Pedestrian mobility and the regeneration of the European city centre

Street-level desires

Discovering the city on foot

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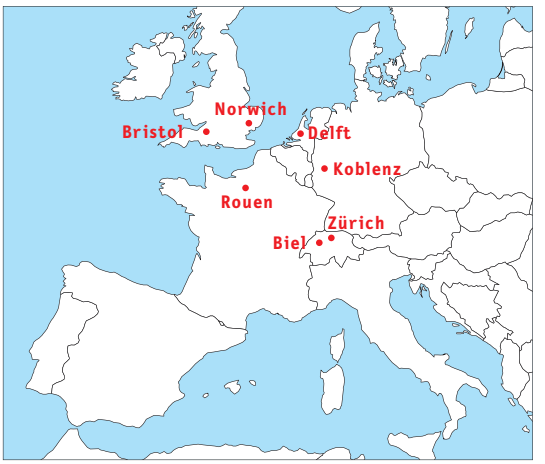
A transnational challenge

In the spring of 2004, Delft University of Technology was approached by Norwich City Council with a request to participate in their project Spatial Metro.

Spatial Metro was developed within the framework of Interreg IIIB. Interreg is a community initiative which aims to stimulate interregional cooperation within the EU, financed by the European Regional Development Fund (ERDF). The programme aspires to strengthen economic and social cohesion throughout the EU by fostering the balanced development of the continent through cross-border, transnational and interregional cooperation. The B strain of Interreg deals with transnational cooperation. As an Interreg IIIB project in the Northwest European region, Spatial Metro brings together partners from the United Kingdom, France, Germany, The Netherlands and even Switzerland.

The Spatial Metro partners across Europe.



The original Spatial Metro project proposal is straight forward. It claims that cities are chaotic places. It states that tourists, visiting business people, shoppers and even local residents rarely have a clear or coherently expressed view of what a city has to offer geographically or thematically. The proposal assumes that people's stay is shortened by their lack of overview of or information on what a town can actually offer them. As lead partner of the project, Norwich explains in quantitative terms what this actually means to the economy of a city:

Visitors who plan a day trip to a city will stay in town for an average four to four-and-half hours and spend about £ 100. If the welcome they receive is inhospitable, the destination is confusing and demands are not met, the same visitor will tend to leave after only two hours and spend less than £ 50. If their arrival is welcoming, the destination is safe, clean, relaxed and intelligible and if visitors are able to navigate their way around and their original expectations are fulfilled or surpassed, they will stay for six to seven hours and spend in excess of £ 150.
At first glance, these statements may seem somewhat narrow in scope. Not every city is chaotic and surely there is more to life than just money. However, placed in their proper context, these words make perfect sense.

Five cities are participating in Spatial Metro: Norwich and Bristol (UK), Rouen (F), Koblenz (D) and Biel/Bienne (CH). Each of these cities is characterised by a historic city centre. Norwich itself is proud to have the most intact mediaeval street pattern of the United Kingdom. Mediaeval street patterns are the product of spontaneous urban growth and lack the sometimes rigid clarity of modern planned developments. Mediaeval street patterns are indeed difficult to navigate and pose a true challenge.

Norwich also developed a successful and long-standing policy to prevent out of town shopping by strengthening the vitality of its original historic district. Such a policy requires a city to take a serious look at its economic performance.

From this perspective, it is a sound approach to optimise conditions allowing people to discover a city on foot. As such, the Spatial Metro project prompted Delft University of Technology to tap into a greater European experience that integrates aspects such as urban renaissance, built heritage, public space, pedestrian mobility, leisure economy and even sustainability.

The partnership also included knowledge organisations. Each of these partners has supported the project in their own unique way. The University of East Anglia deployed its automated modelling software to visualise the original historic centres. The University Koblenz/Landau delivered a so-called Blue Box that provides on the spot information by means of Bluetooth technology. The Swiss Pedestrian Association made various contributions as a strategic and competent expert organisation on pedestrian mobility. The Delft University of Technology examined the question as to how to assess of the effectiveness of the investments made in Norwich, Rouen and Koblenz. How can aspects like the accessibility and navigability of public spaces be measured? Much of the effectiveness hereof naturally depends on the way people use the public space. We therefore used novel tools to analyse in detail the movement patterns of people visiting these three city centres.

Finally, Delft decided to capture the essence of the Spatial Metro experience in a document reflecting the versatility of the transnational response to pedestrian mobility and the regeneration of the historic European city centre. The document became this book, 'Street Level Desires'. The book aims to disseminate our experience and knowledge to further strengthen social and economic cohesion throughout Europe.

Frank van der Hoeven

Readers
this Way.

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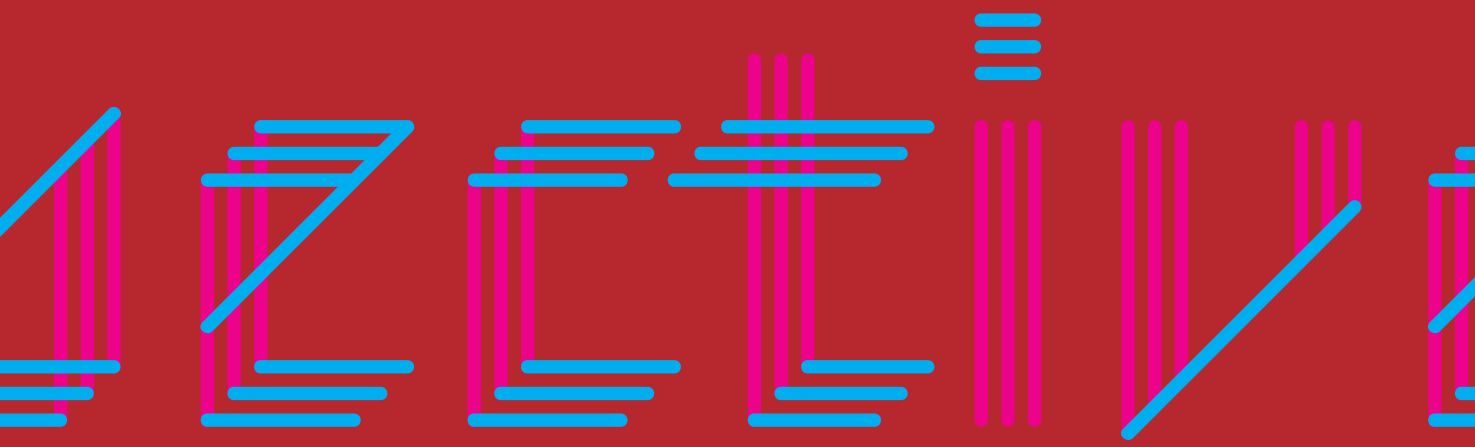
Part 1

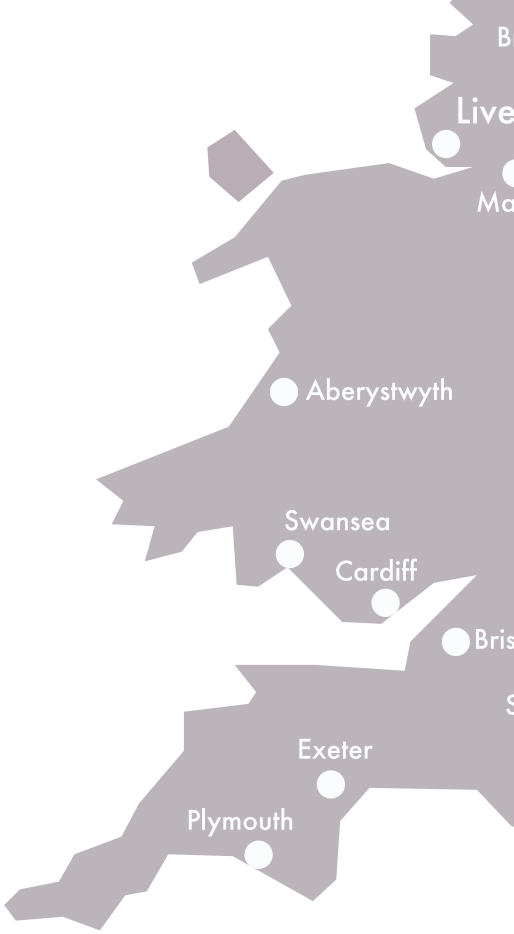
In perspective

Five cities in North-West Europe took part in the Spatial Metro project. What were the main issues that they had to deal with?



Strategies for a
vital city core

The Norwich approach



Major out-of-town shopping centres are still a big issue on the European planning agenda. The potential threats to retail activities in the traditional centres are well known, but some argue that prohibiting major out-of-town retail developments can actually damage the competitiveness of a city or region. The English city of Norwich shows that it is perfectly possible to develop a successful retail strategy based on the qualities of a historic city centre.

Frank van der Hoeven

Michael Loveday

Norwich City Council has resisted retail development on greenfield sites and has put considerable energy and effort into making the existing centre work better. It has made retail uses a cornerstone in an overall 'urban renaissance' approach to building a 'liveable city'. The city is now performing far better than the national average.

Regional centre

Norwich is the capital of East Anglia, an extensive region in the east of England characterised by relatively modest settlements dispersed over a wide area. The only sizeable towns besides Norwich are Ipswich (at a distance of 70 km), Cambridge (100 km) and Peterborough (125 km). Norwich itself is 190 km north-east of London, 90 minutes by train. Its position as England's most easterly city makes it geographically, and in many respects culturally, closer to the historic cities of Europe (Bruges and Amsterdam) than to English cities such as Manchester and Liverpool.

At first glance, the city seems relatively modest is size. The municipal population (125,000) gives the impression that Norwich is a small, unassuming market town. But this is misleading. In fact, Norwich is a significant regional centre

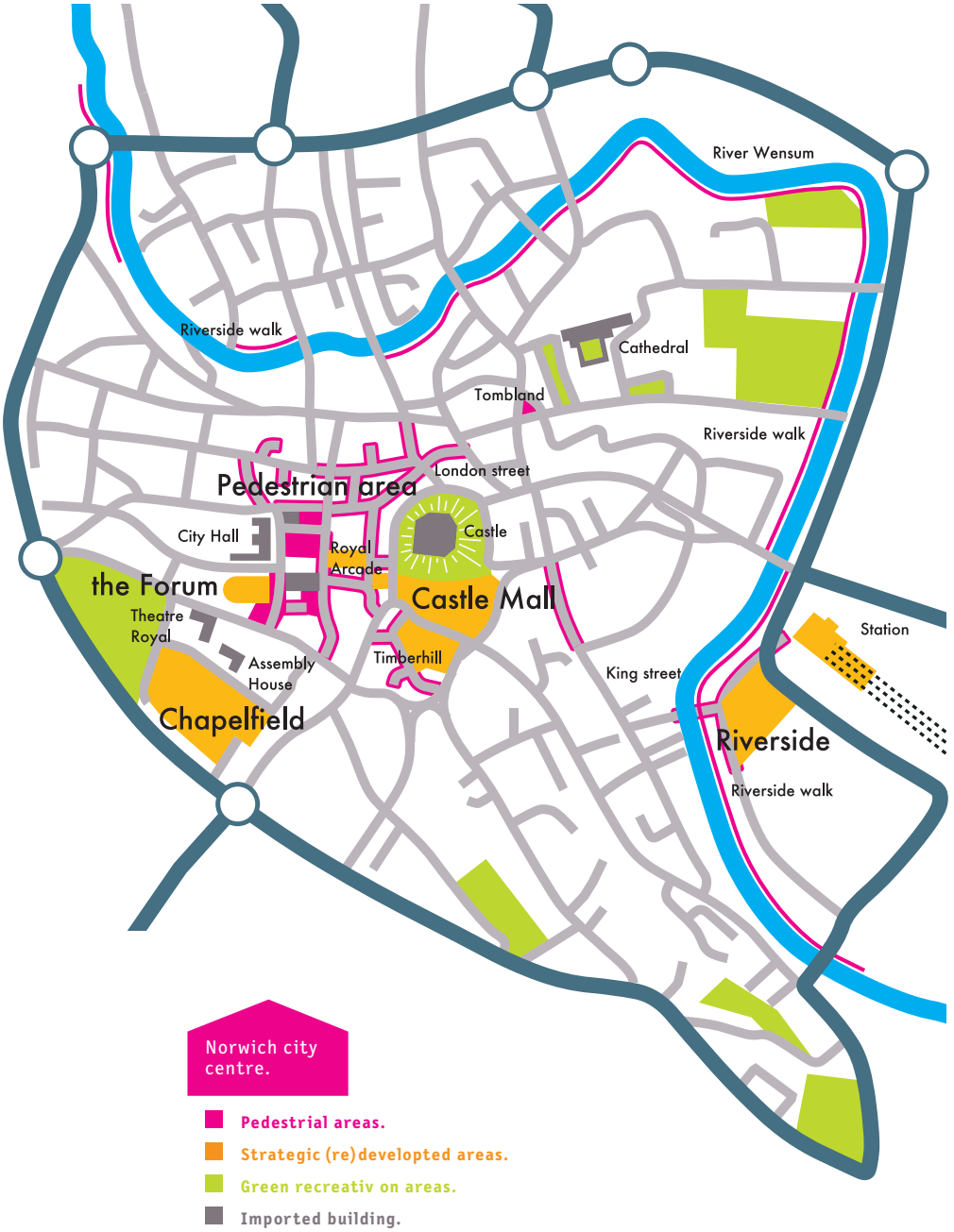
with a wider population (including suburbs) of about 250,000. The city serves a regional catchment area of over one million people, of which 330,000 live within the captive core catchment. The long distances to Ipswich, Cambridge, Peterborough and London mean that this population is particularly loyal. The city employs just over 90,000 people, half of whom work within the old walled city, where the core retail area is located.

The shopping centre, with 200,000 square metres of retail space, was ranked eighth in the Experian League 2004 (which grades UK shopping locations by the size of the total floor space of its shops, the number of big-name chains and its quality independent retailers). Other facilities include nationally important cultural facilities like the Theatre Royal, the Castle Museum and the Sainsbury Centre for the Visual Arts. The City hosts the headquarters of regional media organisations, including the BBC, Anglia TV and regional and local radio and newspapers. It houses the Government's 'telematics think-tank' (the CCTA) and a number of commercial companies (e.g. Norwich Union and Marsh). Norwich is also the home of the University of East Anglia, the Norwich Research Park (including the largest food technology research facility in Europe) and the city's international airport.

Historic context

Historically, Norwich vied for the position of England's second city between the Norman Conquest and the late 18th century. This important national role has left the city with one of the most significant architectural resources in England and possibly in Europe. These include the largest walled centre and most complete medieval street pattern in England. Norwich has the largest collection of pre-reformation churches north of the Alps. The Norman Castle is said to be the finest secular building of its generation in Europe and the city houses one of the most important Norman cathedrals in Europe, the largest Guildhall with the finest civic regalia outside London, one of the oldest and largest open air, six-day markets in Britain, and a staggering 1,600 listed historic buildings spanning nine centuries.

This historic background helps us to understand the enormous post-war regeneration task the city faced. At its peak the current Norwich city centre was home to 80,000 inhabitants, but just after the war this number had fallen to only a few thousand. Once the second largest city in England, the city centre had become almost an empty shell and its subsequent regeneration demanded a much larger effort than in most European cities. Moreover, funding constraints resulted in a



crisis in conserving the City's rich heritage, a problem compounded by the pressure of 500,000 vehicle movements each day and the economic challenges of the 1990s as traditional industries contracted. All this brought the tensions of sustaining one of the country's most important historic resources while coping with the pressures of the regional capital and the challenges of global economic change into sharp focus.

Towards a Strategic Approach

In the late 1960s and 1970s, Norwich was one of the nation's 'cutting edge' planning authorities. Working with an innovative, multi-professional department (transport, landscape, conservation, planning) the City Council achieved notable successes, including the first pedestrianised shopping street in Britain (London Street, 1967). It engaged in some of the first work in General Improvement Areas to transform areas of 19th

The Royal Mall.

century housing, and it was the first authority to bring people back to live in the old city. It was responsible for one of the first comprehensive conservation area designations under the Civic Amenities Act 1967.

However, by the 1980s, Norwich was reaching a watershed. A number of emerging pressures combined to blunt innovation and progress, raising concerns about the quality of life: without remedial action, environmental quality and levels of service provision could easily have collapsed. The shopping centre was outdated and lost trade to regional competitors. Pressure was building for out-of-town retailing fuelled by the deregulatory attitude of the Conservative Government.

Little progress was made with transport planning since the County Council also became the Highways Authority and the city suffered from the constraints on local authority house building and a general failure of the Council to exploit its assets to the full. This prompted the Council into taking a pro-active approach to addressing these problems. The root of the approach was a series of interconnecting strategies directed individually at specific subject areas but together spanning a broad range of interrelated issues: retail, transportation, conservation and greenspace.

Retail Strategy

The cornerstone of the strategies was the Retail Strategy, which over a decade before the latest government guidance on retail planning, recognised the importance of sustaining the whole centre by spanning a range of specific retail and other connected initiatives, including the existing centre, major stores, out-of-town shopping and new developments.

Existing centre

The existing shopping areas were renewed. The city created a pedestrian priority core in the historic shopping centre and the main shopping street was fully pedestrianised. Design approaches were applied to street furniture and shop fronts and a pedestrian signing strategy was adopted.

Major stores

Norwich started to work with anchor stores to improve representation and profile. Parking facilities for the major stores were improved and the city started to promote food stores in and adjacent to the centre.

The Forum and the St Peter Mancroft Parisch Church.

The Castle Mall.

Out-of-town shopping

Norwich continued to resist out-of-town development and drew up a Supplementary Planning Guidance statement with neighbouring authorities on goods, size of retail outlets and ancillary retail

New developments

In response to pressure for out-of-town development, a 17 hectare retail and leisure complex was developed at the Riverside site next to the Norwich railway station, just outside the walled city. Smaller allocations were developed in the centre, including the Castle Mall. The Castle Mall shopping centre was built in the early 1990s on the unsightly 2.5 hectare site of the old cattle market in the city centre. Half of the mall is set into a substantial part of Castle Hill, on which the castle stands, and involved the redevelopment of one of Norwich oldest streets, Timberhill. The Castle Mall, which 35,000 square metres of retail space spread over three levels, was built in response to a need for unrepresented traders and expansion of retail space in the city, and helped to further integrate the dispersed retail core. It became a catalyst for regeneration, added shopper parking and created new public spaces, including the park gardens on top.

Transportation

Having achieved some success with persuading the Highway Authority to allow further pedestrianisation, the City Council pursued a range of transport initiatives, which were implemented as the County Council moved towards a transport strategy. These initiatives included pedestrianisation of the historic core, accompanied by traffic calming measures where pedestrianisation in the core areas was not feasible. Subsequently Norwich introduced the first 30 km/h traffic calming zone in the UK. The Council also introduced controlled parking zones, with charges adjusted to favour shoppers and visitors, and Park and Ride facilities.

This work culminated in a landmark planning inquiry in 1992. In response to a County Council proposal to complete a four-lane inner ring road through the southern part of the medieval centre, the City Council led a broad-based campaign of opposition, which resulted in the proposal being dismissed by the secretaries of state. The City and County Councils have since worked together to produce a sustainable transport strategy for the Norwich Area, which focuses on alternatives to car use.

Conservation Strategy

With a third of shops occupying historic buildings, there is a clear relationship between the retail strategy and conservation. Good relationships had been established with English Heritage in the 1960s and by this time the City had a long running Town Scheme programme. The strategic approach adopted in the 1980s provided a more systematic approach. A multi-professional team of council officers was brought together to drive the strategy, which included a regular historic buildings condition survey and a buildings at risk programme, which identified priorities for action; extensive work was undertaken with trusts to achieve partnership schemes and considerable progress has been made with Living Over The Shop initiatives. Conservation architects were fully involved in traffic design schemes, innovative work was started with archaeologists and a facades painting scheme was launched with a Dutch paint company. Heritage interpretation policies and initiatives were developed.

This work has progressed into a number of initiatives including East Anglia's largest Conservation Area Partnership Scheme and one of only a handful of Urban Archaeological Databases nationally.

Green Plan

In 1985, Norwich adopted the country's first green plan – a three-pronged strategy which sought to conserve existing greenspaces and habitats, extend green areas linking existing spaces and to involve the community in sustaining and regenerating its green assets. The Green Plan has now been developed through the policies of the City Plan into a complex strategy of green links and corridors. The principal elements of the original Green Plan are the Riverside Walk, the 1.6 hectare Castle Mall Park (on top of the shopping centre!), the Tree Trail, the protection and enhancement of the Wooded Ridge, the establishment of wildlife gardens and the greening of traditional streets and spaces. Into the New Millennium Beyond the year 2000, Norwich has emerged to consolidate and develop the strong position built in the late 1990s.

Forum

In 2001 the Forum opened. Designed by Michael Hopkins and Partners, the Forum is an impressive Euro 97 million multimedia centre containing a library, TV studio, business and learning centre, visitor attractions, restaurants and interior public spaces. Visitor numbers have been considerably higher than projected.

Chapelfield

The new Euro 480 million retail-based Chapelfield development is due for completion in September 2005. Chapelfield is the largest retail project so far, adding another 50,000 square metres of shopping area to the centre, including parking space for 1,000 cars. It replaces the former Nestlé chocolate factory. The project seeks to redress the lack of a mix of anchor stores and good sized unit shops and will complement the cultural and leisure offerings of the neighbouring Forum, Theatre Royal and Assembly House.

HEART

Additionally, a unique trust has been established to take control of the City Council's historic building stock and act as heritage regeneration master planner for the whole City, joining up a host of small, poorly resourced organisations and levering in new funds. The Heritage Economic & Regeneration Trust (HEART) sees itself as an international exemplar, using heritage as a potent tool for urban regeneration. The Office of the Deputy Prime Minister, in its report on the Partners in Urban Renaissance Initiative, made this comment on the work in the 1990s and subsequently: 'In many respects Norwich has been a leader in the Urban Renaissance in England.'

Success Criteria

Success is clearly a relative concept, but a range of indicators demonstrates that Norwich's strategies have achieved a degree of success in enhancing the vitality as well as the viability of the city centre. Prime rents in the city are now among the highest in the country and the improvements to retailing have elevated the city from 49th to 8th in the league table of shopping centres in the UK (Norwich is by no means the eighth city in population size).

At a more detailed 'outputs' level, substantially more people use the pedestrian shopping area than previously, vacancies have fallen and have been kept at a low level, the visual environment has been greatly enhanced and uses above and below ground level have been expanded. Traffic accident numbers have fallen substantially. The city centre's household population has risen significantly, tourist numbers have increased, particularly during traditional troughs, and people's attitudes about the centre have become more positive.

Work already undertaken has helped to establish a good track record of innovative practice and persuaded the Government Office of the Eastern Region to award East Anglia's largest

Artist impression of the Chapelfield development.

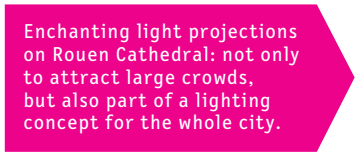
Single Regeneration Budget Challenge Fund settlement (Euro 14.8 million) and one of the highest Capital Challenge settlements (Euro 5.5 million) to Norwich. The English Tourist Board's follow-up assessment of the Tourism Development Action Plan found that for every pound of the Board's money contributed to that initiative, 96 additional pounds had been generated in the local economy.

Norwich's success is also reflected in an impressive number of formal recognitions. The House of Commons Select Committee on The Future of Town Centres commended the Norwich Retail Strategy as an example of good practice. The British Council of Shopping Centres awarded the Castle Mall the accolade of Britain's Best Shopping Centre. The Mall Park has also received a number of awards. Norwich received a prestigious award of the Royal Institution of Chartered Surveyors for Green Link City 1996. The Royal Town Planning Institute honoured Norwich's development and planning process with the Jubilee Cup for Best Planning Achievement nationally and the Forum received the 2003 Civic Trust Urban Design Award. A historic city without that theme park feel Its historic resources could make Norwich an important tourism destination, but somehow the city has failed to exploit this visitor potential fully. This opportunity remains relatively untapped and tourists are a minority, while local people still shop in the centre. As a result, Norwich lacks the theme park atmosphere that plagues many historic cities in Europe. Norwich has not built big boxes on greenfield sites to make an open-air museum of its centre. For decades now the city has put all its energy into making the old centre work for everyone. One can only hope it can retain that strength without having to bow to pressures for out-of-town developments or for commercialisation of the central area. Rest assured, Norwich seems to be on the right track.

Photography

p.13 and p.14 (charts)
Frank van der Hoeven.
p.15, p.16 (left) **and p.17**
Stefan van der Spek.
p.16 (right)
Frank van der Hoeven.
p.18
Source: Miller Hare.

Lighting as a way to guide people through city centres



Enchanting light projections on Rouen Cathedral: not only to attract large crowds, but also part of a lighting concept for the whole city.

Every night in the holiday season – for the second year now – the Cathedral of Rouen is illuminated by an astonishing light show. Images are projected onto the facade of the Cathedral, accompanied by specially composed music. Most of the images are paintings by Monet, who lived in Rouen for several years. The projected images cause the appearance of the cathedral to change spectacularly, creating an incredible and surreal atmosphere. This fabulous show is not just designed to attract large crowds to the central square every night, it is part of a lighting concept for the whole city: lighting as a way to guide people through the city centre.

Stefan van der Spek

The Spatial Metro project is about developing networks of thematic pedestrian routes and reinforcing the identity of these routes with special paving, lighting and public art consisting of visual devices. An important outcome will be the design of metro style maps, information gateways or welcome points where relevant information is easily available about the city, and the design of key locations or 'stations' along the routes as places to enjoy and discover more about the city. These will be supported by virtual reality models of buildings and spaces to aid visitors, audible signs to make the information easily accessible for everyone, and the introduction of environmentally-friendly transport options within pedestrian zones.

