommendations**

- Combine project management and design expertise!
- Stick to the overall project aim through the whole process, especially in extensive projects with a long implementation period.
- Design-methodology is crucial for understanding various claims and for the creation of a joint vision where these are combined.
Uppsala Travel Centre

Challenge
Uppsala, a rapidly growing university town within commuting distance from Sweden’s capital Stockholm and the international airport Arlanda, had an old station building. The station area divided the city core in two parts, the bus station was located elsewhere, and bikes were all over the area. Management was scattered among several actors.

The creation of a new traveller’s centre was a joint project for the Swedish Rail Administration, the local municipality of Uppsala and the state-owned company Jernhusen, which was in charge of station buildings and services. The new hub would serve travellers on long distance trains, regional and commuter trains, busses, taxi, cars and bicycles. The new station building would include café, restaurant, retail, and travel services. The urban environment would be changed as new streets, squares, parks and buildings were added. A new block with hotel, office space and shops was added with parking underground. Part of the former marshalling yard was reconstructed, and land was designated to a new residential area for 200 families and retail. The project also included two new connecting underpasses beneath the railroad tracks, one for pedestrians and cyclists and another, further south, for car traffic with pathways for pedestrians and cyclists on both sides and new entrances to the platforms. The local municipality also planned other important investments in the vicinity to improve the local connections within the urban core on the former back side of the station.

The biggest challenge for the parties involved was to cooperate².

Goals
The goals for the reconstruction of the station area and the marshalling yard were to enhance security, to increase the transport capacity and to improve the local environment inside and adjacent to the station area.

Process
This project has a long history. First negotiations were initiated already during the last part of the 1980s and an agreement was reached in 1990. It was obvious to all parties that the station and the station area had to be developed due to the rapid growth of travellers. However, the cooperation did not work well. Conflicting interests often led to deadlocks and it was difficult to find solutions which all parties could accept. The Rail Administration appears to have been too focused on traffic solutions and lacking insight about the interrelationship between infrastructure and urban development, while the local municipality was considered to have had far too unrealistic expectations on future values of the project. The standard expected seemed far too high in relation to praxis and available resources. The separation of the traveller’s waiting place from the station services caused another debate.

A radical change occurred as Uppsala Municipality declared a willingness to contribute to the funding. The slow process changed into an efficient and dedicated cooperation towards a common goal. Coordinated plans were produced by the Rail Administration and the local municipality. Negotiations proceeded into a binding framework agreement, signed by all three parties in 2003, stating how the various investments, defined as ten sub-projects, were to be implemented. The Rail Infrastruktur med finansiering Göran Cars, Bo Malmsten, Jacob Witzell, KTH Institutionen för samhällsplanering och miljö

² Infrastruktur med finansiering Göran Cars, Bo Malmsten, Jacob Witzell, KTH Institutionen för samhällsplanering och miljö
Administration and the local municipality had a shared responsibility for two of them. However, the rail investments became bigger than foreseen while the costs of the municipality kept within budget. As the costs added were divided according to shares agreed, also the municipality had to raise their part.

As the work proceeded it became apparent that the Rail Administration had difficulties to fund their part due to a budget restraint. The municipality decided to offer the Rail Administration a loan, provided that two additional road-crossings would be included in the project. Thanks to the good relations, and joint project ambitions, a new deal was reached. A new model for the co-founding was found, where the Rail Administration would have to pay for additional costs themselves if the project would be more costly than expected. This time the contribution from the local municipality was defined as a fixed sum.

Landscape architect Mattias Nordström and his colleagues at White Architects were contracted to support in defining a design program, accompanying the detailed plan for the whole area, including the investments made by each of the three partners. The same firm has later designed most of the new constructions in the area on behalf of different customers.

Uppsala Travel Centre has provided a new central connection within the urban core

Result
The whole project took six years to implement. It was inaugurated in December 2011. Today the old station building is a restaurant, a broad pedestrian walkway leading to the commuting trains connects the city districts, and all transport modes are combined within the station area.

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3 White arkitekter, projektbeskrivning http://www.white.se/projekt/71-uppsala-resecentrum
Commercial investors as well as young skaters were immediately attracted – a surprise for many planners. Additional investments in the areas close to the station area were made promptly. And travel by train continued to increase. Retail, shops, cafés and restaurants in, and adjacent to, the travel centre expanded.