Several workshops were being held during the life of the project. Rouen organised a workshop on its ongoing experience with lighting. This article focuses on using light as a tool to improve the use and quality of public space within the framework of the project: a legible city that is easy to navigate.

Lighting principles

Traditionally, city lighting is designed mainly to provide safety and comfort to all users of the public realm. According to

lighting expert Sylvain Bigot, it now has two other purposes as well: for city beautification and as direction beacons. The example of Rouen reveals a third purpose: light as an event. The UK Institution of Lighting Engineers states that 'good lighting promotes a feeling of security and well-being; bad lighting kills people, places and jobs'. Safety and comfort is usually provided by street lighting. City beautification can apply to different parts of the city, such as gardens, buildings, bridges and heritage sites. Examples of city beautification are the use of coloured street lighting, filters, coloured lamps, building illumination, image projection and dynamic lighting. The underlying concern of all lighting principles is to respect the architecture of the buildings and their surroundings.

Illumination in the city is usually criticised for two reasons: energy wastage and light pollution. The key question is always whether the use of light is proportional to the gain in spatial quality and so it is always necessary to draw up a city lighting strategy. The goal of a balanced lighting plan is to secure orientation and safety, conserve energy, minimise light pollution and ensure coherence between all lighting elements. Sylvain Bigot distinguishes between two types of lighting plan: the lighting master plan, which only deals with city beatification (for example Lyon and Marseille), and the lighting development plan, which is more technical and focuses on safety, orientation and comfort.

Bigot identifies five steps in the process of developing lighting plans:

1. Historic and cultural research to select heritage features;
2. Analysis of the setting: urban architecture and current street lighting;
3. Classification of the elements;
4. Definition of 'the Image of the City': selection of image-defining buildings and public spaces, and;
5. Lighting proposals for street lighting, city beautification and/or direction beacons.

This means that the main goal of the process is first to identify the desired image and define a concept, and then to choose

the appropriate technologies. Illuminating objects is not just a question of setting up a projector at a particular place; a real effort must be made to use the right equipment for the location, the desired image and the budget. Safety and durability are an important consideration, especially the danger of vandalism.

Workshop

Many cities use lighting to accentuate certain locations during the night or to radically change the form or appearance of an object. In Hamburg, a part of the harbour is illuminated at night to attract people. The pattern of lights on the bridge in Bristol differs from the shape of the structure, giving the bridge a different form at night. Likewise, the Eiffel Tower is transformed every month by a new lighting theme. In Delft students can play Tetris at night with the windows of the Faculty of Electrical Engineering, Mathematics and Computer Science.

Conclusion

The light master plan is not an entity unto itself but also makes demands on the environment. It is a strategy whereby a balance must be struck between the illumination of objects and the consequences for the direct environment, and between demands made by the direct environment and demands (conditions) made on the direct environment.
The light master plan is a strategy for the night; important routes can be accentuated and objects that may aid orientation and navigation can be illuminated.
Under the Rouen lighting plan the 156 different types of lampposts will be reduced over the next few years to 10 types, all orange sodium lamps, and the other ‘dirty lights’ will be replaced by low-energy and long-life lamps. The new lighting system allows the lighting scheme to be changed into a variety of different, adaptable regimes during the night.
Different types of streets and public spaces will be defined by different colours of light and different illuminated objects. A distinction will be made between car streets, pedestrian streets and streets with historic monuments and important places, which should encourage orientation during the night.
Finally, it means that the illumination of all the key buildings in the city will be in keeping with their architecture and

surroundings. For example, Rouen's famous Big Clock is lit up using Micro-Light technology, while new LED displays light up the Archive Tower, which functions as a beacon on the other side of the river.

The Archive Tower illuminated: leds enable it to change colour and pattern, and even to present large pictures or commercial images.

Epilogue: outside Rouen

The lighting workshops in Rouen as part of the Spatial Metro project stimulated the awareness among the other partners of the value of a public lighting strategy for a vital city core. Based on the Rouen experience, the cities of Koblenz and Norwich started working on a lighting strategy. The strategy includes an overall system of street lighting in the inner city and the application of new illumination techniques on special buildings (such as churches, the city hall, etc.) and at special places (such as vital squares, water fronts, etc.).

Photographed art works

Sylvain Bigot

The Archive Tower illuminated: leds enable it to change colour and pattern, and even to present large pictures or commercial images.

Strengthening
Koblenz

Driven by the Federal Garden Show

There is an acute need for action in Koblenz city centre. Although extensive renovation work since the 1960s has led to notable improvements in the key areas, there are still many clear signs of wear or functional defects. For several months, the responsible members of the city council and administration have been considering a comprehensive package of measures intended to return the former splendour to a city in which the bombs of the second world war and the serious mistakes during rebuilding have left ugly scars. The aim: To strengthen Koblenz in its competition with the neighbouring towns and regions, and to attract more visitors and customers. It is a question of rediscovering a city with ancient mediaeval roots and the resulting economic success.

Reinhard Kallenbach

All involved were and are in agreement that quick results must be achieved. The reason: The Federal Garden Show (Buga) 2011 will be held in Koblenz. Actually, the city had originally applied for the years 2013 or 2015; however, it was ultimately unable to hold its own against the competition from Hamburg and Osnabrück. Nevertheless, when Duisburg decided not to host the Federal Garden Show, Koblenz was given a new, unexpected chance and with it the opportunity of tackling the long overdue measures with a degree of urgency. However, this requires investments well in excess of Euro 100 million. Euro 102 million will be due for the Buga 2011 alone, whereby the State of Rhineland Palatinate is contributing around Euro 49 million. This immense sum does not include the urgently required investments in streets and squares in the city centre.

It was clear from the very beginning that the city can only shoulder the major projects by acquiring partners. The fact that the European Union provides the local authority districts with funds within the scope of the ‘North-West Europe Interreg IIIIB’ programme for the development of cross-border cooperation in transnational projects and for the implementation of concrete urban development projects was a welcome option. Above all, participation in the ‘City on Foot’ project offered

Chistmas market in Koblenz. The city is rediscovering its ancient-mediaeval roots – and the resulting economic success.

the opportunity of strengthening the city centre with the help of EU subsidies. However, the actual attraction of the project was not the possibility of financial support but rather the unique opportunity of solving inner city problems within the scope of Europe-wide cooperation. In Koblenz, this would not have been possible without the support of the European Union.

It was above all Lord Mayor Tom Jennings who encouraged his Koblenz counterpart Oberbürgermeister Dr. Eberhard Schulte-Wissermann to participate in the project. Jennings, at the time the most senior representative of Koblenz's partner city Norwich, knew only too well what he was talking about. 'His' city was the lead manager in the transnational project in which Bristol and Rouen (France) were also involved. Additional participants were other public facilities and universities in Delft, Koblenz and Norwich. The budget of the partners involved was around Euro 11 million. This included EU subsidies of around Euro 5 million, provided in the period between 2005 and 2008.

Participating in 'City on Foot'

At the beginning of June 2005, the local press announced that Koblenz would also be participating in 'City on Foot'. After all – as the term says – the project offered the opportunity of reorganising inner city areas and developing them in a uniform manner. One very important point: There was an acute need for action in the centre of the upper area on the Rhine and Moselle because visual aspects and axes were not working. Above all, the connection of the two river banks to the inner city areas left a lot to be desired. As a result of the differing development of the inner city – up to 90 percent of which was destroyed in the war – it was and still is not easy for outsiders to find their way in the centre of Koblenz – although the dimensions are easily manageable by comparison. 'City on Foot' provided a unique opportunity of designing the city in a visitor-friendly manner. The key points: Uniform design of pedestrian links, introduction of a visitor-friendly lighting system and the setting up of points at which free city information can be called up via mobile telephone The initial priority was given to the redesign of pedestrian areas and the so-called 'Master plan light', commissioned and financed by the city's public utility company 'Koblenz Touristik'. This plan placed the question of how artificial lighting can be used to supplement the footpath concept as a guide instrument for visitors and

Model lighting at Florinsmarkt.

guests at the focal point. The French city of Lyon, where a new lighting concept has already proven itself in ideal manner, was repeatedly used as a role model. Now, streets, squares and facades in Koblenz should also be given better lighting. From the very beginning, the Economic Development Office responsible for coordination of 'City on Foot' in Koblenz, has emphasised that the 'Master plan light' also applies for the already well functioning areas of the historic old city – for example the 'Görresplatz', the 'Jesuitenplatz' and the 'Münzplatz'. The name of the project was by itself an indication of the objectives: The reorganisation of the inner city lighting is aimed above all at giving pedestrians 'priority' in all cases. Conversely, car drivers should be given valuable orientation assistance through the selection and effect of the lighting fixtures.

A welcome aspect in the preparations for implementation of the EU project was the fact that, for some years, Koblenz has been promoting itself to an increased extent as a centre for researchers, developers and service providers in the field of information technology. The electronic orientation and information system for visitors to the city was implemented at short notice by the city itself. The telecommunication project for the design of the inner city was planned in cooperation with the renowned Faculty for Information Technology at the University of Koblenz and the city's Office for Land Management and Surveying. This subproject is also being financed by Koblenz Touristik. The city's public utility company is responsible as customer. The core idea: Visitors will be able to obtain information free of charge via electronic means in the very near future. Examples are digital route recommendations for a walk through Koblenz as well as information from the most varying fields – for example on the history of the city or on local cultural events.

In order to communicate the merits of 'City on Foot' to the public as far in advance as possible, the people of Koblenz were given an early taste of what is to come. Thus the 'Florinsmarkt' was presented in new form using the medium of light during the Museum Night in September 2005. Finally, the towers of the 'Florinskirche' and the historical details of the neighbouring buildings were lit up brightly. Even more important was the ensuing dialogue with those directly affected, whereby the Economic Development Office also devoted particular attention

Schlossstrasse
before and after.

to the sceptical Koblenz business people. The main topic of the discussions centred around the past mistakes as regards the lighting of the inner city and the choice of the correct type of lamp.

Priority projects

At the focal point of considerations was above all the axis from the southern Löhrstrasse as far as the Marktstrasse reaching back to Roman roots, which links the station – redesigned in time for the new millennium – with the old part of the city.
A further priority: The western Schlossstrasse Following the redesign of the eastern and central sections of the former showpiece street, the task was now also to finally make a start on the 'end piece'. However, several months were to pass before concrete building measures could be implemented. This was due above all to the fact that those responsible attached great important to finding out whether and how the planned individual measures would be welcomed by the citizens. For the first time, the city organised a virtual survey of its citizens in which the proposals could be assessed online. From the very beginning, this survey was organised in several languages, in order to enable foreign visitors to take part. In addition, the classical – frequently statutorily prescribed – channels of citizen participation were followed. Citizens had the opportunity to express their ideas, reservations and planning suggestions. Ideas and criticism from the citizens flowed into the subsequent planning. This made it possible to achieve fundamental overall improvements for pedestrians. At this point, it should also be emphasised that the city administration also took account of the requirements of the inner city business people when coordinating the further steps. Because of the need to keep the main retail selling months between November and February free of building work to as great an extent as possible, delays in the overall proceedings were deliberately taken into account.

Schlossstrasse before and after

Despite the prospect of EU subsidies, it made no sense for the city administration to opt for speed in the design of the surface area. It was clear from the very beginning that the forthcoming measures should also be used to renew supply and disposal systems. This decision in favour of the civil and underground engineering measures – not subsidised by the EU – did not go down well at all with the local retailers; nevertheless, the work

The Löhrrondell in the past and in the future.

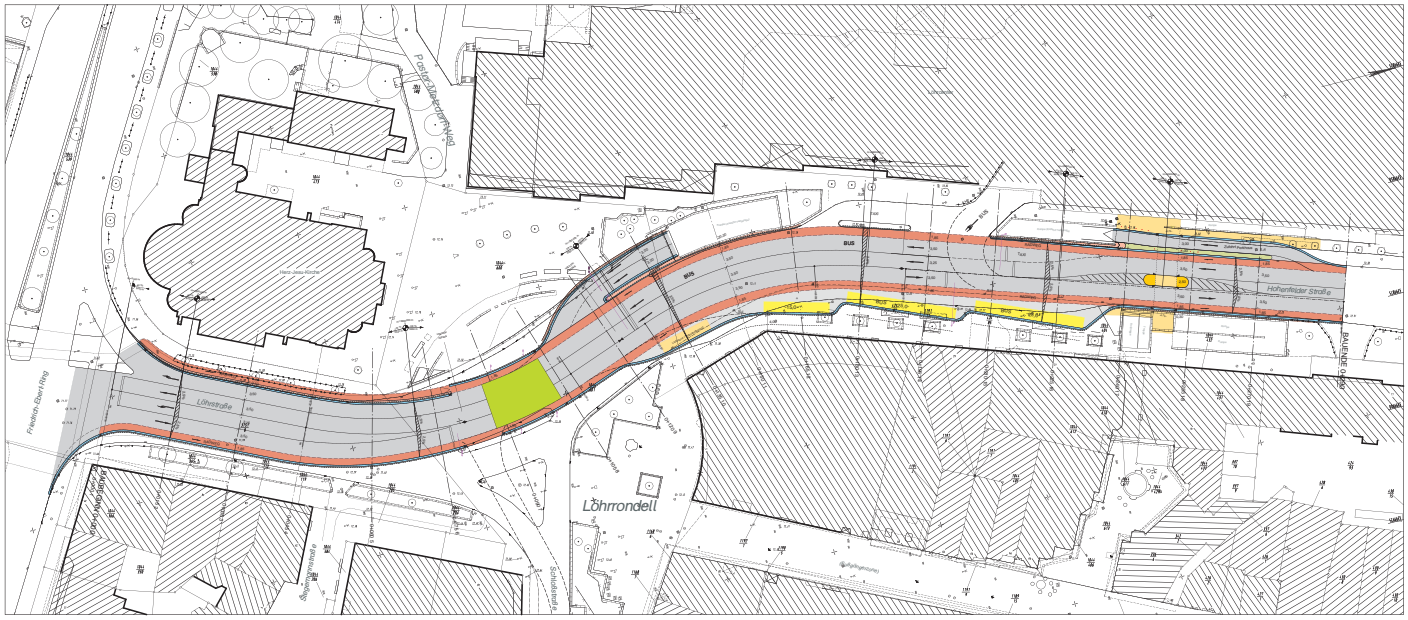
was and remains indispensable. The citizens were likewise not pleased by the decision. After all, the old chestnut trees on the Bahndamm in the Löhrstrasse had to make way (they were subsequently replaced by 14 new trees). However, there was no alternative. Large sections of the drainage system in the Löhrstrasse as well as in the western part of the Schlossstrasse dated back to the 1890s. The extensively brickwork shafts had developed leaks and the condition of the main connections also left a great deal to be desired. A further problem: Due to the particular topographical position of the city on two rivers, the shafts had been laid at a depth of up to six metres.

In the Spring of 2006, after a good year's delay, work finally began on the southernmost section of Löhrstrasse whose design was based above all on the new station square. The work, costing roughly Euro 1 million and carried out amidst ongoing traffic, was completed to a fundamental extent by the end of the year. The redesign of the western part of the Schlossstrasse, where the renewal of the drainage system was particularly complex, was to take somewhat longer. The section was not opened until the middle of August 2007. Before that, the pavements were made considerably wider and the carriageway reduced to one lane. This work, costing around Euro 1 million, was also one of the most important results of the virtual survey of the citizens.

Intensive preparation

Following conclusion of the work in the upper Löhrstrasse and in the Schlossstrasse, the way was free to tackle the complete renewal of the northern half of the Löhrstrasse from the Löhrrondell as far as the Münzplatz. Nevertheless, this section required particularly intensive preparation. Initially, the city of Koblenz organised an international competition for the measures costing a total of around five million Euro. Overall, 220 offices from all over Europe competed for the appealing planning task. Finally, 28 planning offices were requested to provide a contribution. Applicants from the project partner cities were 'seeded' in order to ensure the international nature of the competition and the diversity of ideas. The competition was monitored by a jury of experts made up above all of representatives of the project partners. This was an important precondition for enabling problem-free communication with local politicians and other opinion leaders – for example in

Studies proving that it is possible to give more space to pedestrians.



the local associations and organisations. At the end, the judges were very pleased with the quality of the work submitted. All contributions took account of the particular traffic situation in the centre of Koblenz. Although fully in line with the international spirit of the competition, other European towns and cities were often the motivating force – without the planners neglecting the regional identity and the particular aspects of local architecture.

Finally, at the end of 2006, the result was known: The Koblenz architect Michal Thillmann used his detailed knowledge of the local urban development to win the competition. He had earlier formed a planning group together with the renowned Trier landscape architects Helmut Ernst and Stefan Jacobs, which ultimately triumphed over well-known offices from Rotterdam, London and Berlin. The realistic approach of the three experts ultimately proved successful. The basic requirement: Redesign of the Löhrrondell into a ‘Welcoming point’ via which all other newly designed areas of the Koblenz city centre are easily accessible for pedestrians. This was to be achieved through retraction of the carriageways to form a central hub for pedestrians. In the end, the triumph of the group from Koblenz and Trier was also due to them providing the most convincing approach for the linking of the Löhrrondell to the planned new railway stop behind the Löhr Centre. The surface covering of the Löhrstrasse pedestrian precinct was also to be kept deliberately simple and ‘easy to care for’. The architects opted for large-format granite and concrete slabs in the central area with small cobblestones on the edges. Koblenz City Council gave its basic approval for the concept at its meeting on 1 February 2007.

Once the competition had been decided, the aim was to begin work on the Löhrrondell as early as the end of 2007. Ultimately, the city administration changed its plans. Work in this area will now form the final point of the extensive package of measures for the Löhrstrasse. Preparatory work for this section of the old north-south axis also proved to be anything but easy. The supply lines in this part of the city centre have to be renewed, thus necessitating extensive preparations – and not only as a result of the old drainage system. In some areas – above all in the Marktstrasse – the cellars are below the street, thus necessitating complex measuring work. Even more difficult is the fact that the Löhrstrasse is the main artery of the local retail trade and must not be damaged. From the very beginning, the planners were aware that development in several partial stages would not be sufficient. Finally, ways were found of

carrying out roughly two thirds of the system renewal below ground. The uppermost objective had to be as little disruption of business operations as possible.

The ‘Löhrstrasse project’ explicitly includes important side streets. Fully in line with the spirit of the EU project, this should lead to the creation of a network making it possible to discover the City on Foot. Thus, in the medium term, the intention is also to make the Altlöhrtor, as the most important pedestrian axis to the central square – which could be rebuilt as part of a, nonetheless not undisputed, investor model – more attractive. Standing in the way of this is the existing access route to an important car park which is to be relocated under a change of the development plan.

‘City on foot’ at Deutsches Eck

Whilst the development work in many parts of the city centre has not yet been completed, ‘City on Foot’ on the ‘Deutsches Eck’ has already taken on a clear shape. Since October 2007, a new lighting system designed by the Wuppertal planner Uwe Knappscheider has been in operation on the ‘Deutsches Eck’; this switches on automatically at nightfall every evening and offers a new presentation of the entire tip of land on Rhine and Moselle. In the past there was just one system which essentially showed only the equestrian statue and the base of the monument in their true light This represents the implementation of a further part of the ‘Master plan light’ in addition to Obere Löhr and Schlossstrasse, which should make the route through the old part of the city and the city centre more attractive, and make it clear to car drivers where they are not allowed to go. One thing is clear: Pedestrians should enjoy even greater priority in the heart of Koblenz than in the past – nevertheless, without impairing residents’ vehicles. Three electronic bollards have already been installed for this purpose. European towns and cities were also the motivating force behind this subproject.

Even if there are many points of Koblenz city centre at which the execution of the plans – influenced at international level – cannot be completed until during the coming months, it is already clear that the decision to participate in the EU project was absolutely right – and not only because of the subsidies granted or promised. For the upper area of Koblenz, ‘City on Foot’ offered a unique opportunity to tackle the redevelopment of the city centre from a European perspective and to react to future developments at an advance stage. The result of the

Plans for the pedestrian zone.

project is a great central idea which will strengthen Koblenz in its competition with other regions. Ultimately, everybody will benefit: Visitors to the city from all over Europe and, finally, the people of Koblenz themselves. 'City on Foot' has also opened up new dimensions in cooperation. The city administration involved citizens, business people, politicians and property owners at a very early stage. The echo was positive in every respect, because the instruments used went well beyond the statutory requirements. All those involved agree that, without the cooperation with the European Union and the project partner cities, qualitatively high-calibre planning would not have been possible on this level in a major inner city context. The most important aspect, however, is that there has already been a notable increase in the attractiveness of the city of Koblenz. In addition, it is also already becoming very clear just how true an old rule of redevelopment is: Every Euro invested by the public sector leads to subsequent private investment of at least three Euro. At the end of the project was the recognition that all involved had learned a great deal from one another through the 'European variant' of the redevelopment of the city. The most important aspect here is that there has been an increase in the awareness of the interests of pedestrians who will very soon be able to rediscover Koblenz.

Photography

p.29 (right) **and p.30**
Stefan Kesselheim, www.koblenz-bilder.de
p.31 (right and left), **p.32** (right), **p.33 and p.34**
Municipality of Koblenz.

Bristol
Legible City

Welcoming its visitors

Bristol City Council has been developing the Bristol Legible City Initiative over a number of years. The Initiative is a project that aims to help people, whether visitors or residents, to interpret and navigate the city. The Spatial Metro collaboration has given Bristol the opportunity to further develop its provision of user-centred information for the travelling public in the form of Welcome Points.

Sam Gullam

Bristol Legible City was developed to improve people's understanding and experience of the city through the implementation of identity, information and transportation projects. A unique concept at its inception in the 1990s, Bristol Legible City has delivered projects that include pedestrian direction signs (see opposing page, left), on-street information panels with city and area maps, printed walking maps, visitor information identity and arts projects (see opposing page, left). These projects communicate information on the city consistently and effectively to visitors and residents alike.

Since the first signs were introduced in the spring of 2001, over 40 communication projects have been implemented or are in the making.[1] The pedestrian signing sysatem helps visitors find their way around the city centre and encourages people to explore the local area on foot or by using public transport. The projects have provided visitors with a sense of welcome and a better understanding of Bristol's attractions. The aim of developing the system was to make the city open, easy and connected. The primary principle was to approach the dissemination of information from a user's perspective. This entailed understanding when, where and what people

Walkie Talkie. Launch art project for Legible City sign System.

Bristol Legible City pedestrian direction signs.

want to know and developing the best format for delivering that information. It also involved creating the opportunity to integrate information from various modes of movement and in doing so, communicating that the systems are inter-connected and are not merely entities unto themselves. By taking control of the points at which people touch this system, it was possible to direct how and the 'tone of voice' with which the city addressed the public, giving it the opportunity to influence people's impressions and perceptions of the city.

The goal of realising a unique visual identity was realised through the definition of a graphic palette of colours, fonts and cartographic approaches developed concurrently with a three-dimensional physical style manifesting in a family of street furniture components. In developing this unique visual language for the communication of movement and visitor-related information, the Legible City Initiative specifically avoided the use of the City's corporate branding or that of any of its delivery partners. The aim was to develop a language that could be highly functional and appropriate in its ability to deliver information in the street environment whilst at the same time reflecting the character of the city and contributing to its sense of place. The goal was the development of an identity that could grow with the system without the pressures of external influences that would demand change.[2]

From the outset, the highest quality of information planning, design and use of materials was demanded in order to ensure that solutions were developed that could be easily maintained and would provide longevity of service, also eliciting a sustainable response. To ensure that the outcomes were both economically feasible and sustainable, early on in the project, a partnership was built with Clear Channel[3] so that funding and maintenance could be provided through a co-ordinated commercial street furniture advertising contract.

A Pedestrian Sign System

One of the greatest challenges that the city faced was how to encourage and assist the movements of pedestrians around the disparate parts of the city centre and connect them to

Bristol Legible City pedestrian map and directional sign panel.

its areas of regeneration around its main train station and historic harbour side.

Key to comprehending how to resolve this issue was firstly to understand the urban form of the city and how this related to people's perception and mental maps.[4] In response, a system of pedestrian signage (see opposing page), was developed with a defined set of connecting routes linking neighbourhoods, areas of activity, attractions and key arrival points relating to both public transport and private vehicle use. These routes are not made explicit in maps or diagrams aimed at the user on the street, but define key intersections, or nodes, and the locations where signage is most relevant. As a planning tool, these routes assist in determining the optimum number of signs, ensuring continuity in the information provided to the pedestrian without increasing street clutter or causing excessive expense. Defining a clear pedestrian route strategy has also helped in prioritising urban realm and streetscape improvements, focusing funding on upgrading the pavements on and the environment of the most important routes whilst also making these routes accessible to all.

The signs themselves have a clear hierarchy of information; this was only made possible by creating a clear naming and definition of areas. This facilitates the use of a method of progressive disclosure, whereby the closer you get to a destination, the more specific the information becomes. For example, when travelling to Bristol a sign only needs to confirm that you are heading in the right direction. It need not and could not list all the destinations in Bristol. As you get closer the sign might direct you to various areas such as Harbourside; once in Harbourside, but only once you are actually there, you will see a sign directing you to your specific destination, such as the Watershed.

Use of Maps

The map panels use 'heads-up' mapping, i.e. the map is orientated so it displays what is in front of you. When you

move to the other side of the sign the map will have been rotated 180°. Using a three-dimensional representation of recognisable landmark buildings and drawing of the maps with the pedestrian in mind helps people who normally have difficulty using maps to get their bearings more easily.

Most maps provided publicly tend to be schematic, representing road hierarchy, and are distorted to help the motorist navigate more easily. In order to enable pedestrians to relate to the space surrounding them more easily, the maps within the pedestrian sign system were drawn representing all the features at true scale; pavements were shown at their correct width in relation to roads and positions of pedestrian crossings etc. were included. The maps also included a 4-minute walking circle around the location of the 'You Are Here' indicator to provide the user with an immediate understanding of distance.