However, the change from a planning into an implementation phase included involvement of new parts of the organizations. Again the partners returned to focusing on their own interests, instead of looking for joint solutions. Today maintenance, cleaning and other services are not managed in a joint way.

**Transferrable lessons**

The change into a co-financing situation where all actors contributed to the funding was important. The relations became more symmetric. The negotiations became more directed into searching for proposals from which each of the partners could gain. Instead of fighting each other, they began to look for joint solutions in a creative way. Efficiency grew with mutual responsibility and confidence.

**Summary recommendations**

- When planning a complex project where both infrastructure investment and urban development is involved, look for a joint vision, a joint business agreement and joint principles for the funding of investments. Try to form partnerships where all partners contribute to the financing.
- Focus on traveller’s needs and situation! Primary focus should be on connecting local and regional travel networks to the railroad station and to provide smooth access for travellers.
- Combine local urban and transport planning perspectives with national rail transport and private actor’s development perspectives – look for win-win concepts.
- Create an attractive meeting place. Provide a joint design program to guide the planning.
- Regard the railroad station area as a centre within the urban core (central business district)

**Skvallertorget, Norrköping**

*Shared space*

**Challenge**

Many accidents occurred at Skvallertorget (“Gossip Square” or “the square where you can hear the water”), a historic place in central Norrköping, where dressmakers used to mingle at the textile factory entrances. Five streets meet here – an entrance route to the city centre, a transit route and several local streets. One of the streets has been there since medieval times. A bus line passes and stops on one of the streets.

The conflicts in the traffic environment increased as the old industrial buildings in the vicinity were rebuilt and became a University Campus. Many more people passed the square by foot or bike to reach other buildings on the” Industrial Landscape” campus. The situation had to be improved.

**Goals**

Allow access but solve traffic problems:

- provide a safe passage across the square
- reduce accidents as well as noise and air pollution, which exceed permissible limits

Increase the attraction of the Industrial Landscape with the help of good design:
• enhance the attractiveness of the area
• create more lively streets
• create places for people to meet

Process
Various types of actions were investigated, including ways to reduce speed and to stop the transit traffic. People with different competences contributed in discussions and dialogues. Existing claims, which would influence the solutions chosen, were defined. Landscape architect Helena Hasselberg supported the process by providing sketches and idea’s proposals, which were related to the specific preconditions of this certain place. The conclusion made, was that the place would be designed to look like a square. Finally it was decided to deregulate the square totally.

Inspiration was brought from Siena and other urban environments in the Mediterranean. The idea was to allow people to negotiate about the right to go first. This required a scale were human biological preconditions enable perception of details and meetings with other people. The design should provide for a lively and interesting environment, which was created for social life and mutual considerations.

The place was reconstructed in year 2000. The uncertainty weather this would work or not was big in the beginning. Thus electrical systems and rests of the poles were left under the new coating. Local press was negative to start with. Many said that the chaos on the square brought uncertainty and did not work. Others said that lack of traffic lights made it difficult for the visually impaired.

Result
The key was to design the place in a way that led to reduced speed. The comprehensive approach when reducing speed was to create a place which differs from the surrounding traffic environments.

The speed reduction was created through a rise of the surface. The floor was raised by 8 cm at the entrances and 11 cm at departures of the square. The ramps were 1,25 meter long which result in a slope of 1:16 and 1:11 respectively. Bus stops, shaped like time glasses, were created on the street. The traffic must stop and wait for the bus. One signal controlled pedestrian crossing 200 meters north of the square was left as before. Also the big flow of pedestrians forces the car drivers to go slower.

By raising the floor level and covering it with a different coating than on the surrounding streets, it became apparent for car drivers that they were in a different environment. The ramps and the bus stop also forced them to reduce speed. The pedestrians could move smoothly over the surface. The design communicated to people that they had to adapt and pay attention to others. This has lead to radical improvement of safety. However some drivers feel uncomfortable, as they are uncertain of where to go.

Today the students consider the square as their "living room". The student’s broadcast is named Radio Skvallertorget and the studio is located at the square. One of the streets has been integrated

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4 Sofia Jaredson, Utvärdering av Skvallertorget i Norrköping, Linköpings universitet ITN, Campus Norrköping Linköping vt 2002
5 http://www.studentradion.nu/
into an entertainment district with restaurants and nightclubs. No serious accidents have occurred after the reconstruction.

Skvallertorget was awarded the Swedish Road Administration’s “Beautiful Roads Award” in 2004.

Transferable lessons
Evaluation studies from Skvallertorget\(^6\) 2007 show that the interaction is active and works well between the various users of the traffic environment. Similar results are to be seen at other places, which were designed as shared space. Reduced speed is the key to well functioning interaction. Vehicle speed on shared space, where various types of users are mixed, should be between 15 and 20 km/h to ensure an active and well functioning interaction. If so the shared space approach brings benefits, including

- safer to move
- reduced risk for assault and robbery as the environment simply invites more people to move around in the area, which in itself enhances security
- increased attractivity of the city

A small pilot study, involving five subjects with various types of disabilities, was made with a camera, Eye tracker\(^7\), which registered the move of the eye. It was concluded in the study that those with

\(^{6}\) Tyréns and Lund Technical University, Trafiksäkerhet vid Shared Space, on behalf of Swedish Association of Local Authorities and Regions (SALAR) and the Road Administration
\(^{7}\) Professor Torbjörn Falkmer, Hälsohögskolan i Jönköping in co-operation with Dr. Joakim Dahlman, Chalmers och AUW Consulting, En pilotstudie i ”Shared space”-område med användande av eye-tracker för personer med funktionsnedsättning.
cognitive disabilities fixate on more traffic-relevant surfaces than those without. The disabled persons did not have more eye contact with car drivers than on other surfaces.

Shared Space should not be seen as a solution, but as an approach. The design must communicate the behaviour wanted at the place.

Co-operation between various types of professionals including landscape architects, traffic engineers, and others is required during the planning process.

**WHAT IS SHARED SPACE?**

**EU definition**

Let the surroundings and the character of the road inform you on how to behave:

- No technical traffic solutions
- Strengthen the character of the room
- Stimulate interaction and social behaviour
- Allow people to negotiate right to drive first
- Treat the car drivers with respect, expect them to be respectful too
- Contacts

**Summary recommendations**

- Low speed is required
- Consider the goals for the reconstruction carefully when determining the design
- Understand the place and the problems to be abolished
- Combine competencies from various specialties and departments in an early stage
- Cooperate closely with disability organizations, consider the importance of contrasts and natural guide paths
- Allow businesses to participate in the process in an early stage
- Consider local media as allied parties

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8 Hanna Centervall, Samspel i staden, en studie av Shared Space ur landskapsarkitektens perspektiv, SLU Uppsala
Overall findings and conclusions

Transport problems solved by added social qualities
Observations of human behaviour in public spaces around urban transportation infrastructure in the three cases above, confirm that the approach and solutions chosen have resulted in well functioning places.

The study of the three cases result in similar conclusions when summing up the lessons learned:

**Physical environment matters**

**Pedestrians first**
- People in Rättvik reach the shore and the Longbridge at lake Siljan simply and safe, since the car drivers slow down to pass the roundabouts and the trains stop by the railroad crossing at the station.
- The station area design in Uppsala was primarily made to serve pedestrians and bicyclists. It has become easy for them to orientate, their routes run along the shortest and most inviting way. Buses and cars stop outside and the platforms for the trains are located on the second floor.
- Safety increased, emissions and noise levels were reduced, and more people were attracted to Skvallertorget as vehicle speed was reduced to fit better with human biological preconditions, and as all had to negotiate on the right to go first.

**Attractive places invite to communication**
- The natural pedestrian connection between the village centre and the Longbridge at lake Siljan has strengthened the identity of Rättvik and increased its attractivity as a tourist destination.
- The station area in Uppsala developed into a destination in itself with pleasant public spaces, cafés and restaurants as it became easy for people to meet, to pass and to swap between transport modes and routes. Additional investments were made nearby. Travel by train has continued to increase. Sports clubs and skaters use the stairs for training.
- Skvallertorget in Norrköping has become a centre for social communication within the campus area as the new design led to increased safety and security.

**Human needs and dimensions**
- The design of the transport environment in Rättvik communicates directly to the human senses, including road, railroad station, parking space and paths for pedestrians and bikers. Visual orientation, coating materials, lightening and vegetation makes it obvious to drivers that they must slow down. The crossings of roads and rails are located where drivers slow down to turn or stop. Pedestrians and bikers, as well as car and train drivers, understand that they must be cautious.
- Train travel increased in Uppsala when pedestrians’ access to the trains became fast and simple, both sides of the urban core were connected to the platforms via an inviting underpass under the platforms, and various modes were connected within the station area where it is safe to walk.
Total deregulation of the traffic area at Skvallertorget has created an uncertainty about the right to pass first. Reduced vehicle speed has allowed silent negotiations between drivers and pedestrians’ as their eyes meet. Accidents are rare. Uncertainty was better than false safety.