Inclusive Design

As well as planning signed routes to be accessible for most people, the needs of people with a variety of disabilities were also considered. Strong levels of contrast and the use of appropriate fonts and scales of type all assist in making information legible to the greatest number of people whilst inclusion on the map of such features as steps and locations of pedestrian crossings helps people suffering from mobility impairment to decide on the most appropriate route. Since the initial scheme was developed and in response to the Disabilities Discrimination Act (DDA)[5] the UK now has clearer guidance.[6]

The Legible City

The project continues to draw international attention, which in itself has helped to promote the city. It has also earned Bristol City Council a number of accreditations including the Royal Town Planning Institutes Award 2001 and the Environment Category of the DBA Design Effectiveness Award 2003.

The importance of the legibility of the public realm and urban environments has been an area of growing interest in recent years in the UK, largely stemming from a government drive towards urban regeneration within British cities.[7]
The pedestrian sign system in Bristol set a benchmark in good practice when first implemented and generated interest among many cities who have referenced it to inform their own approach. A number of cities have introduced or are in the process of introducing signing systems that have been influenced by Bristol; these include Liverpool, Sheffield with its Connect

Introduction maps to Bristol and central area of the city.

Information on transport alternatives and transport system diagram.

South West map at Bristol International Airport.

Welcome Information at the New Bus and Coach Station.

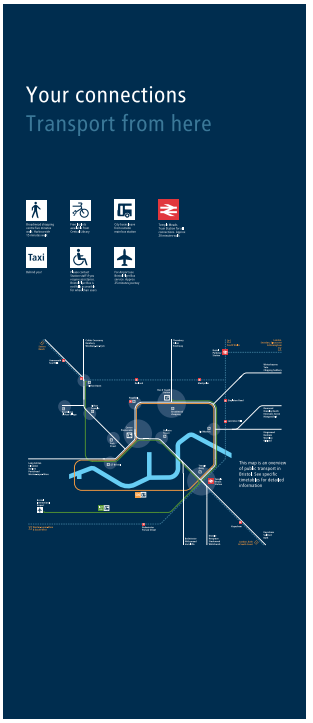
Sheffield programme[8] Southampton, Newcastle, Leeds, Norwich, Glasgow plus a number of other smaller towns and cities.

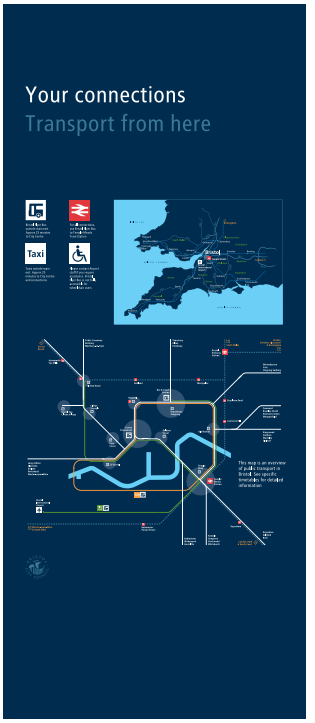
The influence has been wide-ranging, in some cases leading to the adoption of similar approaches to information content and hierarchies, and in others leading to the use of the 'heads-up' format for mapping, sometimes using similar materials and processes to produce the physical signs. Those cities that have allowed themselves to be influenced by the Bristol system rather than attempting to mimic it have arguably created a response that relates more directly to the local context, creating systems that build on the individuality of the place concerned.

Legible London is a project that started as a response to the Bristol Legible City Initiative with key stakeholders within Central London investigating how such a system could help to provide benefits to the public in the UK capital. Following reports commissioned by TfL (Transport for London)[9] and CLP (Central London Partnerships),[10] the development of a system that will span London's 33 boroughs and form an integrated and consistent approach to pedestrian wayfinding is now underway. The project presents many factors of a different scale to those in Bristol including the size of city, the multifarious transport modes and the political dynamic of the various stakeholders and information providers. However, many of the initial key concepts of Bristol have influenced the ways in which information is supplied. The project is now led by TfL, which is developing prototypes and pilots to test thinking.[11]

Spatial Metro in the Bristol context

The pan European collaboration of the Spatial Metro programme has enabled Bristol to define what information it should provide at its arrival gateways. The information must enhance people's experience of the city, whether they are visitors or residents, by helping them to easily orientate and navigate, understand the public transport options available and by conveying what the city has to offer. This can be achieved by helping the user create an image or mental map of the city, highlighting potential





destinations and activities and supporting itinerary planning and way finding.

Delivery

As part of a pilot, provision of information is being tested at four of the city's major transport interchanges; Bristol Temple Meads Station, the new Bus & Coach Station (see opposing page), Bristol International Airport and Bath Road (Brislington) Park & Ride.

Signs at each location provide content that has been determined by addressing the need of the user; this is essentially anyone who may find themselves moving around the city, whether they are a tourist, a commuter, a shopper, a resident or someone from the local region visiting a hospital or similar amenity.

In the Bristol solution, this content has been distilled into a hierarchy by answering the questions below:

— Where am I and what is my location in relation to my destination?
— How do I move from my current location towards my destination and what are the transport options?
— What is there to do in the city of Bristol and how might I get there?

Brunel Mile Super Graphic.

This has resulted in the following hierarchy of information (see page 41, left and middle pictures):

— Confirmation of location;
— A map of the overall Bristol area;
— A map of the central area of the city;
— Information on each transport alternative for leaving the location, and;
— A transport system diagram showing the various modes of transport within the city and their connectivity.

The airport also has a South West of England map (see page 41, right picture), acknowledging the airport as a gateway to the wider area; in addition to the above, provisions have been made at certain sites for poster panels that can display time sensitive information. These may promote or provide specific transport information on an upcoming city event. An example is the need to direct large numbers of new university students from Temple Meads Station to the campus on open and clearing days.

The benefits

Providing welcome information and the assistance it gives is intended to benefit the city in a number of ways; visitors' perceptions of Bristol are enhanced, their understanding of the city is increased, benefits are gained through a modal shift to public transport and walking, and economic benefits in particular are gained by visitors becoming more active and potentially returning for alternative activities, i.e. business travellers who return with their families in connection with leisure activities.

Transferability to other cities

Each city may have a different view of what it should provide as welcome information and what form this information should take. This will be affected by a variety of factors specific to the city and it is the difference in how the solution responds to those factors that can help to define a city as an individual place and provide its visitors with a unique experience. These factors might include the size of city, its heritage, its transport systems, who initiated the project and the stage of the city's development.

Although the Bristol solution is not necessarily directly transferable to other cities in its specific manifestation, there are a number of common principles that may be applicable elsewhere:

— *Create an image of the city*
it is important to give new visitors to the city an overall picture of the city that allows them to create a mental map

of it. This helps people understand the relationship of different areas of the city to one another and to the major topographical and geographic features. It also assists visitors in navigating and can further give them a greater degree of confidence in exploring the city whilst rapidly allowing them to gain an overall feel of it.

— *Conveywhat the city has to offer*
providing people with information on their arrival stating how they can get to their end destination is also an opportunity to show them the key visitor attractions and other activities the city can provide. This can inform people's itineraries and increase the potential for a return journey at a later date in connection with an alternate activity. i.e. business visitors may be encouraged to return with their families in connection with leisure activities.

— *Assist movement through increased knowledge*
the more people understand the city and the distance between locations and destinations in walking times, as well as the most direct routes, the more likely will they be encouraged to walk as an alternative to transport. A sign system can serve to promote walking by advertising it as an option as well as assisting those who have decided to use walking as a mode.

— *Integrate transport modes through information provision*
key to diverting people's behaviour away from private vehicles, or persuading them to make a larger part of their journey on foot is recognising walking as a movement mode and subsequently integrating information on this and other modes of public transport. Walking is often given less significance as a mode of movement and historically, public transport modes in the UK have treated information on walking in isolation to other modes.[12] Whether or not the traveller chooses to increase the amount of walking he does is a personal decision, but informing people of the options for onward movement by all modes available will enable more efficient journeys and will be reflected in the city's attitude towards the travelling public.

Brunel Mile interpretive sign.

— *Provide appropriate information relative to the location* customising information to be location-specific allows for a greater depth of detail in the information given and the immediacy with which it can be interpreted, although a balance has to be struck between the above and the need, regularity and cost of updating this information.

Spatial Metro Influence on Bristol

Having delivered welcome information and signage at three of Bristol's key transport arrival points and one of its Park and Ride sites, the programme of works is currently being extended to deliver signage at two other locations, one a major transport hub within the city centre and the second a space adjacent to one of Bristol's key heritage attractions, St Mary Redcliffe. These two locations are key nodes within the pedestrian movement system, and although Bristol's existing sign system is not based on the concept of routes defined by activity or attraction type, they have been treated as 'stations' within the concept of Spatial Metro – spaces where pedestrians can dwell and gather further information about the city and its attractions. The Spatial Metro programme and the dialogue with other cities throughout the course of the project has informed and reinforced the need to create an introduction to the city at key nodes within the pedestrian route network as well as at key arrival points.

Although Bristol's pedestrian sign system does not identify specific routes as being more significant than any other, as an influence on the Spatial Metro project, it has been decided to mark the Brunel Mile (see above), a significant leisure route that links some of Isambard Kingdom Brunel's major contributions to the city. This is realised through a series of interpretive signs (see above), which add a cultural heritage aspect to the system, one of these signs coinciding with the 'station' at St Mary Redcliffe.

The welcome points project has been developed by Sam Gullam of Lacock Gullam and Tim Fendley of AIG working in collaboration with the City Council's City Centre Projects team and its Visual Technology department; all are key members of the original team that delivered the Legible City pedestrian wayfinding system. Further information can be found at www.bristollegiblecity.info

Notes

1 Further information about Bristol Legible City and the projects undertaken can be found at www.bristollegiblecity.info

2 This approach was documented through an exhibition and publication titled 'you are here'. The publication, also known as 'the blue book' is now out of print. Information about this and other Bristol Legible City publications can be viewed at www.bristollegiblecity.info/r3.html

3 Clear Channel is an outdoor advertiser that assists local authorities in the provision of street furniture through their Adshel business division. www.adshel.com

4 Defining the city's urban form in relation to the view of the 'user' and how this can influence the information to be provided builds on the work of Kevin Lynch, *The Image of the City* (1960), MIT Press, ISBN 02-62-12004-6.

5 *PartIII of the Disabilities Discrimination Act (DDA) 1995* (Finalised 2005) (1995), gives people a 'right of access' to goods, facilities services and premises. TSO, ISBN 01-05-45095-2, www.hmso.gov.uk/acts/acts1995/UKpga_19950050_en_1.htm, www.dft.gov.uk/transportforyou/access/dda2005/pubs/part3

6 *Inclusive Mobility, A Guide to Best Practice on Access to Pedestrian and Transport Infrastructure* (2002), Department of Transport, www.dft.gov.uk/transportforyou/access/tipws/inclusivemobility. *Also Sign Design Guide – a guide to inclusive signage* (2000), JMU and the Sign Design Society, ISBN 18-58-78412-3.

7 *Towardsan Urban Renaissance – Urban task Force* (1999), chaired by Lord (Richard) Rodgers, ISBN 18-51-12165-X.

8 Connect Sheffield is a major programme of connected information whose main partners are the city council and the South Yorkshire Passenger Transport Executive (SYPTE), www.sheffield.gov.uk/whats-new/connecting-sheffield/connect-sheffield

9 Including, *Promoting Walking in London: A Draft Business Case* (2003), and *Towards a fine city for people – Public spaces and public life* (2004), both by Gehl Architects for TfL.

10 *LegibleLondon – A Wayfinding Study* (2006), AIG Lacock Gullam for Central London Partnerships (CLP), www.legiblelondon.info/wp01/?p=34

11 www.legiblelondon.info, the'Yellow Book' describes the first prototype delivery and is available at www.legiblelondon.info/wp01/?p=74

12 Transport for London through its Legible London programme is now investigating how it can integrate walking information into the on street infrastructure of other modes.

The concept of
Biel/Bienne (Switzerland)

Information and signposting for pedestrians

Highlighting pedestrian routes, offering pedestrians a dynamic aid to find their way and implementing an information platform for residents and visitors: these are the objectives of the signposting concept of Biel/Bienne town council. The new information vectors incorporate interactive maps and are located throughout the town in the form of routes linking the town centre to the residential districts.

Thierry Burkhard

Jonas Schmid

Pascal Mages

After the 1980s and 1990s, which were characterized by demographic decline and economic weakness, the launch of a new council policy at the end of the 1990s, which was bolstered by economic promotion and a dynamic town planning vision, injected new vitality into the town of Biel/Bienne. For 7 years, the population of the town has steadily increased, new businesses have arrived and new districts are emerging on former industrial wasteland. This controlled urban growth is mainly occurring internally, through densification, regeneration of disused areas and renovation of the existing housing stock.

This urban renaissance movement is supported by a broader trend of urban migration, favoured by the development of new residential districts close to services and leisure facilities, taking into account the social context and the new needs of working people.

Coordinated actions to promote pedestrian travel

Observing, according to statistical data, that mobility needs are increasing at the same rate or more quickly than demographic growth, and committed to sustainable development that ensures a quality living environment, a coordinated transport policy that promotes a modal

Biel/Bienne,
Place Centrale.

shift, favouring environmentally friendly modes of transport, is essential.

Therefore, a major action plan has been deployed since 1999, with a view to establishing a cycle route specifically adapted to the spatial layout of Biel/Bienne, running east-west, to fill in gaps in the network and increase the amount of sheltered and secure bicycle parking. Projects are still being implemented on an occasional basis. In parallel, in 2002, bus stops were cleaned up and communication was improved for the public transport network with the introduction of a passenger information system that uses the local radio network (iqube equipment), making bus travel more comfortable. In addition, feasibility studies for the construction of an urban tram system are underway. In this context and within the framework of this article, it seems appropriate to look in greater detail at the completed or planned redevelopment work intended to enhance the appeal of pedestrian mobility.

A great deal of work has been carried out to improve journeys on foot in the town centre and link the centre to Lake Biel, which unfortunately is separated by the railway line and a major secondary road.

Firstly, the majority of the busy shopping thoroughfare that links Place de la Gare and the historic heart of the town, crossing Place Centrale, has been redeveloped as a pedestrian street. The southern section of Rue de la Gare, the last relic that has motorized traffic, will soon be redeveloped, with access being limited to public transport, cyclists and pedestrians. Traffic flows in Place Centrale, the central pivot of this thoroughfare, which lends itself to strolling and browsing, were reorganized in 2001. Until then a focal point for motorized traffic, with more than 15,000 vehicle movements per day, Place Central has become the main meeting area in Biel/Bienne, thus eliminating the break in the Station-Old Town pedestrian link and simplifying readability for all users. Throughout Place Centrale, pedestrians

The network of routes defined by the direction signs.

Network of routes.

Locations of interactive signs.

Direction signs.

Pedestrian priority zones and main pedestrian routes in Biel/Bienne.

have right of way and can cross the road at any point. The speed limit for traffic is 20 km/h.

Encouraged by the success and widely recognized improvement of traffic flows, characterized by a reduction in motorized traffic in the short term, other pedestrian priority zones have recently been set up in Biel/Bienne, for example in the historic centre, or are planned. Moreover, the construction of a convenient underpass, leading to a new square developed in 2001, called Place Robert Walser after the writer who hails from the town, has extended the aforementioned pedestrian link towards the lake, particularly the beach and the wharf.

A major project remains to be undertaken: improving pedestrian links between the different residential districts and the town centre, with a view to promoting journeys on foot. To achieve this, there are two main focuses to the strategy: the first addresses the building of new infrastructures – cycle and walkways (plan to extend Rue des Jardins as a pedestrian route), pavements and safe walkways for pedestrians; the second concerns the preparation of a signposting concept, with signs organized in a network, promoting pleasant and attractive pedestrian links.

Signposting concept

The signposting concept will make it possible to assist visitors and people who are unfamiliar with Biel/Bienne by providing information; in addition, it is planned that the signs will indicate attractive pedestrian walkways between the residential districts and the centre, to link up the various parts of town.

The concept, which was approved by the council in spring 2008, has been developed to incorporate interactive elements into the direction sign network, offering users orientation assistance in the form of interactive maps and other information. The aim is to decentralize information regarding public transport, public administration, leisure activities, etc. by using the technologies available. Biel/Bienne has made an international name for itself thanks to the numerous communications firms and renowned watch manufacturers

that have their head offices or production units there, taking advantage of local know-how and ideal conditions. The aim of the project was to remind people of this, by integrating the themes of watchmaking and communication.

Interactive signs: dynamic orientation aid

Geographical information is summarized in the form of a map of the town, printed on the upper part of the metal panel of the interactive sign. In addition, an interactive map will be available via a touch screen, enabling users to browse a predefined database. The main purpose of the interactive sign is to provide orientation assistance. The map will have a zoom function, enabling users to browse at both the town scale and the district scale, zooming right in to find a street and a building number (the Point of Interest POI system, developed by a firm from Biel/Bienne). Furthermore, it will be possible for a certain place to request the plotting of a specific route, by defining a destination. Pedestrian and cycle routes will be incorporated, as will public transport interfaces.

Other types of information will also be available, such as bus route numbers and times, national rail times and information provided by the town council. The concept has been designed so that in future it will be able to receive and incorporate other information, such as cultural information. The interactive sign will be equipped with a clock and will foster Biel/Bienne as the watchmaking capital of the world.

The project envisages the installation of twenty-two interactive signs in the town centre and at the nerve centres of the residential districts (district centres, meeting points).

Direction signs: attractive routes

Visitors and new residents in Biel/Bienne will be able to find their way around on foot, using pleasant, safe pedestrian routes. Analysis of the relationship between routes and the image of

Biel/Bienne,
Place Centrale.

Routes and information: direction and interactive signs.

the town has not been limited to pedestrians. The interlinkage of individual motorized traffic, public transport and slow traffic to various places have also been examined.
The pedestrian signposting and orientation system will reveal the uniqueness of the town, improve its image and appeal, and facilitate access and orientation for residents and visitors alike.
Each direction sign provides details of addresses and geographic directions (streets, squares, district), public institutions (local government buildings, schools), cultural attractions (museums, theatre) or sports facilities (swimming pool, stadiums), as well as transport information (stations, car parks, bicycle stations, bicycle shelters) in relation to the location of the sign.
There is a main east-west artery for pedestrians and cyclists, largely running along the River Suze. Branches come off this artery to serve the other districts, following attractive routes. These routes take into account the proximity of public transport stations, in order to facilitate transport connections, as needed.
A second north-south artery links the picturesque district of Vignoble – located on the south-facing slope of the town and characterized by the remains of low walls and steep paths that remind passers-by of the ancient terraced vineyards – to the southern part of town, via the town centre. This is an attractive route that offers spectacular views of the historic heart of Biel/Bienne, the modern district and contemporary housing developments. As well as the interest of the planned routes, aspects linked to pedestrian mobility, such as safety, journey time and coexistence with other means of transport have been taken into consideration.
The direction signs contain thematic, functional information, in both German and French. They will enhance the appreciation of certain places of interest, improve access to district centres and help users find their bearings in Biel/Bienne.

Technical support

The signs consist of a metal supporting structure covered with aluminium sheets. Each part is treated with anti-graffiti coating, which limits the extent of possible damage.
The electronic component comprises a 19-inch touch screen with anti-vandalism glass and a computer which displays the orientation map and information, and manages user requests according to predefined programming. These terminals will not offer open Internet access.
The search engine is based on a database, consisting of georeferenced information about streets, buildings, bicycle parks and car parks, as well as more general information such

as council office and museum opening times, the local events diary, etc. Access to the system for the purpose of marketing the town will make it possible to send new information or update data on the display, which will be automatically transmitted by the network using a GPRS or WLAN system.

The town laid bare to pedestrians

The signposting project and the work undertaken to increase the attractiveness and fill in the gaps in the pedestrian network contribute to enhancing routes intended for daily journeys. Whether during pedestrian commutes or journeys for leisure reasons, the town bares itself to the walker. Different perspectives, districts, buildings, roofs… The myriad details of the urban fabric and numerous forms of a new urbanity can only be appreciated when walking through the town on a daily basis; an experience that is both useful and enjoyable.

Photography

p.48 (upper middle)
Stadt Biel

Part 2

Investments & context

What investments are required to make the pedestrian policy in each city work? What are the spatially relevant circumstances of each city?

Investments & context

Norwich Cathedral.

Norwich market.

Sweets in Rouen.

This chapter provides an overview of the main investments made within the framework of the Spatial Metro Interreg IIIb project. Most of the investments were made in Norwich (United Kingdom), Rouen (France) and Koblenz (Germany). All projects were co-financed with money from the European Regional Development Fund (ERDF). This chapter also offers the contextual information on the cities necessary to understand the research carried out by Delft University of Technology.

Stefan van der Spek

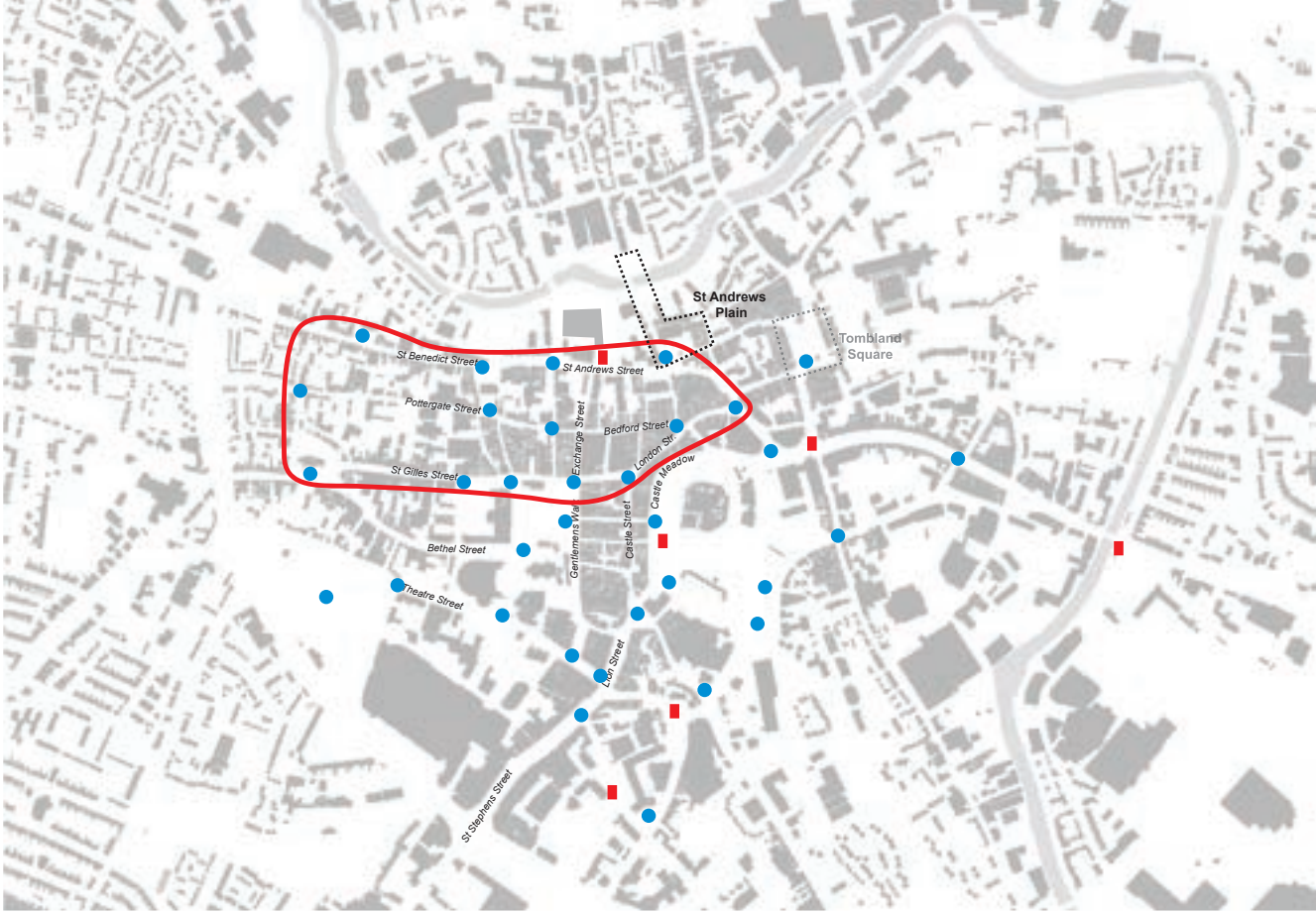
What can you find here?

After this introduction, each city will be elaborated on separately and it specific context explained. A short introduction on each city will be followed by a description and an illustration of the investment projects. The next page will contain a satellite image of the city and an overview of the arrival points. Finally, the main commercial activities for each city will be mapped, as well as the major attractions in the city centre.

Koblenz river bank.

Rouen old city.

Koblenz.


St Andrews Plain
Tombland Square
St Benedict Street
St Andrews Street
Pottergate Street
Exchange Street
Bedford Street
London Str
St Gilles Street
Castle Meadow
Gentlemens Wa
Castle Street
Bethel Street
Theatre Street
Lion Street
St Stephens Street

City of Norwich

Norwich is situated in the heart of East Anglia, the United Kingdom. The city functions as a regional capital, offering retail trade, higher education, heritage and culture. Norwich is an excellent example of a well-preserved medieval city. The city is renowned for its medieval churches within the city walls, of which there are over thirty. Remarkable are the half-timbered houses and cobble stone roads of Elm Hill.
Norwich is an inspiring and vibrant city with museums, galleries, theatres, buzzing nightlife and year- round festivals such as Heritage Open Days, Norwich & Norfolk Festival.

Before railway connections were introduced from London to Norwich in 1845, the city was so geographically isolated that it was quicker to travel by boat to Amsterdam than over land to London. Today, the railway links Norwich to the rest of the country via London and Peterborough. Norwich International Airport has connections to Central European countries, such as the Netherlands (Amsterdam Schiphol Airport) and Germany.

Norwich is a twin city of both Rouen and Koblenz. The City accommodates the University of East Anglia (1964).

About 129,500 people live in the Norwich City Council Area. Within the East of England, Norwich is the fourth most densely populated area with 3,320 people per square kilometre.

Norwich: Key ERDF Investments in public space.

Information point.

Welcome point.

Indicates Norwich Lanes shopping district.

Investment project area.

Norwich: Google Earth Map.

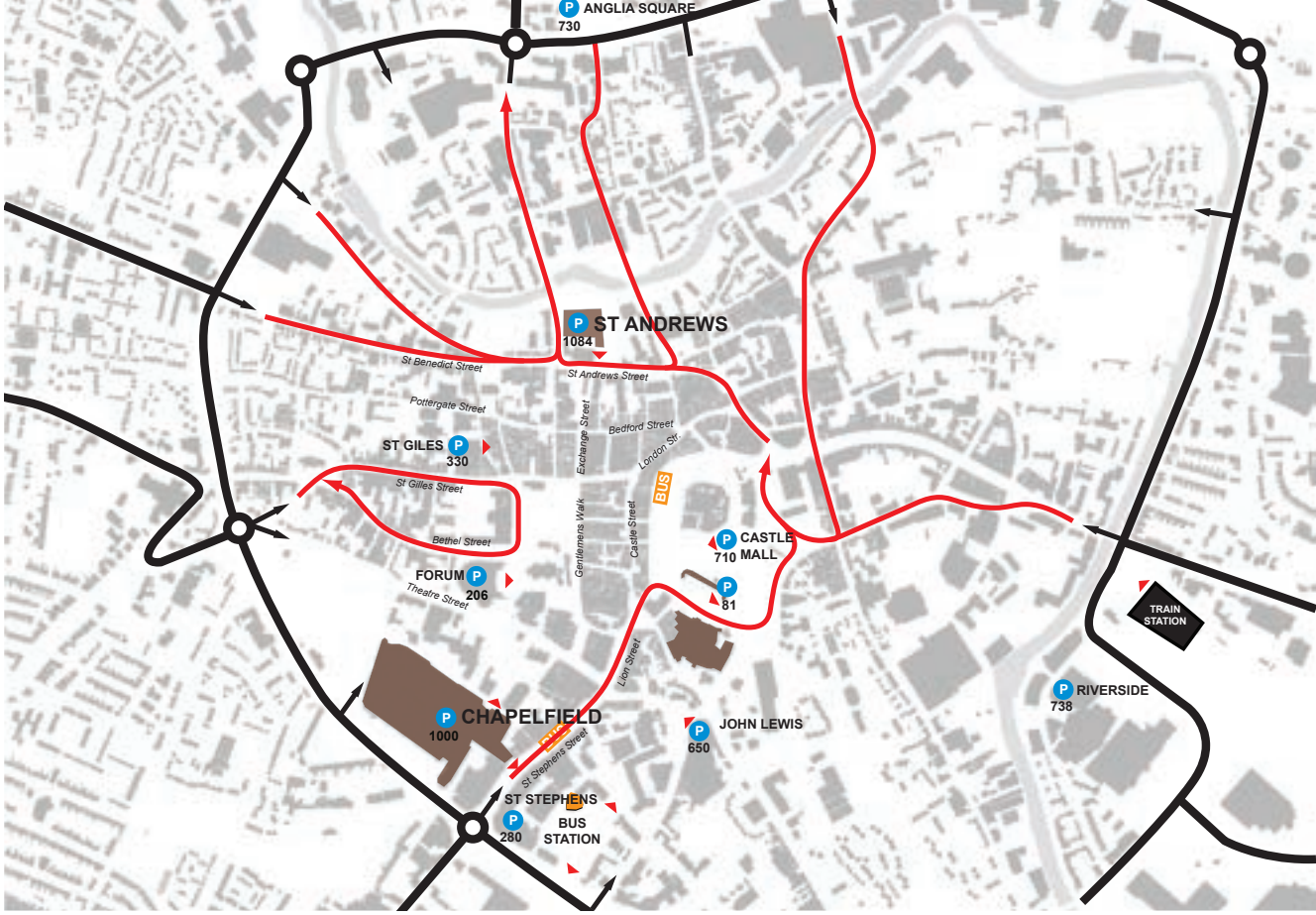
Norwich Key ERDF Investments in public space

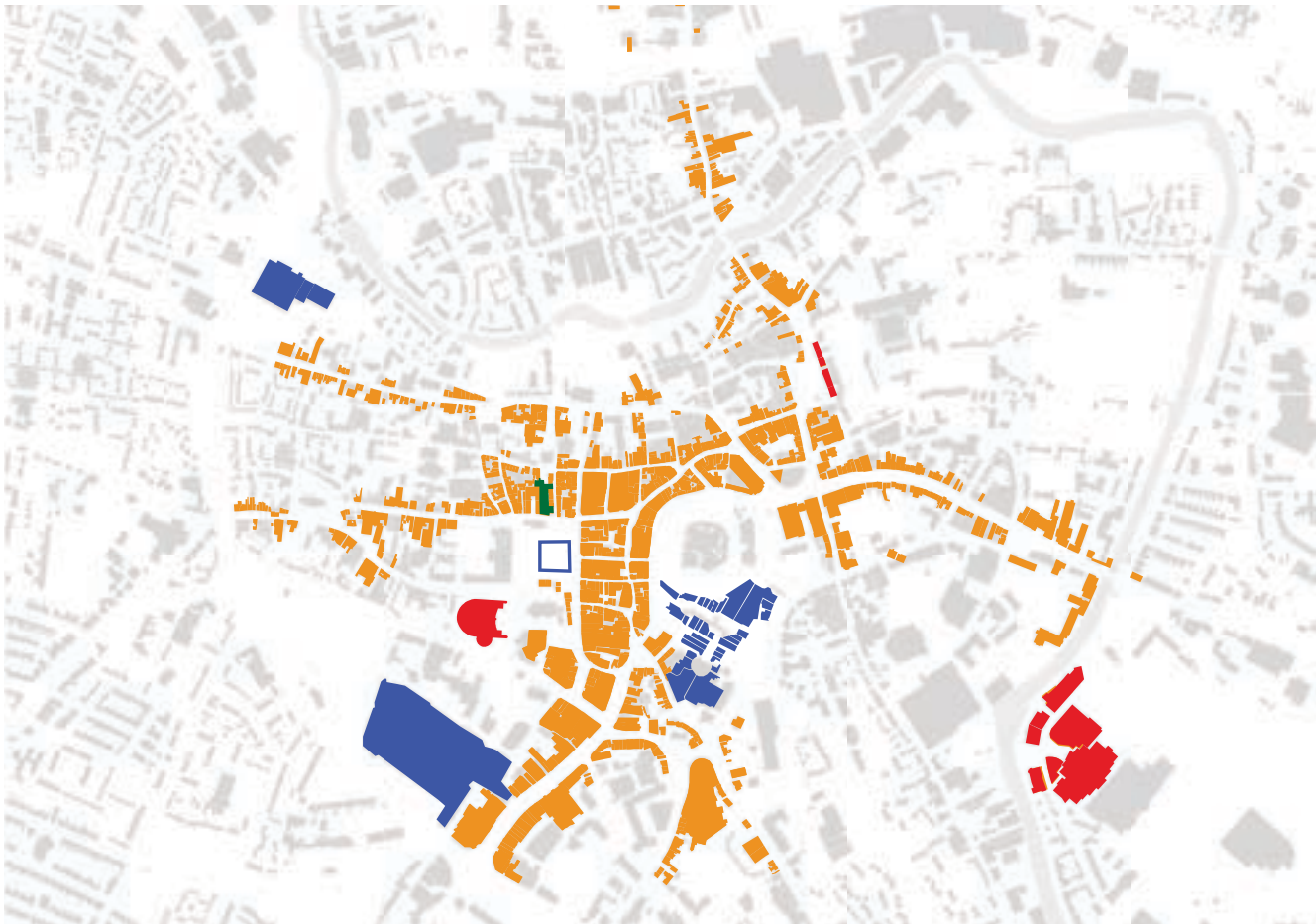
Revitalising the St. Andrews Plain area

'The area between the Playhouse Theatre, St. Andrew's Hall, the Art School and Cinema City will be transformed, with part of the area closed to traffic, pavements widened, trees planted, and new lighting, paving and street furniture installed. The first phase of the project includes the installation of pedestrian crossings.'

Norwich Lanes – Makeover adds stronger identity

'A facelift of the Norwich Lanes area of the city promises to further highlight and promote the quaint cobbled streets, narrow alleys, and innumerable visitor attractions in this vibrant and historic specialist shopping district. This will include New Signs, New Paving, Pavement Markers, improvements around St. Gregorys Green and improvements for cyclists.'


ANGLIA SQUARE
730
ST ANDREWS
1084
St Benedict Street
St Andrews Street
Pottergate Street
Exchange Street
Bedford Street
London Str.
ST GILES
330
St Gilles Street
BUS
Bethel Street
Gentlemens Walk
Castle Street
CASTLE
710 MALL
FORUM
206
Theatre Street
81
TRAIN
STATION
Lion Street
CHAPELFIELD
1000
JOHN LEWIS
650
RIVERSIDE
738
St Stephens Street
ST STEPHENS
280
BUS
STATION



Gateways – Welcome Points at key arrival locations

'First impressions count when visitors arrive in a city – and few things put people off more quickly than unwelcoming, grubby-looking airports, railways stations or car parks where basic information is hard to find or hard to understand.'

Norwich Google Earth Map

The aerial photograph shows the city centre of Norwich.
A central item in this picture is the Castle on the hill. The historic city and shopping core is located east of the Castle. Here the Market, Forum and Chapelfield Mall and Chapelfield Gardens can be distinguished.

On the western side, the railway yards can be recognised.
To the south, a large scale development has been realised.
A direct route connects the Railway Station with Castle Meadow, namely the Prince of Wales Road. North of this road, the green area around the Great Hospital is clearly visible. The city centre is enclosed by a core ring road and partly bounded by the River Wensum.

Norwich:
Arrival Points.

P
Multilevel car park.

Access road.

Access road.

Norwich Arrival Points

The map shows the arrival points in the city. These include the railway and bus station and several multi-level car parks. These locations can be seen as pedestrian access points into the city.
The largest car parks are St. Andrews (north) and Chapelfield (south), both containing approximately 1000 parking spaces. Both opened in 2005. Castle Mall also has many parking spaces. Other multi-storey car parks are located on the eastern and western side of the core.

The station is located on the other side of the river, next to the Riverside development. The railway station is directly connected to the city by the Prince of Wales Road. The bus station is located behind the building block opposite the street of Chapelfield. Most buses also stop either on St. Stephens Street (opposite the Chapelfield Mall) or Castle Meadow, providing direct access to the historic city centre.

Outside the centre, along the outer ring road, a number of P+R locations offer alternative transportation into the city.

Norwich:
Commercial
Activities.

Retail.

Shopping Mall.

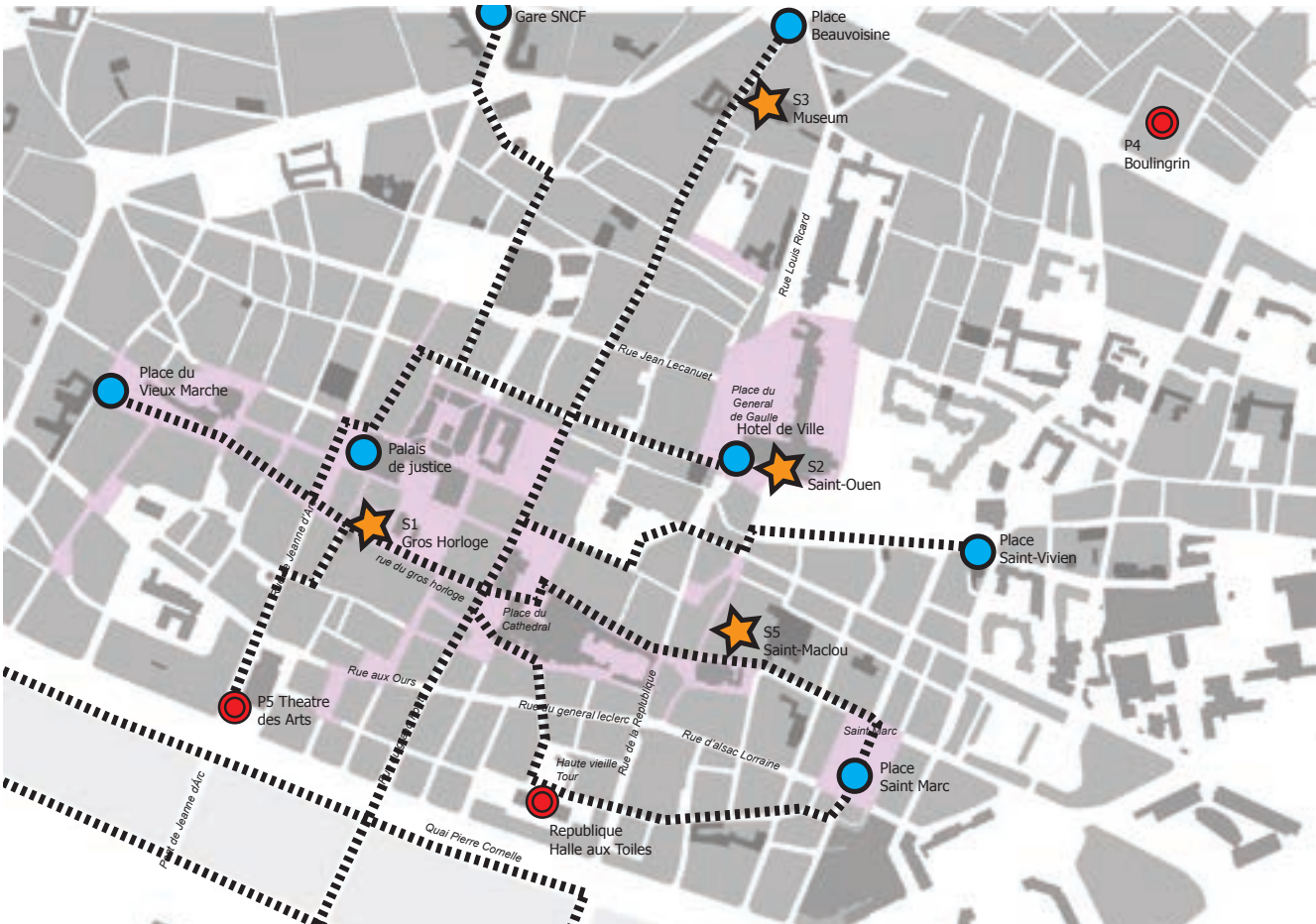
Daily Needs.

Drinking & Dining.

Norwich Commercial Activities

Norwich functions as a regional attractor for its commercial activities. Norwich is among the top places to shop in the United Kingdom; in 2006 Norwich was the eighth most flourishing shopping destination.
Norwich Market is the largest open-air market in the country.


Cow tower
Norwich Cathedral
Elm Hill
ST ANDREWS
St. Andrews
Tombland
St Benedict Street
St Andrews Street
Pottergate Street
Exchange Street
Bedford Street
London Str.
Roman Catholic Cathedral
St Gilles Street
BUS
Market
Gentlemens Walk
Castle Street
Bethel Street
Chapelfield Gardens
Forum
St Peter Mancroft
Theatre Street
King Street
Castle Mall
Lion Street
Chapelfield Mall
Dragon Hall
BUS
CHAPELFIELD
St Stephens Street


Gare SNCF
Place Beauvoisine
S3 Museum
P4 Boulingrin
Rue Louis Ricard
Rue Jean Lecanuet
Place du Vieux Marche
Place du General de Gaulle
Hotel de Ville
Palais de justice
S2 Saint-Ouen
S1 Gros Horloge
Rue Jeanne d'Arc
rue du gros horloge
Place Saint-Vivien
Place du Cathedral
S5 Saint-Maclou
Rue aux Ours
P5 Theatre des Arts
Rue du general leclerc
Rue de la Republique
Rue d'alsac Lorraine
Saint Marc
Haute vieille Tour
Place Saint Marc
Rue de Jeanne dArc
Quai Pierre Cornelle
Republique
Halle aux Toiles

Norwich: Places of Interest.

Significant building.

Significant public space.

Rouen: Key ERDF Investments in public space.

Stations Spatial Metro.

Spatial Metro portals.

Spatial Metro lanes with project.

Spatial Metro portals with project.

Further, Norwich boasts a large number of specialist and independent retailers. Most of them are situated in The Norwich Lanes area. The Royal Arcade is a beautiful covered shopping street in Art Nouveau style.
In addition to the commercial activities in the core, there are five main streets: St. Giles Street, St. Benedicts Street, Magdalen Street, Prince of Wales Road and St. Stephens Street.

Norwich accommodates two shopping malls: Castle Mall (1993) and Chapelfield (2005). The malls are very precisely designed to sensitively add larger scale shopping to the fine historic city centre. Castle Mall is a multi-level mall which is partly built into the Castle Hill. On the roof, a public garden provides access to the Castle and a view of the city. Chapelfield was developed on the location of the old chocolate factory. Chapelfield has two main entrances: one on the market side and one along St. Stephens Street.

For leisure, the main attractions are The Forum (2002) and Riverside Entertainment Centre.

Norwich Places of Interest

Main attractions in the city centre include The Forum (information, library and BBC Norfolk), the Market and St. Peter Mancroft Church. The Castle on the hill overlooks the city, but forms a barrier to King Street, the historic throughway. The main attractions on the eastern side are Dragon Hall (along King Street), Elm Hill, Tombland, the Norwich Cathedral and the Cow Tower behind the Great Hospital. The second cathedral, the Roman Catholic Cathedral, is situated to the west of the centre.

City of Rouen

Rouen is the Capital of Normandy and has approximately 106,500 inhabitants. The French city is situated along the River Seine, with the centre on the right side. Much of the historic city centre has been preserved.
Rouen is a vibrant city with both a thriving retail trade and culture, and is a popular tourist destination. The city is renowned for its famous characters such as Joan of Arc, Pierre Corneille and Gustave Flaubert. The city is also known as ‘Ville aux cent clochers’.


METRO
direction
Gare SNCF
Rue Jeanne d'Arc
Rue Louis Ricard
Rue Jean Lecanuet
Vieux Marche
Place du Vieux Marche
408
Espace du Palais
1406
Hotel de Ville
361
Place du General de Gaulle
Place de la Pucelle
453
544
Rue du Gros-Horloge
Place du Cathedral
BUS
Rue aux Ours
de la Bourse
189
Rue du general leclerc
Rue de la Republique
Rue d'alsac Lorraine
Haute Vielle Tour
428
Saint Marc
531
Place Saint Marc
La Seine
Pont Jeanne d'Arc
Quai Pierre Corneille
direction
Saint Sever

Important buildings in the city are the 13th century late-gothic Cathedral (the Notre Dame) and the renaissance style Gros-Horloge, a giant medieval clock which is a city symbol. The city contains many other gothic monuments such as St. Ouen Abbey, St. Maclou Church and the Palais de Justice. Further, many half-timbered houses still exist giving the city a historical image.

Year round the city offers cultural events and impressive performances. One example is the 'From Monet to Pixel' performance, a magnificent light show on the façade of the Cathedral.

The University of Rouen and the well-known ESC Business School are situated in nearby Mont Saint-Agan.

Rouen: Google Earth Map.

Rouen Key ERDF Investments in public space

In general

In Rouen the investments are aimed to provide strategic improvements both in the daytime and at night. The strategy consists of three pillars: gateways, stations and lines.

Gateways

The gateways provide information at the entrances to the city and at changes from motorized traffic to pedestrianism. The gateways form a ring around the core of the city. The projects include a feasibility study into a bike & cycle park, the development of coach parks and the improvement of car parks.

Rouen: Arrival Points.

P
Multilevel car park.

Access road.

Access road.

Stations

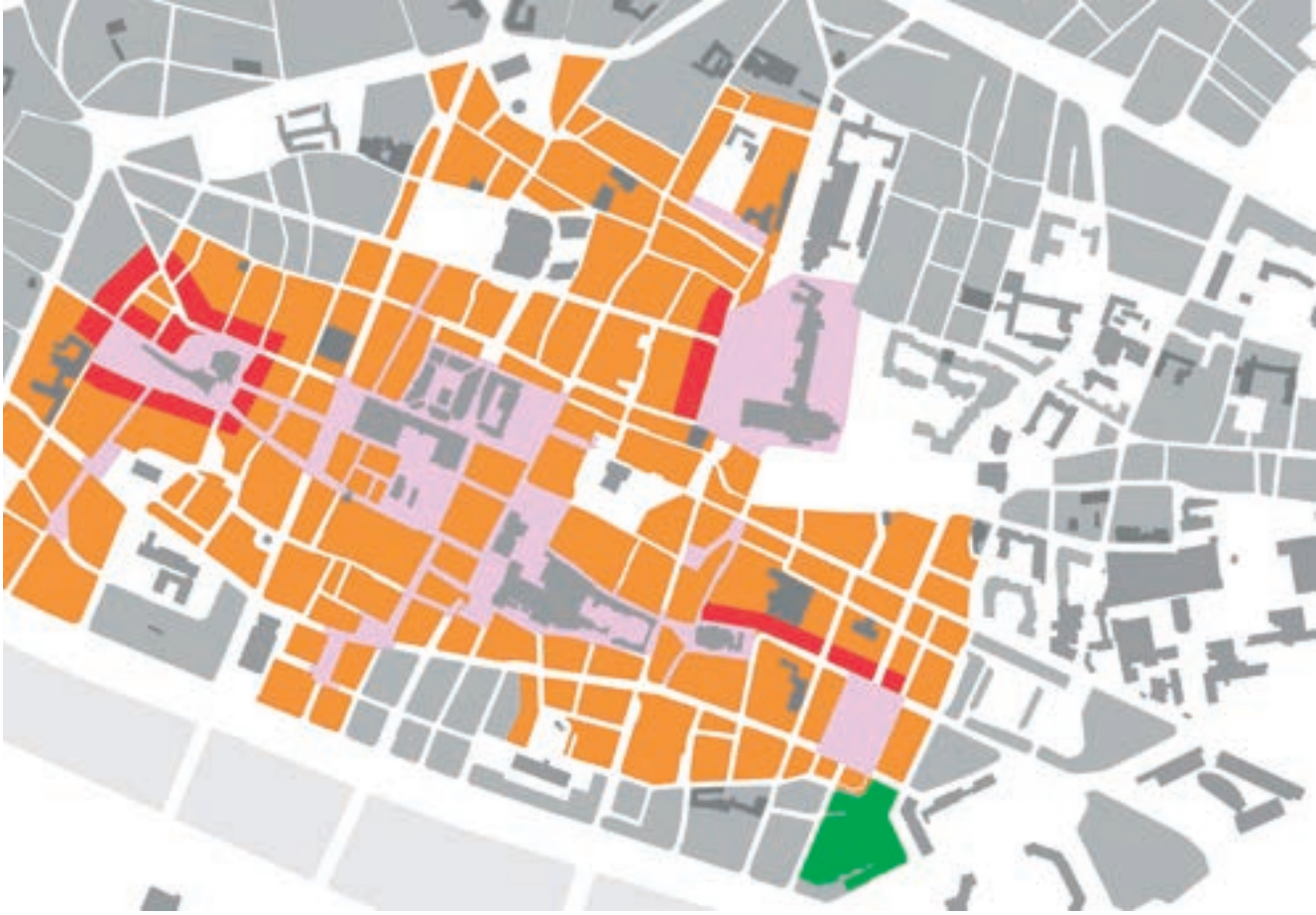
Stations are major destinations. Rouen defined several station projects: Gros-Horloge, St. Ouen Abbey, Natural History Museum, Saint-Maclou.