*Manage the process to the very end*

*Ensure joint learning and commitment*

- In Rättvik it has been demonstrated that a joint vision is important, and that it is necessary to keep this vision alive during a long implementation period, especially when several actors’ investments are to be combined.
- The deadlock in Uppsala ceased when the local municipality decided to contribute to the funding, and when the stakeholders started to co-operate as partners. The new partnership made all feel responsible for the implementation and the final result. They understood that they had a joint responsibility for solving upcoming problems during the process.
- Officials from several departments and a team of experts with different competences, including a landscape architect, were involved in the analysis of the place-specific preconditions at Skvallertorget. They contributed to identify goals, create proposals, and evaluate alternative ways to reach the goals. This learning process convinced them to go for an innovative solution. It also helped in the public dialogue.

*Benefit from professional design methodology*

- In all three cases studied, skilled architects and designers contributed with analysis and images of concrete proposals where various claims were combined. Their ability to visualize future physical structures and situations, and to communicate with the help of reference cases, sketches, drawings and other images, made it possible to conclude on joint solutions.
- The professional designers contributed with knowledge about human perceptions and behaviour in all cases studied. They also identified key details, as coating and lighting, in an early stage.
- However, it has also been demonstrated that not all responsible persons understood the pictures and drawings. Nor did they realize how important these visualizations were as guidelines to the final design.

*National transport administrations can play an important role*

Traditionally the national transport administrations have had a normative role, and also a funding role as responsible for the national infrastructure. In the cases studied, the role has been more sophisticated.

National administrations have participated in all three cases studied, either as a partner during the planning and implementation processes, or by evaluating and communicating lessons learned.

- The Swedish Road Administration had a leading role in initiating and contributing to propose and implement solutions in Rättvik.
- The Swedish Rail Administration was a key player in the upgrading of the station area in Uppsala.
The cases in Uppsala and in Norrköping were discussed on a high level within a multi-annual development project called “The Liveable City”.

Allow and stimulate new competence
Apart from traditional funding of investments in national road and rail infrastructure, the national level has contributed with funding resources to allow the engagement of expert’s in the analysis and communication processes (Rättvik) and in the evaluation of project results (Skvallertorget).

In Uppsala the National Rail administration agreed to let the local Municipality co-fund investments, which allowed for a wider approach and higher ambition when creating the new Travel Centre.

National Administrations contributed to communicate and spread results and lessons learned in all the three projects studied. Thus they were officially recognised as good examples. This meant that not only were these new solutions accepted, also the new attitude was noted.

Encourage innovative approaches
The status as a “Pilot Project” (Rättvik) and projects which were paid attention to in “the Good City Project” (Uppsala and Skvallertorget) has provided opportunities for the top level managers on local and national levels to discuss the design as well as the processes. This has encouraged the local level representatives to develop and test unconventional solutions.

The General Directors’ attention has contributed to raise awareness, prestige, and to gain acceptance in the wider local society. The final report from the Liveable City project concludes that the General Directors’ presence has created mandate and legitimacy, and has provided more status and weight to project results in various situations.

Create new types of partnerships
New initiatives from top level managers terminated the processes deadlocks in Rättvik and Uppsala. These processes developed into a new type of partnership where the responsibilities were shared. The partnership approach made it possible to combine programs, spaces, and construction, and to coordinate implementation processes to enhance the range of service to the travellers. The providers’ needs were no longer prioritised; instead focus was on users’ quality. The cases studied illustrate that this new approach – to look for win/win solutions - contributed to create values added.

These experiences are important as the new Swedish Transport Administration strives to develop a new role as “societal developer”.

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9 A joint project between the Swedish Road Administration, Rail Administration, National Board of Housing, Building and Planning and Swedish Association of Local Authorities and Regions (SALAR) in cooperation with the municipalities of Uppsala, Norrköping and Jönköping. A group of researchers was also involved. The aim of the project has been to develop processes focusing on the interplay between the planning of urban transport systems and built up environment.