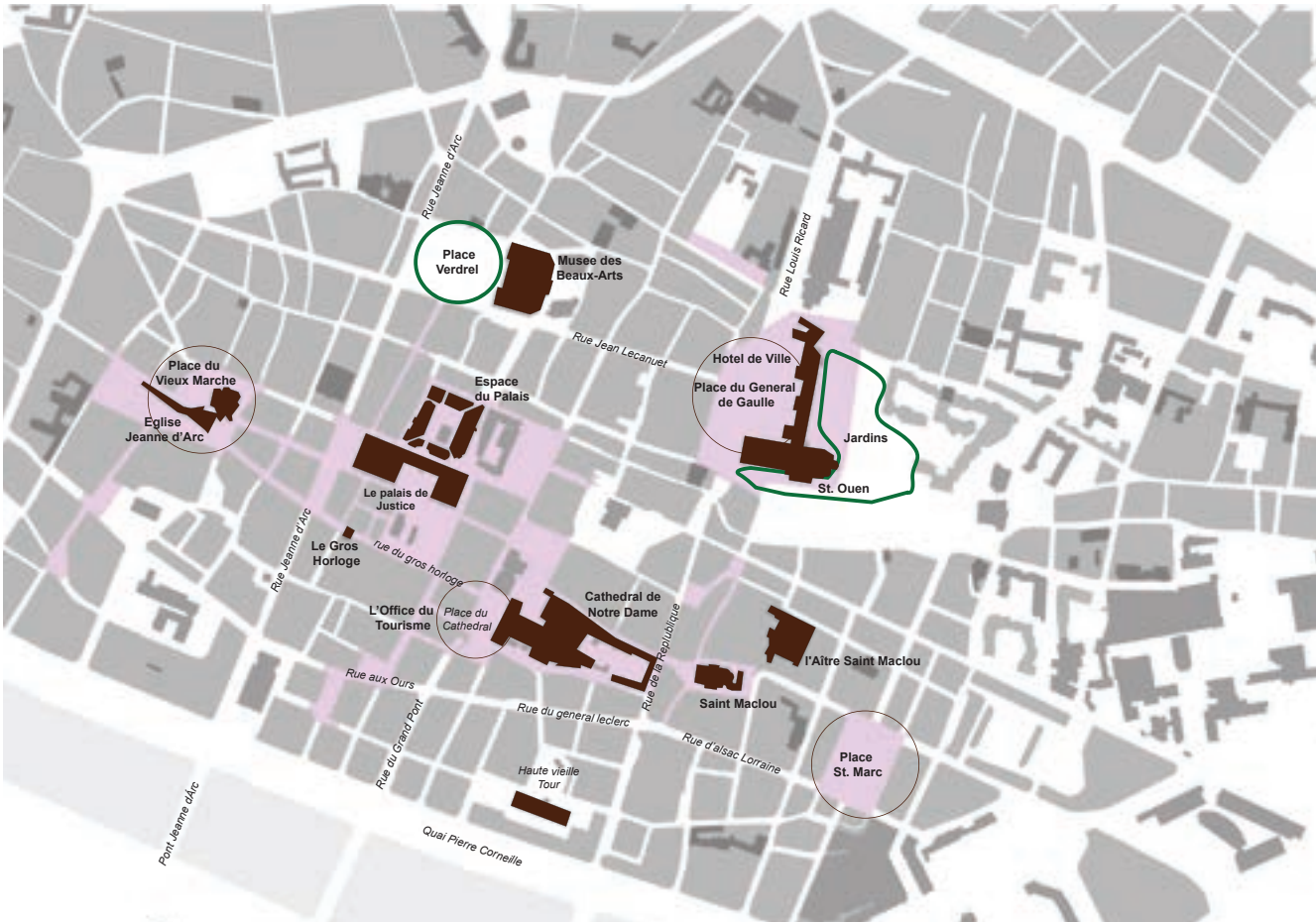
Lines

The lines consist of concrete projects with regard to routes and spaces such as the redevelopment of public space, pedestrianisation, traffic calming, pedestrian links, a lighting strategy, a signage strategy and activities for day and night

Rouen Google Earth Map

The aerial photo of Rouen emphasizes the orthogonal structure of the city. An exception to this structure is the area around the City Hall and St. Ouen. Further, some streets do not run straight or parallel to the river. An example is the Rue du General Leclerc.
The aerial photo shows a very limited number of green areas. Potential green areas are the gardens around the City Hall and Place Verdrel, a landscaped square.




Rue Jeanne d'Arc
Place Verdrel
Musee des Beaux-Arts
Rue Louis Ricard
Rue Jean Lecanuet
Hotel de Ville
Place du General de Gaulle
Jardins
St. Ouen
Place du Vieux Marche
Eglise Jeanne d'Arc
Espace du Palais
Le palais de Justice
Rue Jeanne d'Arc
Le Gros Horloge
rue du gros horloge
L'Office du Tourisme
Place du Cathedral
Cathedral de Notre Dame
Rue de la Republique
l'Aître Saint Maclou
Saint Maclou
Rue aux Ours
Rue du Grand Pont
Rue du general leclerc
Rue d'alsac Lorraine
Place St. Marc
Haute vieille Tour
Pont Jeanne dArc
Quai Pierre Corneille

The city centre does not have a clearly defined border. The sequence of boulevards such as Boulevard des Belges, Boulevard de la Marne, Boulevard de l'Yser, Boulevard de Verdun, N28 and the quays form the boundaries of the city centre.

Two major roads cross straight through the centre starting from the river: Rue Jeanne d'Arc and Rue de la Republique. The quays are also occupied by major roads.

Rouen Arrival Points

Although there are some clear clusters, most multi-level arrival points are spread through the city in Rouen. The largest car park, Car Park du Palais, is located in the core of the centre. All car parks are well accessible by car.

The main train station is located just outside the city centre to the north. The station is accessible via the Rue Jeanne d'Arc.

Public transport consists of METRO, Bus Rapid Transit (BRT) and a BUS system. The metro line is located underneath the Rue Jeanne d'Arc and connects the railway with the city centre and the left side of the river, including the Saint-Sever commercial district. The metro stops are indicated on the map. The TEOR is the BRT system in Rouen. This high quality bus system is situated on the Rue du General Leclerc.

Rouen: Commercial Activities.

Retail.

Shopping Mall.

Daily Needs.

Drinking & Dining.

Rouen Commercial Activities

Rouen has an extended shopping district. It mainly covers the area between Rue Jeanne d'Arc and Rue de la Republique, plus the area up to the Charles Nicole hospital and the area up tp l the Boulevard de Belges. Except for the Saint-Sever commercial district on the other side of the River Seine, there are no shopping malls in Rouen.

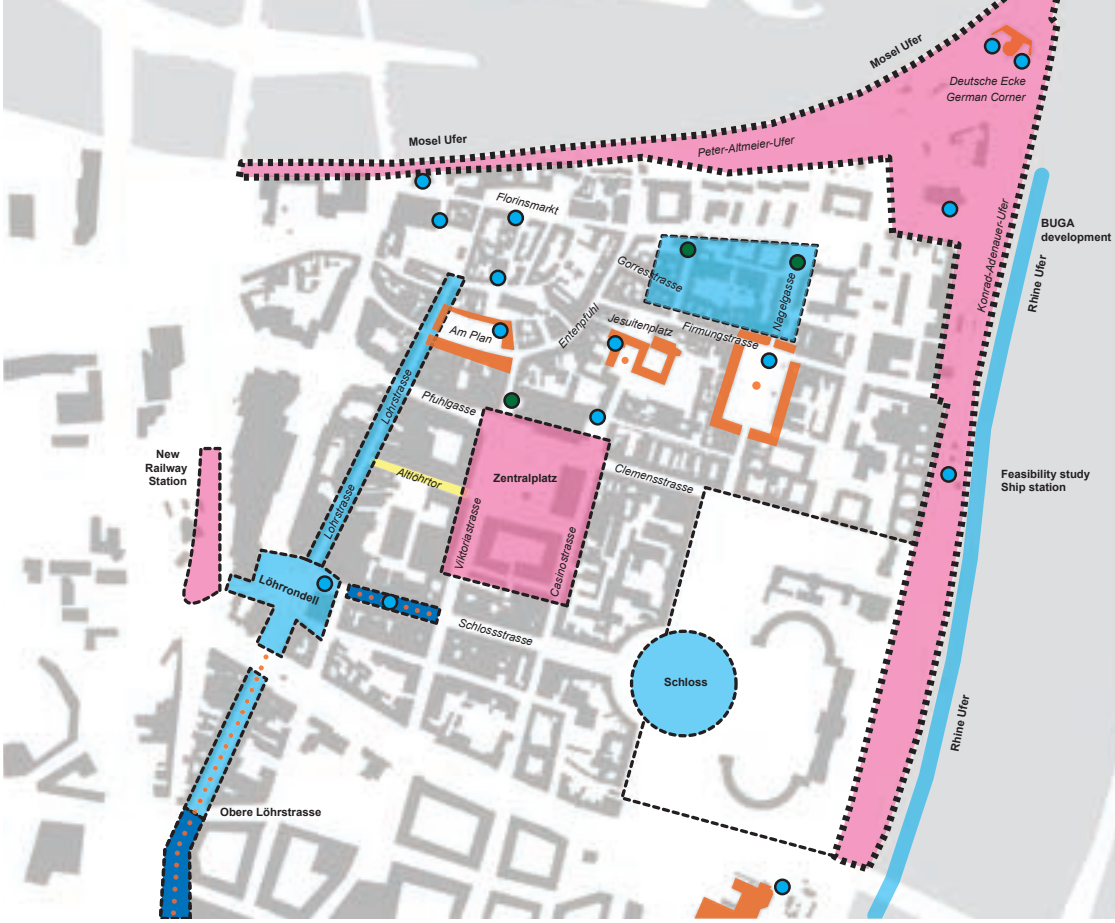
Rouen: Places of Interest.

Significant building.

Significant public space.

Rouen Places of Interest

Rouen has a large number of interesting places and objects. The most significant building is the late-gothic Notre Dame Cathedral. At 150 metres, the tower 'La Tour Grêle' is the tallest clock tower in France.
Other important buildings are the City Hall and St. Ouen, the Palais de Justice, the Musee des Beaux Arts, the Eglise St. Maclou and the Eglise Jeanne d'Arc nearby Vieux Marché.


Mosel Ufer
Deutsche Ecke
German Corner
Mosel Ufer
Peter-Altmeier-Ufer
Florinsmarkt
Gorresstrasse
Nagelgasse
Konrad-Adenauer-Ufer
BUGA development
Rhine Ufer
Am Plan
Entenpfuhl
Jesuitenplatz
Firmungstrasse
Pfuhlgasse
Löhrstrasse
Löhrstrasse
New Railway Station
Altlöhrtor
Zentralplatz
Clemensstrasse
Feasibility study Ship station
Löhrstrasse
Viktoriastrasse
Casinostrasse
Löhrrondell
Schlossstrasse
Schloss
Rhine Ufer
Obere Löhrstrasse

City of Koblenz

Koblenz, a German city with around 106,000 inhabitants, is situated on the corner of Rhine and Mosel. The city is encapsulated in the glowing landscape which surrounds the city. The city centre is bordered by the River Rhine on the eastern side and the River Mosel on the northern side. The place where the rivers merge, known as 'Deutsches Eck – The German Corner', is marked by a re-erected equestrian statue of Emperor William II.

The city is truly European; the name Koblenz is based on the castle the Romans constructed here. In wars, the city was captured by the Franks, conquered by the French and fortified by the Prussians.

The historic city centre contains a lot of small square, such as the Florinsmarkt, Münzplatz and Jesuitenplatz, and distinctive medieval churches such as St. Florins Church and Our Lady's Church.

Tourists arrive at the city by car or coach. The main coach park is located near the German Corner. Many also visit the city by boat, or take boat trips along the River Rhine. This makes the waterfronts vital parts of the city.

Koblenz: Key ERDF Investments in public space.

Spatial Metro investment.

City lighting.

Pedestrian zone.

Future developments.

Koblenz: Google Earth Map.

Koblenz Key ERDF Investments in public space

Safeguard old town tranquillity

Traffic calming measures have been introduced to ensure car-free pedestrian areas and to enable pedestrians to stroll about freely and safely. Bollards prevent unauthorised traffic from entering this part of the historic city.

Facelift for Schlossstrasse

The Schlossstrasse connects the Löhrrondell to the Kurfürstlichen Schloss near the River Rhine. The western section of the Schlossstrasse was improved to reinforce its status as a first-class shopping destination. The street was designed according to the principles of Shared Space, realising a balance between pedestrians and motorised traffic. Traffic calming measures succeed in reducing traffic speeds to 20 km/h. Raised crossings and tactile street surfaces make access and crossing easier for all.


Deutsche Ecke
Peter-Altmeier-Ufer
Konrad-Adenauer-Ufer
Florinsmarkt
Am Saarplatz
514
BUS
Görresstrasse
Am Plan
Entenpfuhl
Jesuitenplatz
Firmungstrasse
Hegelgasse
GÖRRESPLATZ
Görresplatz
386
Löhrstrasse
Plankgasse
Schangelcenter
150
LÖHR
CENTRE
1400
Zentralplatz
Clemensstrasse
Altlöhrtor
Zentralplatz
450
Altlöhrtor
340
Clemensplatz
200
Viktoriastrasse
Casinostrasse
Löhrrondell
Schlossstrasse
Schloss
Rhein-Mosel
Halle
463

Redesign of Löhrstrasse and Löhrrondell

Through a competition, new ideas for the Löhrstrasse and Löhrrondell were obtained. The Löhrrondell is a key location in the pedestrian network, connecting three urban axes with the Löhr-Center and the future city railway station.

Waterfront

The waterfront is a vital part of the tourist area in Koblenz. Both Rhine and Mosel quays offer port facilities for tourist ships. Improvements of the quays are necessary to meet today's needs. Within the project, a feasibility study has been carried out.

Future developments

Key developments in the near future are a new railway station close to the Löhr-Center, Zentralplatz and both Rhine and Mosel quay.

Koblenz:
Arrival Points.

P
Multilevel car park.

Access road.

Access road.

Koblenz Google Earth Map

The aerial image shows the city centre including the historic city centre. The boundaries of the city centre are the River Rhine (east), the N49 main road, the railway tracks and N9 and the River Mosel (north).
Within the centre area, the medieval city core can be recognized by its dense and curved pattern of streets. Other deviating areas are the palace (Schloss) with lots of green, and the waterfront (boulevard). Further, the city is based on an orthogonal grid with two special long lines: Schlossstrasse (east-west direction connecting Palace and Löhr-Center) and Löhrstrasse (north-south direction connecting the historic city with the DB train station). These long lines meet at the Löhrrondell, the square near the southern end of the Löhr-Center shopping mall.

Koblenz:
Commercial
Activities.

Retail.

Shopping Mall.

Daily Needs.

Drinking & Dining.

The quays are used for port functions. The Mosel Quay accommodates the cruise ships. The Rhine Quay accommodates the tourist boats which make day-trips along the Rhine.

Two intensely used roads for traffic pass straight through the city centre, namely Pfulgasse/Clemesstrasse and Neustadt.

Koblenz Arrival Points

Most multi-storey access points are located in the southern and western parts of the city centre. This is due to the location of the city's access routes and waterfronts. The coach station is located near the German Corner. The largest car park is Löhr-Center with 1400 parking spaces. The Rhein-Mosel Halle,


Ecke
Deutsche Ecke
Peter-Altmeier-Ufer
Florinsmarkt
Florinskirche
St. Kastor Basilika
Konrad-Adenauer-Ufer
Liebfrauen Kirche
Görresstrasse
Am plan
Entenpfuhl
Jesuitenplatz
Firmungstrasse
Nagelgasse
GÖRRESPLATZ
Rathaus
Fountain
LÖHR CENTRE
Löhrstrasse
Pfuhlgasse
Zentralplatz
Altlöhrtor
Clemensstrasse
Löhrstrasse
Viktoriastrasse
Casinostrasse
Löhrrondell
Schlossstrasse
Kurfurstliches Schloss

south of the N49, also offers parking facilities. Further, parking is possible at ground level around the palace.

The train station is situated outside the city centre. A new railway station is planned behind the Löhr-Center. Most bus lines go straight through the city centre, providing high quality access to public transport.

Koblenz Commercial Activities

Commercial activities are situated on a limited number of streets. Main shopping locations are Löhrstrasse, Schlossstrasse, Entenpfuhl, Firmungsstrasse and the Altstadt. The colour indicates the type of activity.
The Altstadt and Görresplatz are generally populated by bars and restaurants, while for daily shopping and department stores, the Löhrstrasse and Phulgasse are the places to go. Both Altstadt and Zentralplatz have a large variety of shops. For the time being, the Zentralplatz is clearly not able to accommodate any activities.

Koblenz Places of Interest

The places of interest consist of public spaces and exceptional buildings. The public spaces are the German Corner with its statue, Görresplatz with its fountain, Am Plan at the edge of the Altstadt and Florinsmarkt.
The main buildings are the large scale shopping mall Löhr-Center, the palace, City Hall (Rathaus) and three churches in particular: St. Kastor Basilica, Liebfrauenkirche and Florinskirche.

Koblenz: Places of Interest.

Significant building.

Significant public space.

Part 3
Techniques

What techniques are available and necessary to make the pedestrian policy in each city work?

Information systems for Spatial Metro

The Stationary Info System.

Waiting at a train station in a small Dutch city in the mid 90s together with a colleague who had a brand new Palm III, we began dreaming; suppose we could use the Palm to obtain information about the location where we were, about interesting places around the station and so forth and so forth. On returning home, we drew up a project proposal and succeeded in acquiring funding for a project called 'MIA' [1], eventually resulting in an application-oriented product.

Ulrich Furbach

Markus Maron

Kevin Read

This was the beginning of a series of projects on this topic which we aim to describe in this paper. Recently, Raj Reddy and Jaime Carbonell, declared a new 'Bill of Rights' of the Information Society, claiming therein that we should:

— get the right information;
— to the right people;
— at the right time;
— in the right language;
— with the right level of detail, and;
— in the right medium.

We feel that the project described here contributes to at least some of these claims.

The projects

This sections starts with a short review of the history of such projects, before focusing on the various systems we developed in connection with Spatial Metro. The first project in this series, the MIA project mentioned above, assumed that the palmtop device was equipped with a GPS system for its localisation and had access to the internet. In addition the system had access to a user profile on a server and was hence able to answer personalised and location-based queries. In successive projects, we avoided connecting to

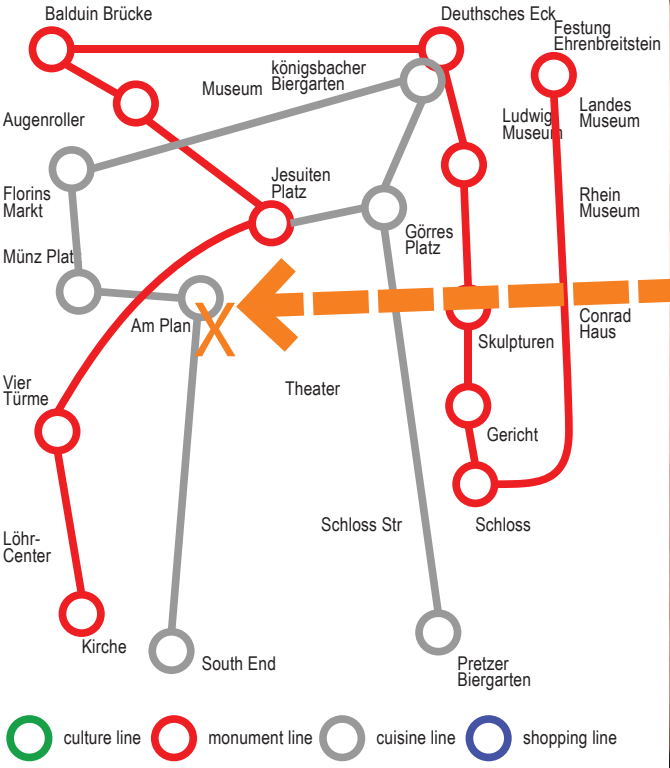
The Stationary Info System as a tourist guide.

the internet via the mobile device, instead focusing on free-of-charge access to Bluetooth access points.
One of these successive projects was 'IASON',[2] and aims at providing mobile users (users of PDAs or mobile phones) with location-aware personalised information. In a so-called Semantic Mobile Environment, service nodes are installed at chosen points of interest. These service nodes broadcast messages to nearby mobile users using bluetooth wireless technology. The kind of message depends on the access point it will be broadcasted by, for example a bookshop could send out its latest orders, a pub could present its menu and its schedule of events to its customers or a bus station could provide information on delays in bus schedules. The most interesting feature from a scientific viewpoint is filtering technology. The huge amount of information to be sent is filtered by the mobile device according to the profile set by the user. To achieve this, it is necessary to install a small application on the user's mobile.
This application[3] was the first usable prototype of the project and is able to do more than just storing and displaying incoming messages. Internally, it uses a powerful logic reasoning engine called Pocket KRHyper,[4] the first theorem prover to run on a mobile phone. More information about the entire approach can be found in.[5]

The SpatialMetro project

One goal of this European Commission project[6] is the use of AI techniques for the efficient guidance of tourists in a city. For this purpose, tourists are guided along themed routes on special maps that are reminiscent of Metro or Underground line maps, hence the name (see above left). Points of interest are the equivalent of Metro stops in this analogy. We developed a stationary information system for this project, channelling our experiences from IASON into a wireless information system.

The Stationary Info System – this is a terminal placed at public areas like train stations (see above left), to welcome the tourist at the location at which he starts his stay.
The Stationary Info System can offer information on current events in the city, on accommodation in the immediate vicinity and more. The terminal can help to present tourists with a basic aid to orientate and guide them through the city. A clearly



structured user interface guides the visitor through the varied information provided by the terminal. Both the navigation and contents are multi-lingual, so that visitors from foreign countries can make use of the terminals. The terminals can run in both online and in offline modes.

The Outdoor Info System is a modification of the Stationary Info System

Outdoor terminals should be placed in front of important buildings and other sights. In this way, the Outdoor Info System can give an explanation of the buildings and monuments on-site. These terminals propose what sight to visit next and guide the tourists to the next point of interest. Current events taking place at the building or monument concerned can also be incorporated. The terminals have to be outside and must therefore be weather resistant. Like the Stationary Info System, the Outdoor Info System can run in both online and offline modes.

Recapitulating, it can be said that the Stationary Info System and the Outdoor Info System help tourists acquire information and orientate in an uncomplicated manner (see page 75). They are easy to use, so that even tourists who aren't used to working with computers can simply navigate through the information sites. For city planners, the terminals are easy to maintain, especially considering the advantages they provide. The existing content can be easily handled, and new content can be added rapidly. In this way, the Stationary Info System and the Outdoor Info System can contribute to increasing the attractiveness of the city.

A mobile Information System was also introduced

Each point of interest will be equipped with a Bluetooth-enabled Access Point that will broadcast information about the location concerned (see above). Examples would be historical information, directions to next underground stations or shopping facilities. Tourists' PDAs or mobile phones can be contacted by the Access Point and can display the information after reception. This is naturally free of charge, in contrast to wireless LAN or GPRS/UMTS technology, and is location-based by nature.

The Mobile Info System keeps users up-to-date on events. This makes the Mobile Info System interesting for tourists as well as for local residents. The reasoning engine is based on the efforts of the IASON project. Enhancements where made to the profile generation. There are several profiles bundled together with the SpatialMetro application, one or more of

The Infonetz map.

The Mobile Information System.

which can be selected. The description logic terms of the activated profiles are disjunctively linked together. In addition to this disjunction, the profile selection also makes it possible to activate attributes that further narrow down the users' interests. These attributes are then added as a conjunction to each profile term. An example would be the attribute 'vegetarian', that would narrow down all food interest profiles to this kind of food, without overriding profiles such as 'Italian food'.
A test run at the local university cafeteria brought significant empirical results. Log data showed that there was a technical barrier in the installation of applications via Bluetooth. Mobile phone providers disable this data transport to force users to download applications over their data networks, thereby generating revenue. This technical barrier was accompanied by a social barrier – installing a foreign and potentially dangerous application on a mobile phone. This was reflected in the feedback forms and generated online discussion.
Today's mobile phones do not offer a baseline of technical features. Quite to the contrary, the power of the embedded operating system and even standardised features like the Java virtual machine differ significantly. This posed another major obstacle.

At the same time the supplier of the Access Point technology announced the End-Of-Life for this product range. All these developments led to the realisation that we had to redesign the concept to overcome these problems.
First we had to look for a new access point platform, which was not a trivial task. To reduce the requirements of mobile users and enable us to carry out even more complex reasoning in the future, we chose to move the reasoning process from the mobile phone to a server. For broadcasting the services we adopted standard bluetooth transport mechanisms instead of java-based communication. In this way, we also increased reachability. Various test cases carried out at public events show that we can now reach all Bluetooth-enabled (mobile) devices.

The Infonetz Koblenz

The conceptual change appeared to be so good that public bodies were highly interested in our research, and following our presentation, the city of Koblenz decided to introduce a

Usage of the Campus News System.

	Semester	Semester break	Total	Maximum	Minimum
Found devices	5,108	865	5,508	754	1,974
Served devices	1,593	178	1,676	364	139
Transmitted data	15,102	595	15,697	2,400	862
Acceptance rate	31.18%	20.58%	30.42%	48.28%	7.04%

city-wide information system. This led to the development of an information system called Infonetz Koblenz. It introduced a Client-Server architecture and a web based Profile Editor that stores users' interests in a central database. The reasoning engine used by this project is based on our deduction model. For use in high load situations, we optimised the theorem prover.
In addition, we consulted the participating companies, utilising our experience gained in our projects and research. The City of Koblenz has decided to use the system at various places in the city. A map of some of the planned points of interest can be seen on page 77, with a total of twenty points planned.

In addition, the University of Koblenz is actively using the system as a campus information system for mobile users.[7] Some of the local area personal information systems initially mentioned differ conceptually from our approach;[8] they use Bluetooth only for positioning but send the information over non-local wireless links such as GSM. The project 'mobile cafeteria menu'[9] is used in similar scenarios to our campus project but is completely unaware of location or personalisation aspects.

Results and outlook

Now, ten months after introducing the Campus News System at the University of Koblenz, it appears that its usage and acceptance by the students is fairly good.
The lowest ratio of found devices to devices that received information was 7.04% in April 2007 (roll-out was on 16 April). After a while and following certain promotional activities, this ratio rose to 48.28% in December. The overall acceptance rate is 30%. Unsurprisingly, this ratio is higher during the semester than at breaks. The acceptance rate is defined by us as the number of phones that accepted files sent by our system divided by the number of Bluetooth-capable devices owned by users willing to activate Bluetooth functionality.
We detected over 5,508 different mobile devices with Bluetooth activation and served 1,676 of them. Of these 1,676 devices, 1,340 were unregistered users that received the cafeteria menu and urgent public announcements, and 336 were registered users that obtained news according to the profile set. All in all we transmitted over 15,600 different messages within this time frame (see table above). The message sent out most often was the menu of the cafeteria which was also transmitted to unregistered users. To put the numbers into perspective, the campus Koblenz has around 6,000 students. Taking into

account occasional visitors, scientific workers and other employees, more than 80 percent of all people on the campus have visible Bluetooth-capable devices and more than a quarter have received CampusNews information.
We also conducted a questionnaire on user wishes and opinions regarding Campus News. We sent out a code and asked the students to enter that code on the answer sheet. We moreover enquired about their mobile phone brand and model, their opinion of the system in general and wishes or suggestions for future work. Of the 97 students that replied, 12 could not receive the code. Using the stated information on the mobile phone brand, we gained insight into the workings of Samsung and Motorola brand phones and were able to increase compatibility in this area. Opinions varied from a general vague acceptance of the concept to enthusiasm. The most desirable feature was a higher density of service nodes and up-to-date information in the system on changes in course schedules.
The next step is to support public bodies in building up the Infonetz, which is based on our research work, in the city of Koblenz as a tourist and citizen information guide. We hope that its adoption will be as favourable as the university project.

Notes

1 MIA is short for: Mobile Informaton Agents for the WWW. See also: C. W. Gerd Beuster, Bernd Thomas. Mia – an ubiquitous multi-agent web information system. In of International ICSC Symposium on Multi-Agents and Mobile Agents in Virtual Organizations and E-Commerce, December 11-13 2000.

2 Short for: A Location-Based Information Announcement System with Ontology- Based profiles, http://www.uni- koblenz.de/~iason

3 M. Maron, *IASON Mobile Application – Konzept und Realisierung einer mobilen Anwendung für profilbasiertes Matchmaking von Nachrichten* (2005), Master's thesis, Universität Koblenz/Landau.

4 T. Kleemann and A. Sinner. Krhyper – in your pocket, system description. In R. Nieuwenhuis, editor, proc. of *Conference on Automated Deduction* (2005), CADE-20, volume 3632, pages 452–458, Springer.

5 T. Kleemann and A. Sinner, *Decision support for personalisation on mobile devices* (2005). In Proceedings of the 21st International Conference, pages 404–406. ICLP 2005, 2005.

6 www.spatialmetro.org

7 Rhein-Zeitung: *'City Guide Blue' bringt ortsgebundene Informationen aufs MoBiltelefon,* and Rhein-Zeitung: *Info-Netzwerk wird im Alltag getestet.*

8 L. Aalto, N. Göthlin, J. Korhonen, and T. Ojala, Bluetooth and wap push-based location-aware mobile advertising system. In MobiSys '04: *Proceedings of the 2nd international conference on Mobile systems, applications, and services* (2004), pages 49–58, New York, NY, USA. ACM Press.

9 http://www.studentenwerk-dresden.de/mensen/handy.html

Making a virtual city

The process and the problems

St John's Cathedral virtual model. On the left, the 'plain' geometric shape – on the right, the same shape 'textured' – over twenty separate textures have been used for this model.

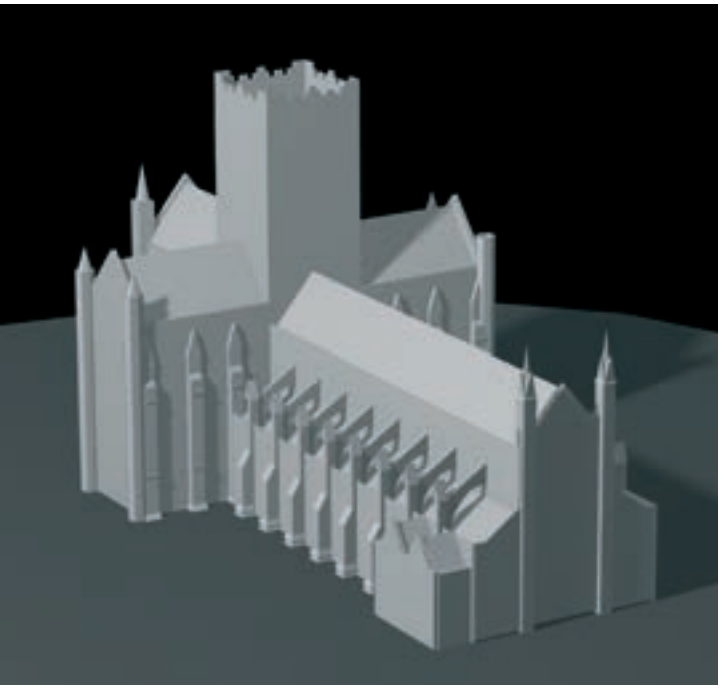
The last few years have seen an increase in the power of computers and a decrease in their cost. This has resulted in the increased accessibility of high-powered computing and rapid developments in software. A whole range of computer applications that were either impossible or unviable just a few years ago are now accessible to many. One of these is the ability to create complex 3D computer models – such as those of complete towns and cities.

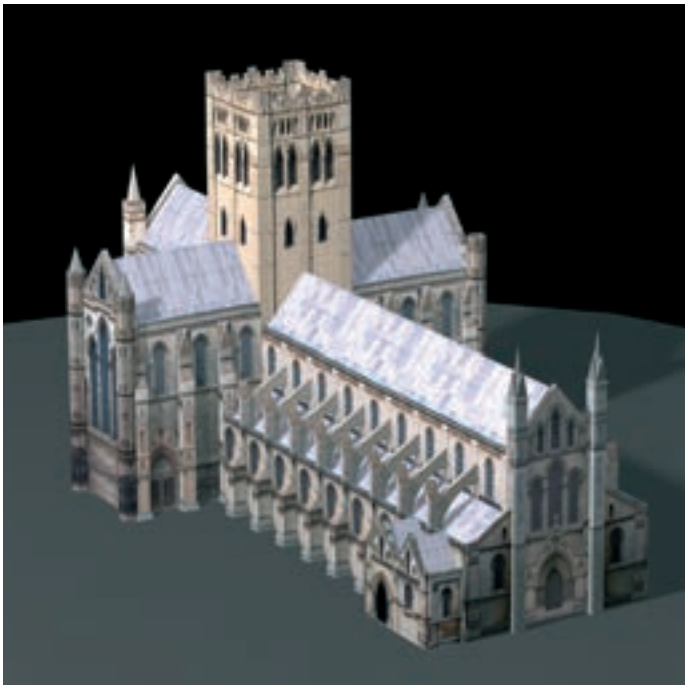
David Drinkwater

Creating the models

Automatic modelling

The Urban Modelling Group has developed software to create buildings automatically using three sets of data. The first set is a digital map containing the 'footprint' of every building (i.e. the ground outline of every building), the second is the ground surface data (i.e. the topography or contoured shape of the land including roads and rivers), and the third is a set of data that includes the heights of every building. The surface and height data sets are now routinely collected using planes and satellites, and are obtainable from different sources.
By combining these data sets, a model of the ground surface of an area can be created, along with a model of each building with the correct basic shape and height. The software also applies a roof to each building depending on the size and shape of the building footprint, and has the facility to automatically generate refinements such as dormer windows, eaves and chimneys. The accuracy of the roof shape depends on the quality of the data, which currently is often available at 50cm intervals and with a height accuracy of plus or minus one metre. The software, whilst creating each building automatically, allows for manual correction of heights, roof type and other details.





It should be mentioned that there are research teams working on other automatic techniques for modelling urban areas, for example the creation of 3D geometry from multiple photographic images, or the use of laser and infrared depth scanning, with cameras and sensors fixed on vehicles that drive through streets to record the facades of the buildings.

'Hand crafted' models

The automatic models provide a backdrop to the whole 'Virtual Norwich' city model. The landmark buildings and many of the buildings in the street models have been 'handcrafted' using a variety of software applications. Some buildings are modelled from architectural plans and drawings but for most, photographs are used as the basis for the model. Whilst a variety of techniques is used, in all cases the process involves creating the exterior surfaces (walls and roofs) of the building, before applying image 'textures' to them. The more detailed models involve the creation of accurate details such as window frames, doorways, porticoes, steps, eaves, columns etc. This can be painstaking and time-consuming.

Texturing the models

The models are initially created with plain 'untextured' surfaces. Subsequently each surface of every model has a 'texture' applied to it. These textures are, in nearly all cases, images made from photographs of actual buildings in Norwich. The number of surface textures used in a building varies enormously – some of the buildings may only use two textures, but the complex handcrafted buildings often require many textures, representing the different surfaces such as wall materials, paint finishes and decorative panels.

For the automatically generated models, sets of these textures have been created to cover a range of building periods, materials, styles and sizes. They are applied automatically to each model according to the style required, and the heights and lengths of the walls of the building. With the handcrafted buildings, the correct textures have to be created and applied individually to all the separate elements.

To create the textures, photographs of buildings are taken and then processed. The processing of the photographs involves removing distortions produced by the camera lens, straightening out the image so it is aligned correctly both horizontally and vertically, and then cleaning up the image. Cleaning up the photographs requires removing, or replacing, all the unwanted

An area of Virtual Norwich with a combination of automatically generated and 'handcrafted' buildings.

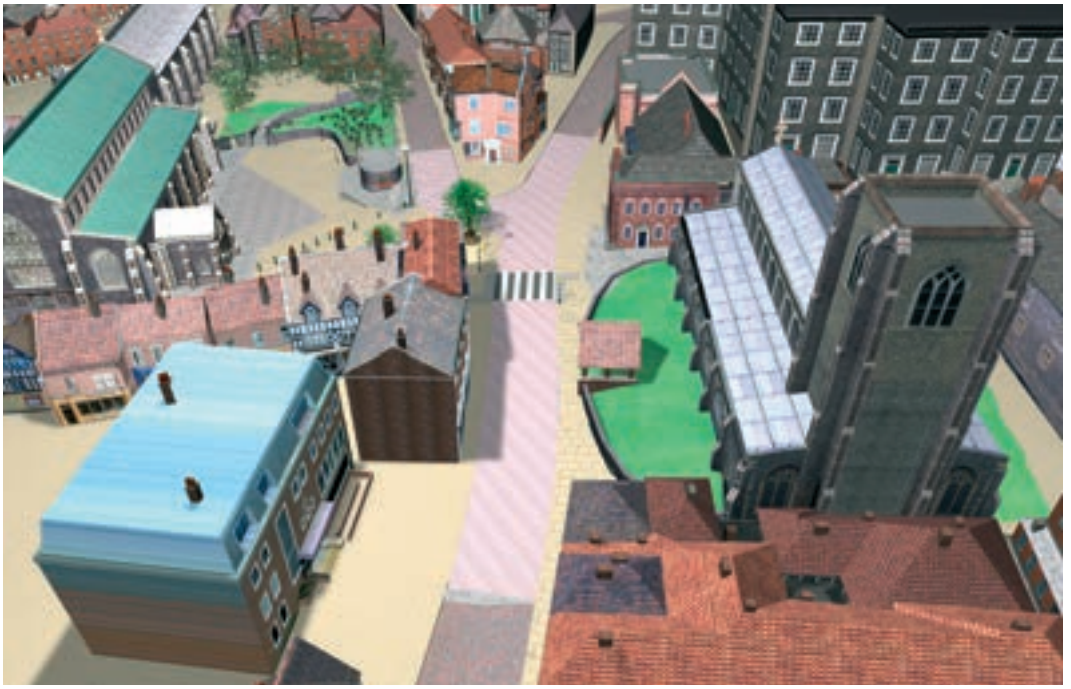
elements that appear in photographs of buildings in a busy city, e.g. plants, trees, people, railings, chairs, cars, buses, bicycles, etc, etc. For some buildings this can be a relatively quick process – if there is a good clear view which allows the whole building facade to be included in a single photograph. But this tends to be the exception. Streets and squares are full of people, vehicles, signs, plants, trees etc., and these have to be removed using image processing software (such as Photoshop). Narrow streets pose a particular problem as they require multiple photographs to be taken, and must subsequently be undistorted, straightened and then joined together. Because of the angles involved these photographs are often very distorted, particularly of the upper levels of buildings, and require extensive processing. Textures for separate elements, e.g. columns and doors, are extracted from the processed photographs.
The processing of photographs, and creating textures from them, often takes significantly more time than the creation of a building's geometric shape.

The buildings made automatically use the same texture sets and on average therefore consume less computer memory than the handcrafted buildings, the texture of which usually only appears once on a single building. Whilst large detailed textures are required if the output is to be viewed in high quality on a large surface (e.g. a cinema-size screen), the texture sizes are usually unnecessarily large after processing, and can be reduced in size and compressed to minimize memory use for general viewing at low resolution.

Another issue relating to the photographs is the prevailing lighting conditions at the time they are taken – the quality of photographs obtained depends on the time of day, the time of year and the weather conditions. Generally good results are obtained in early spring (few leaves), towards the middle of a day with thin cloud covering (creating shadows without too strong a contrast and allowing photographs of north facing facades)

The Virtual Norwich model and its uses

The Virtual Norwich model began as a series of models of individual buildings created to highlight some of the outstanding architecture in Norwich, ranging from the 12th Century Castle and Cathedral to some notable medieval buildings, including over 30 medieval churches, through to Georgian domestic and religious buildings and some notable 20th century monuments.
This work was funded by the 'Liveable City' Interreg III project.



For the Spatial Metro project this core of models of notable buildings was expanded to include the construction of the whole of the city centre. The resulting model has been used to create animations of individual buildings and of routes through the city streets, along with an interface which allows users to explore Virtual Norwich. The current model, along with the in-house software, was created by a team of three researchers over a period of three years.

Having created the model, Norwich is now in possession of an outstanding resource which has many uses. The most obvious practical use is urban planning – the models have already been used by Norwich City Council Planning Department for three projects; to view changes to two pedestrianisation schemes and also for a visioning project with respect to a set of sculptures that have been installed in a square in the city centre. The visualisations produced enable a clearer understanding of such schemes by officials and members of the public, whilst they also provide feedback to the planning department, which sometimes sees problems that were not obvious before.
The models have also been used by commercial architects in planning projects, and are currently being used in visualisations for a major riverside redevelopment in the city centre – having a set of high quality models gives a greater understanding of the impact of such a development.

The application of the models to tourism is being developed, and the interface and visualisations mentioned above are in the process of being placed on the internet allowing potential visitors throughout the world to explore Virtual Norwich.
Uses within education are varied; for younger students, the models give new views of the city and individual buildings extracted from their surroundings; for older students there are uses within the studies of architecture and urban planning.

A significant development with regard to the Virtual Norwich model is its basis in connection with several virtual historical reconstructions. Funded largely by HEART, a trust set up to encourage the appreciation and regeneration of Norwich, several major virtual reconstruction projects have been undertaken, including the Cathedral Close, the St Andrew's Hall monastic complex, the Great Hospital and the Market Place. The Cathedral reconstruction will be on display at the new education centre currently under construction in the Cathedral Close.

Virtual model of Koblenz around 1880.

A historic virtual reconstruction of Koblenz in the 19th century was produced for our Spatial Metro partners. This was done using mainly automatic modelling techniques, and data sources which included some very detailed maps of the period. The texture sets were based on photographs of existing buildings from that period.

There are also two incidental, but not insignificant, by-products of all the work done. The first is that the model itself forms, in its own right, an historic document of a city at a particular period. The second is that the thousands of photographs taken in the process of creating Virtual Norwich have created a huge resource, for current use, and for use by future historians and researchers.

A few issues relating to the creation of a virtual town or city
The creation of a complete virtual town or city raises a variety of problems and issues.

The first is the time involved in creating the model on such a scale – the area in Norwich contains approximately 8,000 buildings, and for each of these buildings there are the two elements as mentioned above, namely the geometric shape and the surface textures. The geometric shape can vary from as few as five surfaces in a simple structure, to well over a million surfaces in the (still incomplete) model of Norwich Cathedral. Likewise the number of textures required can be large.
As a result, the complete model of the whole of Norwich will not currently fit into any of our computers. This means that the model has to be divided into smaller sections, which might be a street or a detailed landmark building. To create an animation or complex view across the city, the sections that will be visible are called up as required. The software

View from a walkthrough animation of Virtual Norwich.

used provides tools to help do this, but the process can nevertheless be time-consuming.

The ultimate aim is to allow the user to 'wander' around virtual Norwich at will, in 'real time', for example by using a mouse to control movement. However, memory requirements mean that this is not possible with the current models – they need adapting for this purpose, and this has only been achieved successfully for small sections of the city. In the meantime our output is pre-processed, i.e. we have generated a range of animations which the user can select to view with the interface we have created,. Generating these animations with the detailed models is time-consuming. Our animations need 30 frames per second and thus 1,800 frames for one minute's viewing. Whilst typically frames take between thirty seconds and a minute to generate, some frames take over five minutes – and at that rate it requires over 9,000 minutes' time to generate one minute of output – i.e. over 150 hours. Sometimes our computers are very busy.
Hardware storage concerns are also an issue – the output images and raw uncompressed animations taken by just one of the routes, generated at high resolution (1,200 by 900), take up 70 GB of hard disk space.

A more general issue to be considered is what to include in the model. On a basic level, should traffic signals and road signs and road markings be included? Rather less obvious are issues such as whether to include ugly repairs of old buildings or to cover them up with more sympathetic materials, thus 'returning the building to its original state'. Should graffiti be included or 'airbrushed out'? And what about television aerials, satellite dishes and advertising hoardings?
The software used allows sophisticated lighting control, but should the weather always be beautiful and sunny?
And finally, cities change – the building the virtual model of which was made yesterday, might today be repainted, or even demolished. Keeping up with these changes is a significant task.

Though the creation of a high quality set of models represents a significant investment of time and money, it provides opportunities that were not previously available, and it is surely inevitable that all cities, town and urban areas will eventually wish to possess a similar tool and resource.

GPS devices.

Tracking pedestrians in historic city centres using GPS

This chapter describes the results of a series of pedestrian observation studies carried out in Norwich, Rouen and Koblenz. The goal of these studies was to observe pedestrian behaviour and to investigate pedestrian movement and experience in the city centres. The cities are engaged in improving the physical conditions and the experience of their city centres by investing in landscaping and engineering of public spaces, city beautification, wayfinding and in communication and information technology.

Stefan van der Spek

The purpose of the observation studies was to evaluate the use of space in relation to investments, (rather than using the outcome as a design tool to pinpoint) opportunities and threads in the city; the outcome focuses on a comparison between the actual situation and real use.
For the observation, a specific method using Global Positioning System (GPS) devices capturing the movement of pedestrians was developed and put into practice. The recording of pedestrian behaviour was accompanied by a questionnaire adding background information on the participants.

What is to be found here?

After this introduction, the setup and implementation of the fieldwork will be explained in 'Way of Working'. Here, the methods for processing the data and the criteria for analysis will be clarified. After that, the context of the cities will be illustrated by analysis drawings. Next, the results will be described in the paragraph 'Findings and Conclusions'.
The chapter lastly concludes with a synthesis comparing the findings of the different cities.

'Old-fashioned' paperwork.

Way of working

The method of collecting data on pedestrian behaviour is based on the Global Positioning System (GPS). GPS is primarily a system for navigation and orientation. The GPS system makes use of a network of satellites in orbit which send signals to earth. A GPS device has the ability to receive these signals and compute its geographical position. At least three to four satellites are necessary in order to accurately determine a position.

GPS devices are mainly known as navigation or orientation instruments such as car navigation systems or outdoor orientation equipment. The technique has been developed in the military in the United States. Since the year 2000, the technique has been more widely available to the public, although its accuracy is still limited. Today, accuracy is around three to five meters in the open field. Europe is building its own global positioning system called Galileo.

GPS tracking

The method of collecting data on pedestrian movement makes use of the ability that some GPS devices have to store a sequence of positioning data at a determined time interval. This sequence results in a place-time log. The log file can be read out real-time or later and projected onto maps in a Geographical Information System (GIS). GIS has the ability to join different layers of information or different sources, but GIS also provides tools to process, model and visualize data.

Why tracking pedestrians

With traditional methods it is possible to gain insight into pedestrian movement. However, this insight is limited to the scope of the method. Counting people at certain locations leads to insights into the density of the use of the public space only at these locations. Such methods do not collect information on journeys, patterns of use or route choices. Models could possibly estimate where people might walk. However, this would be based on a prediction, and not on an actual situation. Travel diaries might give insights in actual behaviour, but depend on the accuracy of people's minds.

A case study in Delft showed that the ability of people to reproduce a walked route in a map is inadequate. The actual walking pattern based on GPS tracks deviated repeatedly from the drawn map.

Using GPS technology it is possible to acquire accurate and detailed insights into actual behaviour. The technology will provide insights into the exact departure and return time, time spent at specific locations, destinations, the walked route or geographical route of the journey, the speed and the mode of transport.

An important aspect of GPS tracking is to collect information on the whole journey from departure to return. In the event of activity-based research, people will probably have a GPS device for a certain period of time at their homes. In the event of studying pedestrian behaviour, this would make no sense, as it is not clear when and how often people will visit the city centre. Collecting data about pedestrian movement in cities requires other ways of distributing and collecting devices and gathering data. Other systems could involve tracking people living or working in a specific building, street or area or tracking people from a specific point at which they enter the city centre.

For the Spatial Metro project, the main target group is visitors of the city centre. The main points of interest are shopping (retail) or leisure (culture, heritage, drinking, dining). The most feasible way of collecting as much data as possible within a short period of time is to distribute and collect the tracking devices at an access point to the city. Access points are e.g. train terminals, bus stations and parking facilities. Parking facilities assure that people will return to their cars and thus return the device. Free parking was offered to people who decided to participate. This way of working meant that no

Rouen, old city centre.

GPS devices were lost. The drawback was that only visitors arriving by car were recorded.
To collect generic useable data without different weekdays affecting the data, data needs to be covered throughout the week. The time frame depends on both the target group and the opening hours of the activities in the city centre – the so called destinations or anchor points. In general, the distribution of the devices started around 10am and continued until around 5pm. People returning late were able to return the devices to the car park information desk (24/7). This practical time constraint excludes people who expect to arrive late.

Field work

From June 20th until June 26th 2007, a team from Delft University of Technology (DUT) in cooperation with Norwich City Council (NCC) carried out fieldwork in Norwich. After that, the field work in Rouen was carried out from October 1st until October 6th 2007 in cooperation with Rouen City Council (Marie de Rouen). Finally, from October 8th until October 14th, fieldwork was carried out in Koblenz in cooperation with Koblenz City Council (Stadtverwaltung Koblenz). In each city, fieldwork was carried out from two different parking facilities at the same time. This made it possible to collect sufficient and comparable data within one week. The data will be generically useable and comparable as all data from the different locations is collected under the same conditions.
In principle, the chosen facilities were on either side of the city centre. In Norwich the first location was St. Andrews Car Park (1,000 cars, opened June 2005), an important parking facility on the northern side of the centre core near The Lanes. The second location was Chapelfield Shopping Mall (1,000 cars, opened in 2005 as well), located on the southern side of the centre core and developed at the location of an old chocolate factory. In Rouen the first location was Vieux Marché (400 cars), on the Westside of the city centre. The second location was Haute Vieille Tour (430 cars) on the Southwest side of the city centre. Finally, in Koblenz the location on the Westside was Löhr-Centre, a car park on top of the shopping mall (1,400 cars). The second one on the Eastside was Görresplatz, an underground car park (350 cars).

Procedure

The information and co-ordination point for the distribution and collection of GPS devices was located near the pedestrian entrance/exit of the parking garage. People leaving the parking garage were handed out flyers explaining the background and setup of the study and asked to contribute to the research.
If they matched the ‘shopping’ or ‘leisure’ target group, a GPS was presented in return for their parking ticket. To understand the behaviour better, a questionnaire had to be filled in on return. Participation was extremely high. No personal information on any of the participants was kept.

Processing data

Data was collected from two different sources: track logs resulting in temporal-geographical quantitative information and questionnaires resulting in social-geographical qualitative information. For data management reasons and to keep all data anonymous, a unique code was allocated to every entry.
Processing the data consisted of 5 steps:

1. validation;
2. cleaning, filtering and repairing;
3. individual analysis;
4. collective analysis based on the questionnaire, and;
5. findings and conclusions.

The results of processing are layered analysis drawings in GIS, Photoshop and Illustrator. A selection of these drawing will be used to illustrate the results.

Norwich.

Koblenz.

1 *Validation*

The assessment of tempo-graphical data was based on existing track data, matches between track data and questionnaire, the start point of the track, the end point of the track, and the readability and consistency of the track. If all questions received a positive response, the file was marked as valid. Otherwise, the file was rejected or had to be cleaned. In further steps of the analysis only valid tracks were taken into account.

2 *Cleaning, filtering and repairing*

The quality of the raw track log files varies depending on several factors. Cleaning, filtering and evaluating the tracks are necessary to determine validity. Within this study, tracks were only filtered and assessed, with no information which was lacking being added.

3 *Analysis of individual data*

After validation of the tracks the next step was the specific analysis of the route from the access point to the activities. For all distribution points a map with the alternative routes was generated. All tracks were checked with regard to the route used to walk into the city and the route used to return to the car park. Further, the type of journey was determined. A distinction was made between three types: (A) AREA, the destination is within the direct surroundings of the car park; (B) RETURN TRIP, same route to/from destination, probably a single destination and (C) ROUND TRIP, circular journey, different route, probably multiple destinations.

The following step in this type of analysis is the investigation of destinations and the time spent on these activities. Starting with a list of individual destinations, the result will conclude with a growing list of collective destinations ranking in time or frequency. This is very detailed research and as such has not yet been proposed within this study.
An important aspect for the analysis of tracks starting from Chapelfield and Löhr-Center is that people might start or end their journeys in the shopping mall. Time spent out on the streets can thereby be compared to time spent in a shopping mall and differences in behaviour can also be compared based on the type of starting point.

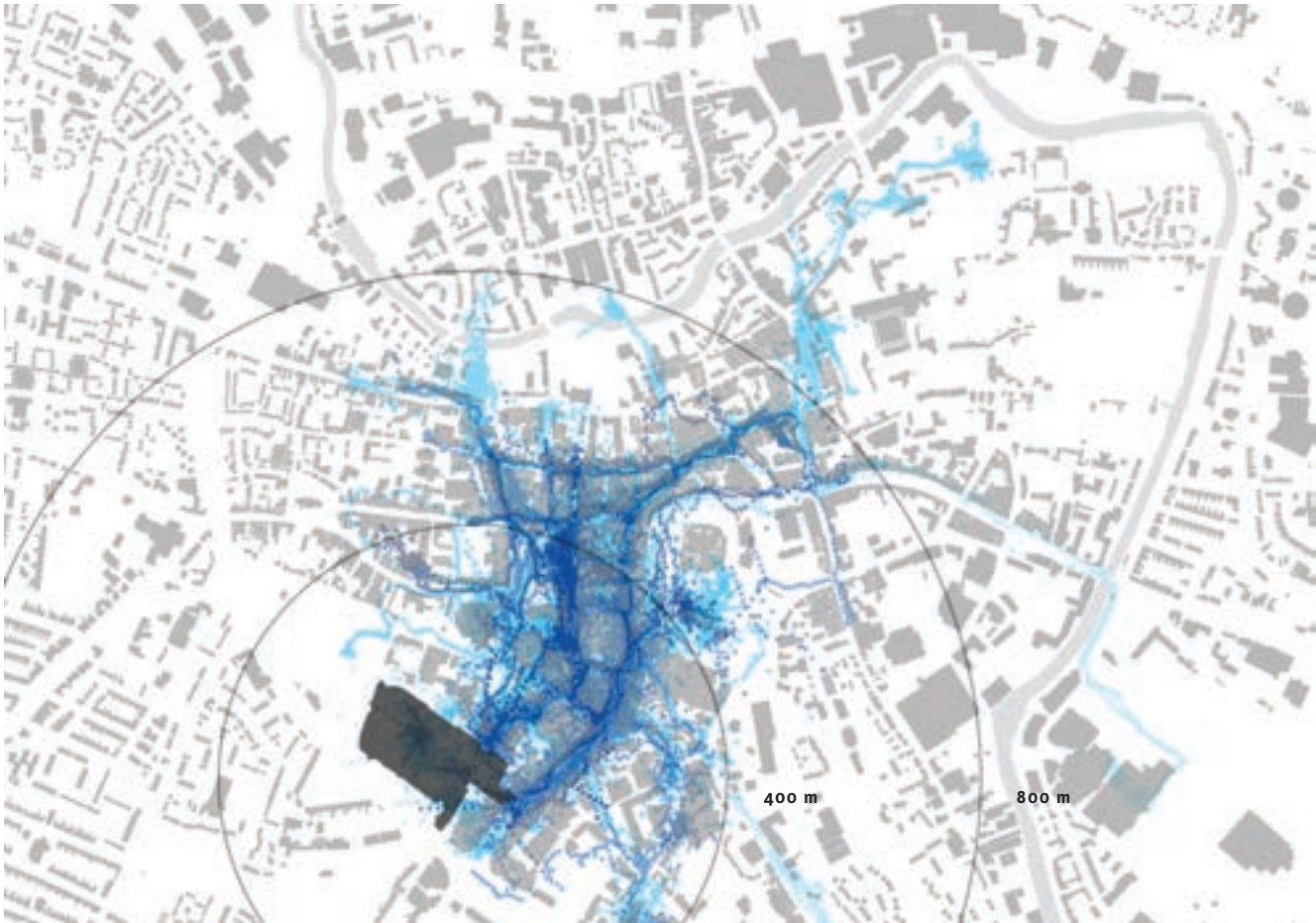
4 *Analysis of collective data*

The tracks themselves give an impression of use of the city when projected onto a map. Each individual track represents a person or group. Computations are required to create the collective image covering a selection of respondents. This can be established in GIS software where the tempo-graphical data was analysed using density calculations. With density calculations the number of lines or the number of points within a range of a certain locations are computed and visualised using a specific colour. The colour differs between lower and higher values. This technique simplifies line or point drawings. Using a legend it is possible to limit the visible data and emphasize structures.
All data were collected with a frequency of 5 seconds. This means that every dot on the map represents 5 seconds. Point density represents the time spent at a location. Using the outcome of the questionnaire, density drawings were made for four themes: (1) origin, (2) purpose, (3) familiarity and (4) duration.
Within the theme ‘Origin’ four subgroups can be distinguished: local, regional, national and international visitors. The theme ‘Purpose’ can be divided into shopping (retail), leisure (i.e. drinking, dining, culture, heritage) and other purposes, including living, education, business or other formal appointments. Within ‘Familiarity’ the subgroups are first visitors, occasional visitors and regular visitors. Finally, the ‘duration’ of the trip is based on the period of time between the distribution and the return of the GPS device. A representative subdivision is based on a two-hour time period, leading to the categories ‘less than two hours’, ‘two to four hours’ and ‘more than four hours’. Per theme two representative subgroups were chosen for the visualisation of the results and conclusions.

5 *Findings and conclusions*

The background data provided in the questionnaire was analyzed using statistical software, namely SPSS. Frequency


400 m
800 m


400 m
800 m

tables show how many times an alternative was mentioned. Cross tabulations provide insight into the relationships between subjects or categories.
The analysis also includes the fabrication of conclusion maps. These maps summarize and elaborate the outcomes of the analysis drawings. The maps contain three elements:

1 *Edge*
Hard borders in the city which are hardly crossed.
2 *No-go area*
Neglected parts of the city within the range of the access point.
3 *Attractors*
Main destinations, buildings and spaces/places.

01 | Norwich St. Andrews. All valid tracks of seven days.

Each dot represents 5 seconds.

The findings in this study are based on the explanation of the statistical information, the assessment of the drawings (density image of a theme), a comparison within the series of the theme and a comparison between locations. All outcomes should be considered as results of the participating population. The study does not provide insight into the background and behavior of all visitors, but only the selected population.

What to find next?

In the following paragraph the results will be amplified per location. After that, the generic conclusions of the outcomes will be presented. In 'Synthesis' a comparison will be made between the cities and the locations. In the last paragraph 'Reflection', the method will be discussed in respect to the Spatial Metro project and the investments.

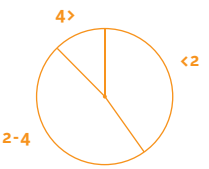
02 | Norwich Chapelfield. All valid tracks of seven days.

Each dot represents 5 seconds.

Results

Norwich, St. Andrews

The fieldwork in Norwich was carried out from Wednesday June 20th until Tuesday June 26th 2007. The first distribution location was located at St. Andrews car park on the northern side of the historic city centre. This relatively new car park has approximately one thousand parking spaces. Most of them are used by commuters, but specific spaces are reserved for shoppers. The car park is open 24 hours, 7 days a week. The full daily rate is 5.00 pounds. The fieldwork facilities were located near the southern exit on the route to the city centre. This car park is an ideal starting point for destinations around St. Andrews Plain and the Norwich Lanes shopping district. In total, 370 people responded resulting in 173 directly useable tracks. The graphical result of the collective use of space is illustrated



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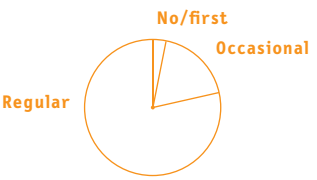


Familiarity.

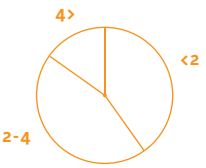

400 m
800 m


400 m
800 m

in image 01. The origin of the respondents at this location was generally local (84%), although regional visitors were also represented (11%). As expected, the main purpose was shopping (80%), followed by leisure (12%). Most respondents were regular visitors (80%), followed by occasional visitors (18%). People generally stayed in the city centre 2-4 hours (48%), with 40% staying for a shorter period. The main route people took to walk to the centre was Exchange Street, directly in front of the exit and leading to the market and the main shopping street. Alternative routes were along St. Andrews Street and Charing Cross. The return route was generally the same.

03 | Rouen Vieux Marché. All valid tracks of seven days.

Each dot represents 5 seconds.



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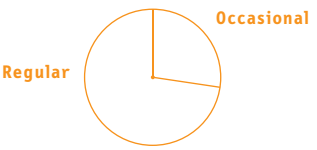


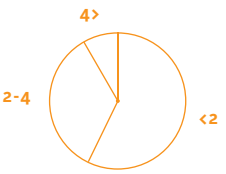
Familiarity.

Norwich, Chapelfield

The second distribution location in Norwich was located at Chapelfield mall, a car park and shopping mall on the southern side of the historic city centre. This is also a relatively new car park with approximately one thousand parking spaces. The main focus of the car park is shopping and leisure. The full daily rate is 20.00 pounds, but special flat rates are also available. Access to Chapelfield Car Park is limited from 8am to 10pm. This car park is an ideal starting point for destinations on the southern side of the city centre. The distribution facilities were located near the main exit to the car park in the central hall. In total, 270 people responded resulting in around 80 directly useable tracks. The graphical result of the collective use of space is illustrated in image 02. The origin of the respondents at this location was generally local (80%), although regional visitors were also represented (17%). There were scarcely any national or international visitors at the location. As expected, the main purpose was shopping (90%), followed by leisure (8%). Most respondents were regular visitors (72.5%), followed by occasional visitors (27.5%). People generally stayed in the city centre for 2-4 hours (45%), with 40% staying for somewhat shorter periods. The main routes taken leaving the car park and returning to it were the same, namely Malthouse Road in the direction of Gentleman's Walk. The main destinations were the shopping streets leading to Norwich Lanes and Tombland. In comparison to St. Andrews, the response was far lower, and there were more regional visitors, more shopping as the main purpose, more occasional visitors and people generally stayed for a slightly shorter period.

04 | Rouen Haut Vieille Tour. All valid tracks of seven days.

Each dot represents 5 seconds.



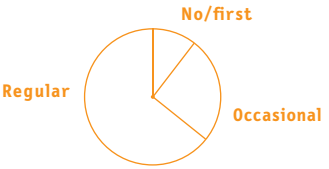
Duration.

Rouen, Vieux Marché

The fieldwork in Rouen was carried out from Monday October 1st until Saturday October 6th 2007. The first distribution location was located at Vieux Marché car park on the western side of the historic city centre. The fieldwork facilities were located near the pedestrian exit of the garage. The car park is


400 m
800 m

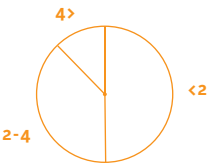

400 m
800 m



Familiarity.

05 | Koblenz Löhr-Center. All valid tracks of seven days.

Each dot represents 5 seconds.



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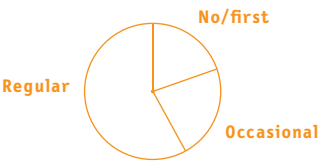


Familiarity.

06 | Koblenz Görresplatz. All valid tracks of seven days.

Each dot represents 5 seconds.

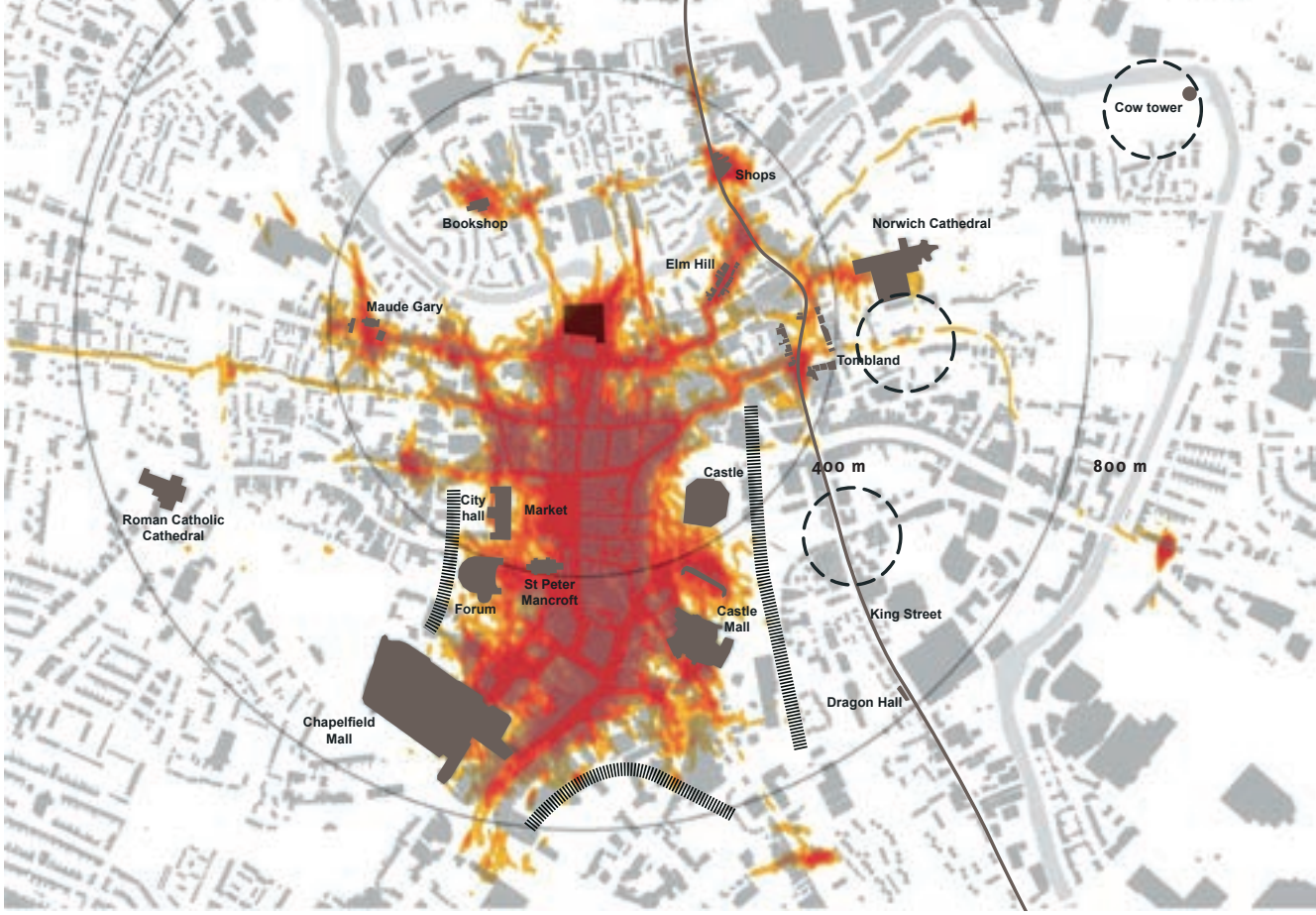
located in the main pedestrian area, which makes it an ideal starting point for the main cultural and commercial destinations. In total, 240 people responded resulting in 150 directly useable tracks. The graphical result of the collective use of space is illustrated in image 03. The origin of the respondents at this location was generally regional (46%), although local visitors were highly represented (37%). As expected, the main purpose was shopping (69%), followed by leisure (18%). Most respondents were regular visitors (64%), followed by occasional visitors (25%). People generally stayed in the city centre less than 2 hours (57%), with 35% staying for longer periods.
The main route people took when walking to the centre was Rue du Gros-Horloge, directly leading to the Gros-Horloge ending at the Cathedral. Alternative routes were two parallel streets, namely Rue Saint-Lô and Rue Rollon. The route back was generally the same. The main destination was the shopping area between Vieux Marché and the Cathedral.

Rouen, Haut Vieille Tour

The second distribution location was located at Haut Vieille Tour car park on the south-eastern side of the historic city centre, directly south of the Cathedral. The fieldwork facilities were located near the main pedestrian exit of the garage. The car park is not located in the pedestrian area, but is relatively close to the main cultural and commercial destinations. In total, 180 people responded resulting in over 130 directly useable tracks. The graphical result of the collective use of space is illustrated in image 04. The origin of the respondents at this location was both regional (42%) and local (39%). The car park is also used by international visitors (11%). As expected, the main purpose was shopping (66%), followed by leisure (21%). Most respondents were regular visitors (58%), followed by both occasional visitors (22%) and people on a first-time visit (20%). People generally stayed in the city centre for less than 2 hours (50%), with 38% staying for longer periods of 2-4 hours.
The main route people took to walk to the centre was Rue de L'Epicerie, directly leading to the Cathedral. Most other alternatives were also used. Remarkably, the route back varied significantly to the route taken in. The main destinations were the Cathedral and from there Vieux Marché via the Rue du Gros-Horloge. In comparison to Vieux Marché, the response was lower, but the origin of people was more or less identical; the same applies to the respondents' purposes. In Haute Vieille Tour, more respondents were new visitors and people tended to stay for longer periods.

Koblenz, Löhr-Center

The fieldwork in Koblenz was carried out from Monday October 8th until Saturday October th 2007. The first


Cow tower
Shops
Bookshop
Norwich Cathedral
Elm Hill
Maude Gary
Tombland
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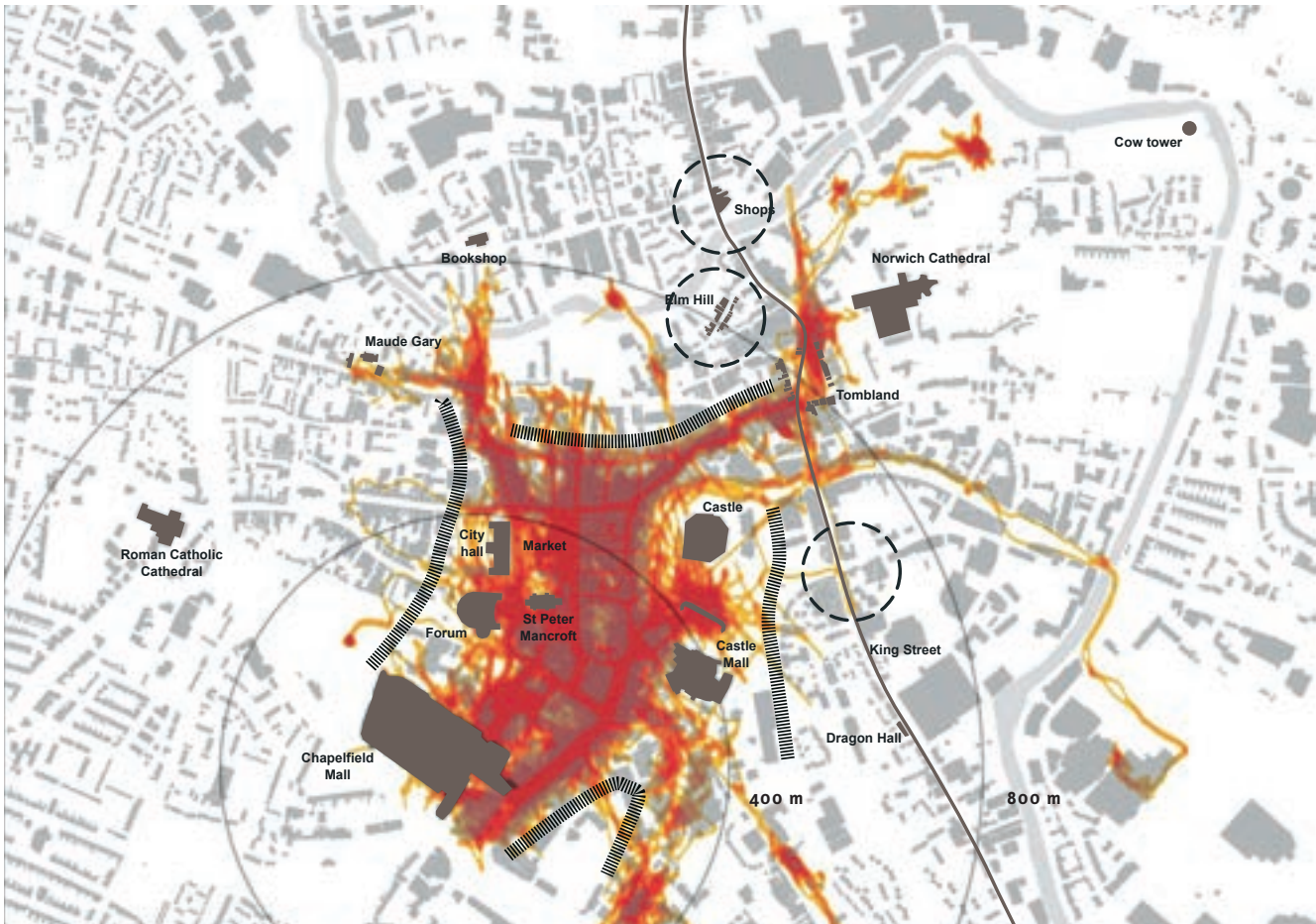
Roman Catholic Cathedral
St Peter Mancroft
Forum
Castle Mall
King Street
Dragon Hall
Chapelfield Mall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Dragon Hall
Chapelfield Mall
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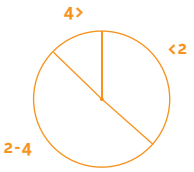

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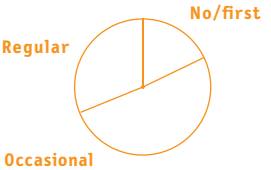


Familiarity.

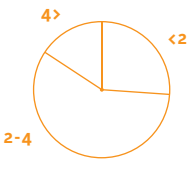
07 | Norwich St. Andrews. Density analysis of primary purpose shopping.

Neglected area.

Edge.

Low use.

High use.



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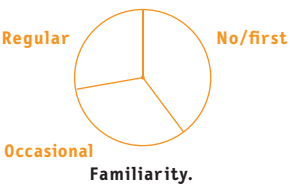


Familiarity.

08 | Norwich Chapelfield. Density analysis of primary purpose shopping.

Neglected area.

Edge.

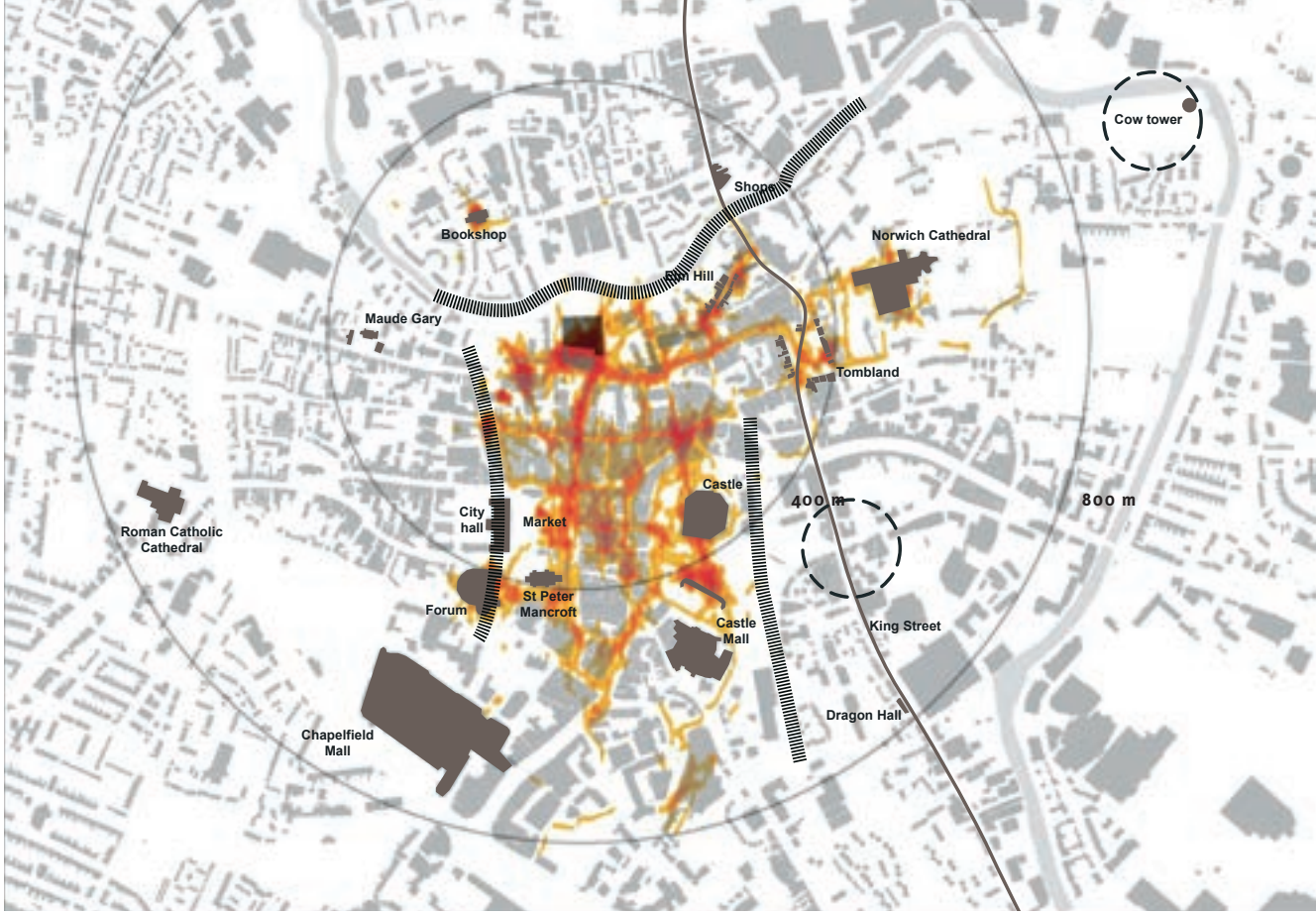
Low use.

High use.

distribution location was located at the Löhr-Center – a car park on the roof of the main shopping mall on the western side of the city centre. A new railway station for the city centre is planned at the rear of this mall, with its main entrance situated at the Löhr-Rondell. The fieldwork facilities were located near the main pedestrian exit of the garage. The mall is located on the edge of the pedestrian area and is relatively close to the historic city centre, but the main tourist destinations such as the riverfronts are beyond reach. The mall has three exits: one on the Southside to Löhr-Rondell, one in the middle on the western side and one on the northern side of the building which connects to a pedestrian tunnel. In total, 180 people responded resulting around 100 directly useable tracks. The graphical result of the collective use of space is illustrated in image 05. The origin of the respondents at this location was mainly regional (60%). National and international visitors also use this car park (20%). As expected, the main purpose was shopping (75%), followed by leisure (22%). Most respondents were occasional visitors (50%) but the location is also used by new visitors (20%). People generally stayed between 2-4 hours (58%) or less than 2 hours (26%). A large group only uses the car park to access the city (40%), but the car park is also used for the mall itself – 33% of all visitors stay in the mall for over one hour. The exit people mainly took when walking to the centre was the Western exit directly leading to the Löhrstrasse. However, the route back varied significantly to the outbound route. The main destinations were within a range of 400 metres, and were mainly on the Löhrstrasse – the shopping street.

Koblenz, Görresplatz

The second distribution location was located at the Görresplatz car park on the eastern side of the city centre between the shopping district and the waterfront. The fieldwork facilities were located near the main pedestrian exit of the garage. The car park is located in the pedestrian area and is relatively close to the main cultural and commercial destinations. In total, 120 people responded resulting in around 100 directly useable tracks. The graphical result of the collective use of space is illustrated in image 06. The origin of the respondents at this location was mainly regional (54%). A fair number of national and international visitors also use this car park (38%). The main purpose was shopping (48%), directly followed by leisure (43%). Most respondents were new visitors (40%), followed by both occasional visitors (32%). People generally stayed in the city centre between 2-4 hours (51%), with 36% staying for shorter periods of less than 2 hours. The main route taken on leaving the location led to the shopping streets via the Firmunstrasse. However, remarkably enough, the route back varied significantly to the route in. People tended to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City hall
Market
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Roman Catholic Cathedral
Forum
St Peter Mancroft
Castle Mall
King Street
Dragon Hall
Chapelfield Mall


Cow tower
Shops
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Norwich Cathedral
Elm Hill
Maude Gary
Tombland
Castle
City hall
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Roman Catholic Cathedral
Forum
St Peter Mancroft
Castle Mall
King Street
Dragon Hall
Chapelfield Mall
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800 m

browse their way back to the car park leaving a sprawled pattern of use. In comparison to the Löhr-Center the response was lower but more profitable. The origin of people in both locations was mainly regional, although Görresplatz had a greater number of national and international visitors. This factor affects the purpose statistics; in comparison to Löhr-Center, virtually twice the number of visitors to Görresplatz had leisure as their purpose, a number almost equal to that for shopping. In Görresplatz, far more respondents were new visitors, but people tended to stay for shorter periods.

09 | Norwich St. Andrews. Density analysis of primary purpose leisure.

Neglected area.

Edge.

Low use.

High use.

10 | Norwich Chapelfield. Density analysis of primary purpose leisure.

Neglected area.

Edge.

Low use.

High use.

Conclusions

Norwich, St. Andrews > Shopping

The main visitors participating in the study carried out at St. Andrews were identified as shoppers (79%) visiting the city centre regularly or occasionally. Most of them stayed for 2-4 hours (50%) or less (40%). The main type of shopping indicated by the respondents was fashion and luxury (50%) followed by non-daily shopping (28%). Remarkably, daily-needs shopping was also significant at this location (10%). The area visited mainly covered the main shopping streets from St. Andrews to Chapelfield, a distance of 800 metres, bordered by the City Hall and Forum on one side and the Castle and Castle mall on the other. Surprisingly, the destinations also included some satellite locations within a range of 400 metres.
The Chapelfield Shopping Mall is clearly also a destination. Neglected or scarcely visited areas were King Street, Tombland and the area behind the Norwich Cathedral including the Great Hospital and the Cow Tower.

Norwich, Chapelfield > Shopping

For Chapelfield too, the main type of shopping indicated by the respondents was fashion and luxury (63%) followed by non-daily (21%). Shopping for daily needs was therefore only marginally represented at this location (4%). The visited area mainly included the main shopping streets from Chapelfield till The Lanes within a range of 600 metres, bordered by the City Hall and the Forum on one side and the Castle and Castle mall on the other. The destinations also clearly include Tombland at a distance of 800 meters and surprisingly, the more incidental destinations of Great Hospital and Riverside. Neglected or scarcely visited areas were King Street and parts of Norwich Lanes; Lobster Lane and Bedford Street function as the borders of the visited area.


Cow tower
Shops
Bookshop
Norwich Cathedral
Elm Hill
Maude Gary
Tombland
Castle
Roman Catholic Cathedral
City hall
Market
400 m
800 m
Forum
St Peter Mancroft
Castle Mall
King Street
Dragon Hall
Chapelfield Mall


Cow tower
Shops
Bookshop
Norwich Cathedral
Elm Hill
Maude Gary
Tombland
Castle
Roman Catholic Cathedral
City hall
Market
Forum
St Peter Mancroft
Castle Mall
King Street
Dragon Hall
Chapelfield Mall
400 m
800 m

11 | Norwich St. Andrews. Density analysis of regional origin.

Neglected area.

Edge.

Low use.

High use.

12 | Norwich Chapelfield. Density analysis of regional origin.

Neglected area.

Edge.

Low use.

High use.

Norwich, St. Andrews > Leisure

The main destinations of the visitors who indicated that their primary purpose was leisure (12%) were within a 400-metre radius, with some destinations located to the south within a range of 800 metres. Main destinations for this group generally consisting of national and international visitors included the Market, the Forum, Castle and Castle Mall, the Norwich Cathedral via Tombland and Elm Hill. The visited area was mainly limited to the central business core: Gentleman's Walk and Castle Street. Neglected or scarcely visited areas were King Street, the northern side of the river, east of the City Hall and west of the Castle.

Norwich, Chapelfield > Leisure

The main destinations of visitors who indicated that their primary purpose was leisure (8%) were within a 400-metre radius, with some destinations in the south within a range of 600 metres. The main destinations for this group generally consisting of local visitors included the Market, the Forum and Castle. The visited area was mainly limited to the central business core: Gentleman's Walk and Castle Street. Neglected or scarcely visited areas were King Street, the northern side of The Lanes, Tombland, Norwich Cathedral, east of the City Hall and west of the Castle.

Norwich, St. Andrews > Region

The origin of the visitors was determined by their postal code. The regional visitors (11%) showed a very distinctive pattern of use. In the image, Gentleman's Walk can be recognized as the main pedestrian artery. Castle Street offers a parallel alternative, but was only partly used. The main destinations are clearly the main shopping streets and the two malls of Castle Mall and Chapelfield Mall. From the exit of St. Andrews to the central shopping area, the main route for regional visitors was clearly Exchange Street. Neglected or scarcely visited areas were once again King Street, the northern side of the river, east of the City Hall and west of the Castle, but also Tombland, Norwich Cathedral and Elm Hill.

Norwich, Chapelfield > Region

Compared to the regional visitors starting from St. Andrews (11%), the pattern of use of the regional visitors starting from Chapelfield (17%) is equal except for two points, namely Norwich Lanes and the routes to the Great Hospital and Riverside. In Norwich Lanes, Lobster Lane/Bedford Street form a border. London Street more or less functions as a divider and funnel, leading people from Chapelfield to Tombland. There, people turn back or walk in different directions, e.g. heading to the Castle via King Street. Remarkably, historic King Street is otherwise neglected.


400 m
800 m
Musee des Beaux-Arts
Eglise de Jean d'Arc
Terre Rouen Center
Le palais de Justice
Le Gros Horloge
Hotel de Ville
Grand Cathedral
Cathedral Notre Dame
Saint Maclou
St. Marc square & mall


Musee des Beaux-Arts
Eglise de Jean d'Arc
Terre Rouen Center
Le palais de Justice
Le Gros Horloge
Hotel de Ville
Grand Cathedral
Cathedral Notre Dame
Saint Maclou
400 m
800 m
St. Marc square & mall

13 | Rouen Vieux Marché. Density analysis of regular visitors.

Neglected area.

Edge.

Low use.

High use.

14 | Rouen Haute Vieille Tour. Density analysis of regular visitors.

Neglected area.

Edge.

Low use.

High use.

Rouen, Vieux Marché > Regular

The main group of respondents starting from Vieux Marché were regional visitors (50%) whose primary purpose was shopping. The main purpose of the shopping was fashion and luxury (42%), followed by non-daily shopping (21%), other (22%) and daily shopping(15%). The main routes through the centre for this group were Rue du Gros-Horloge, Rue Rollon and Rue Saint-Lô. Rue de Jeanne d'Arc functions both as a divider and border and Rue du Bec mainly as a border. The maximum reach of the visitors starting from Vieux Marché was approximately 400 meters. Only some reached the Hotel de Ville at approximately 800 meters. Neglected spaces were Place Vendrel and Hotel de Ville. Remarkably, the waterfront was completely ignored by the participants.

Rouen, Haute Vieille Tour > Regular

The main group of respondents starting from Haute Vieille Tour were regional visitors (42%), followed by local visitors (39%). 90% of both groups consisted of shoppers. The reasons for shopping were almost identical to Vieux Marché, except for daily shopping which was only 10% at this location.
From the car park, the main route to the city centre was along the Rue de L'Epicerie to the Cathedral and along the Rue du Gros-Horloge. From here, people tended to stroll around.
On their way back, people tended to take the shortest route leading to a sprawled image. The main routes through the centre for this group were Rue du General Leclerc, Rue du Gros-Horloge and Rue de Jeanne d'Arc. The maximum reach of the visitors starting from Haute Vieille Tour was approximately 600 meters. Only some reached the Eglise de Jeanne d'Arc at approximately 600 meters. Neglected spaces were again Place Verdrel and Hotel de Ville. Remarkably, the waterfront was completely ignored by the participants.

Rouen, Vieux Marché > International

The national and international respondents (8%) starting their trip from Vieux Marché generally visit the city for the purpose of leisure (100%). The used public space is clearly limited to the Rue du Gros-Horloge and ends at the Cathedral. The area around the Vieux Marché car park, including the Eglise Jeanne d'Arc, also receives some visiting time. A limited number of people make a detour, i.e. to the Hotel de Ville and around the Palais de Justice, but this does not generally extend beyond 600 metres.

Rouen, Haute Vieille Tour > International

The national and international respondents (11%) accessing the city from Haut Vieille Tour principally visit the city for leisure purposes (100%). In comparison to Vieux Marché, the


400 m
800 m
Musee des Beaux-Arts
Eglise de Jean d'Arc
Terre Rouen Center
Le palais de Justice
Le Gros Horloge
Hotel de Ville
Grand Cathedral
Cathedral Notre Dame
Saint Maclou
St. Marc square & mall


Musee des Beaux-Arts
Eglise de Jean d'Arc
Terre Rouen Center
Le palais de Justice
Le Gros Horloge
Hotel de Ville
Grand Cathedral
Cathedral Notre Dame
Saint Maclou
400 m
800 m
St. Marc square & mall

used public space not only includes the Rue du Gros-Horloge starting at the Cathedral and ending at Vieux Marché (800 metres away), but people tend to forage more around, especially to the north. Remarkable is the use of Rue Jeanne d'Arc in the direction of the railway Station. The area around the Vieux Marché, including the Eglise Jeanne d'Arc receives a certain amount of visiting time as well as the Saint Maclou and Place St. Marc toward the east of the Cathedral. The route into the pedestrian zone is mainly through the Rue de L'Epicerie. Some alternatives in the east have also been used. The waterfront was scarcely accessed, also not by national and international visitors.

15 | Rouen Vieux Marché. Density analysis of international visitors.

Neglected area.

Edge.

Low use.

High use.

Koblenz, Löhr-Center > Region

The origin of the visitors was determined on the basis of the questionnaire. The regional visitors (60%) showed a very distinctive pattern of use. In the image, the main shopping street Löhrstrasse running North-South can be recognized as the major pedestrian artery. From there, people tended to spread into other streets, such as Altlöhrtor and Pfuhlgasse in the direction of Zentralplatz or via Am Plan in the direction of Görresplatz. Generally, main turning points were Am Plan and Zentralplatz. Zentralplatz was only partly visited. All exits of the shopping mall were used, but the primary exit was the middle exit along the Hohenfelderstrasse. The visited area matched the shopping district, except for the Schlossstrasse, which runs from the southern exit of the shopping mall in a line directly leading to the palace. The regional respondents failed to visit the cultural buildings and heritage sides, such as the palace, the waterfront, Deutsches Eck or the historic city centre. The regional visitors indicated that their primary purpose was shopping (84%) or leisure (12.5%). The results overlapped with the visualisation of the shopping. The main range was 400 metres, with a single arm up to 800 metres.

16 | Rouen Haute Vieille Tour. Density analysis of international visitors.

Neglected area.

Edge.

Low use.

High use.

Koblenz, Görresplatz > Region

The regional visitors starting from Görresplatz (54%) also showed a very distinctive pattern of use. Most of these visitors were shoppers (64%). The pattern was partly identical to the Löhr-Center, but use of the section between Görresplatz and Am Plan was more intense. The visitors tended to proceed westward to the main shopping streets such as Firmungstrasse, Entenpfuhl and Löhrstrasse. From there, different routes were taken back to the car park. Alternatives were Pfuhlgasse, Altlöhrtor and Schlosstrasse. The Schlossstrasse was scarcely used and when used, people only walked along short stretches, looking for short cuts back to the original location. The Löhr-Center and waterfront were also destinations. The Zentralplatz is a centrally situated square and is part of the route. The


Die Deutsche Ecke
St. Kastor Basilika
Florinskirche
Liebfrauen Kirche
Am Plan
Rathaus
Gorreplatz
Fountain
LOHR CENTRE
400 m
800 m
Kurfurstliches Schloss


Die Deutsche Ecke
St. Kastor Basilika
Florinskirche
Liebfrauen Kirche
Am Plan
Rathaus
Gorreplatz
Fountain
LOHR CENTRE
400 m
800 m
Kurfurstliches Schloss

square is potentially a significant public space and attractor in the middle of the city centre. People seem to walk further distances from Görresplatz, but compared to Löhr-Center, the spatial borders or so-called edges are the same. Especially the area north of the Firmungstrasse and thus directly north of Görresplatz is a barrier which is scarcely crossed.

17 | Koblenz Löhr-Center. Density analysis of regional visitors.

Neglected area.

Edge.

Low use.

High use.

Koblenz, Löhr-Center > Local

Local visitors formed a smaller group (20%) in respect to regional visitors (60%). National and international visitors represented around 20% of the population. The pattern showed more or less the same core as for regional visitors, but limited to the Löhrstrasse and Am Plan. The local visitors seemed to stay in and around the mall more and to spend less time on the street. In both cases, the majority were shoppers (90% local and 84% regional respectively). The Zentralplatz was not part of the walking system of the local shoppers. Görresplatz and the Altstadt were also neglected. Remarkably, the respondents concerned also failed to visit the Schlossstrasse.

18 | Koblenz Görresplatz. Density analysis of regional visitors.

Neglected area.

Edge.

Low use.

High use.

Koblenz, Görresplatz > National

As opposed to the Löhr-Center, a greater number of national and international participated in Görresplatz (38%). The national visitors were highly represented (31%). Their primary purpose was leisure (70%). The respondents visited the main shopping streets (Firmungstrasse, Entenpfuhl and Löhrstrasse), but also the historic city centre (Altstadt) and the waterfront including the Deutsches Eck. Further, this group foraged along both riverfronts.

Synthesis

This paragraph will give an overview of the results and conclusions of the different cities and locations. The result of the themes will be compared with a view to understanding the differences and similarities in visitors' behaviour in different cities. The comparison will be based on the four main themes: purpose, origin, familiarity and duration. Two graphical themes have been added, namely distance and spatial pattern.

Origin

Origin is divided into four separate categories: local, regional, national and global. In all cases, national and global were the smallest groups. Especially in Koblenz, national and global visitors were represented (Görresplatz 38% and Löhr-Center 21%). In Koblenz, the majority of visitors were regional (59 and 54% respectively). Rouen is more orientated toward regional


Die Deutsche Ecke
St. Kastor Basilika
Florinskirche
Liebfrauen Kirche
Am Plan
Rathaus
Gorreplatz
Fountain
LOHR CENTRE
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Kurfurstliches Schloss


Die Deutsche Ecke
St. Kastor Basilika
Florinskirche
Liebfrauen Kirche
Am Plan
Rathaus
Gorreplatz
Fountain
LOHR CENTRE
400 m
800 m
Kurfurstliches Schloss

(42-46%) and local visitors (37-39%). Norwich therefore seems to be operating on the lowest scale with mainly local visitors and a tendency toward attracting regional visitors (81-84% and 11-17% respectively).

Purpose

The primary purposes of the visitors were shopping and leisure. Not surprisingly, the shopping purpose was much higher at the two mall locations (Norwich 89% and Koblenz 75%). The main purpose in Norwich was shopping (79-89%), followed by Koblenz (48-75%). Rouen was somewhere in the middle (66-69%). The leisure purpose was mainly represented in Koblenz Görresplatz (43%). In the other cities, leisure was only indicated for 8-22%. Within shopping, a distinction is made between daily, fashion and luxury and non-daily shopping. Koblenz represents the highest ranks for daily purposes (15-18%), followed by Rouen (10-15%) and Norwich (5-10%). In Norwich on the other hand, Fashion & Luxury were more frequently indicated as shopping purposes (50-63%) compared to the other cities (26-43%).

19 | Koblenz Löhr-Center. Density analysis of local visitors.

Neglected area.

Edge.

Low use.

High use.

Familiarity

The assessment of familiarity with the city was based on the frequency of visits: first-time visitor, occasional visitor or regular visitor. The respondents in Norwich clearly marked themselves as regular visitors (73-79%). The group hardly included any new visitors (0-3%). Rouen was visited by a mix of regular (58-64%) and occasional (22-25%) visitors. In Koblenz, the visitors were a mix of occasional (32-50%) and new visitors (18-40%). These figures correspond with the origin of the participants, assuming that locals visit the city centre more often and national and international visitors only incidentally.

20 | Koblenz Görresplatz. Density analysis of local visitors.

Neglected area.

Edge.

Low use.

High use.

Duration

For the duration, the time between distribution and collection of the GPS devices was calculated. Three workable divisions were made: less than two hours (<2hrs), between two and four hours (2-4hrs) and more than four hours (>4hrs). The first conclusion is that the presence of a mall does not influence the total time spent. Both malls function as attractors and access points to the city. In this sense, a short time is spent in the mall and a longer period in the city. However, people also stay in the malls for longer periods and leave the malls for more limited periods. This influences the registered image of use outside the mall. A clear distinction can be made between the time spent in these three cities. Participants stayed in Rouen for the shortest period of time: most of them under <2 hrs (50-57%) and some 2-4 hrs (35-38%). In Norwich, the respondents mainly stayed 2-4 hrs (45-48%), and some

shorter (40%). Koblenz was the city where people generally stayed the longest: 2-4 hours (51-58%) and some shorter (26-36%).

Walking distance and form of covered area

For the spatial pattern, three types can be distinguished: line (or axis), area and main area with satellite destinations. Most locations fall within the area type. Exceptions are Koblenz Löhr-Center with a strong axis as spatial character for all movement, and Norwich St. Andrews, undoubtedly an area with satellite destinations. To measure the maximum distance, circles of 400 and 800 metres were projected into the result drawings (5 and 10 minutes walking time respectively, depending on the spatial structure and local conditions). Evidently, Koblenz Löhr-Center has the smallest reach of approximately 400 metres. The other exception, also a mall location, was Norwich Chapelfield. Here the maximum walking radius was approximately 600 metres. All other examples had a maximum walking radius of approximately 800 metres.

Reflection

The tracking and questionnaire data give good insights into the behaviour and background of a large group of various types of visitors to the city centre. The technology makes it possible to collect and visualize data of movement. The background data provides the opportunity to select data and focus on specific themes and aspects. Using this method, it becomes clear that people behave in different ways in these historic European city centres. Different programme (functions) are available, as well as different ways to access the city and different structures to use the city as a pedestrian. Up to the present, the method has only been used to monitor and visualise the dynamics in the participating historic cities. The method has not yet been used as a tool to evaluate or address urban design issues. However, this application of the tool can be foreseen.

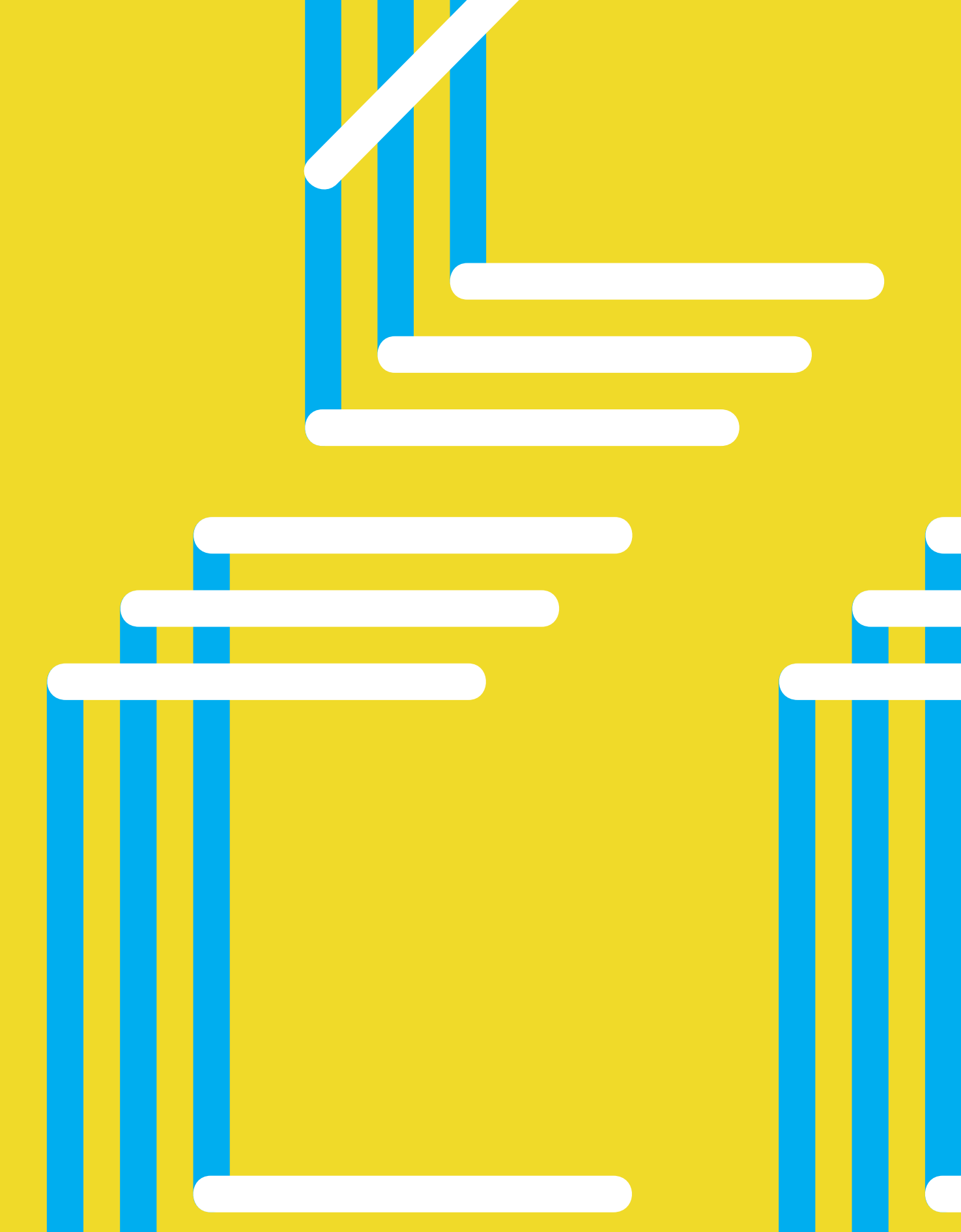
The application of the results

In Norwich, various design issues can be mentioned. St. Andrews seems to be well-integrated its surroundings and contributing to the city. Especially Exchange Street has become a key access street into The Lanes. Chapelfield on the other hand seems to rely on connections to the north alone. The route between Chapelfield Mall and Gentleman's Walk is not consistent. The Chapelfield Gardens and the area around the

bus station are scarcely used and scarcely directly accessible. More integration could be useful to activate these opportunities. Remarkably, King Street and Prince of Wales Street were both scarcely used by the respondents. It might be that the participating population is not attached to these areas, and that tracing visitors arriving at the railway station would show a different response. Still, in combination with Tombland as a turning point, the position in the network of the historically rich King Street could be improved. New access or arrival points on the eastern and western side would create new access streets. Finally, the investments in St. Andrews Plain should be part of a strategy to attract people to the area and connect smoothly to other areas such as Tombland and The Lanes.

In Rouen a frame has been developed based on strategic routes (the lines), nodes (the stations) and access or arrival points (the gateways). The frame is strengthened by a light master plan, the illumination of key buildings and guiding people safely at night. The GPS tracking study indicates several issues. One of these is the neglect of the waterfront. A new route along the water has been suggested, but connections to the current urban tissue are required to improve the waterfront's attractiveness and accessibility. The Rue du General Leclerc offers High Quality Public Transport (TEOR), but is scarcely used by pedestrians. It is a border area between the pedestrian zone and waterfront. The Rue de la Republique is a barrier and due to the intensity of the traffic, not a pleasant route for pedestrians. Finally, the area around the Musee des Beaux-Arts is not well-integrated into the routes followed by the participants on their visits to the city centre. The area has an interesting public square.

Finally, in Koblenz the Spatial Metro investments are part of a strategy for the Bundes Gartenschau in 2011. Up to the present, the research results have shown a limited use of the network and public spaces in the city centre; pedestrian activity is located in the main pedestrian streets. The Spatial Metro investments include essential upgrades of the current shopping streets for pedestrians. Other investments are crucial with a view to completing this work and providing a consistent system of public spaces and programmes. Essential projects are the Schlossstrasse and Zentralplatz. Further redevelopment is necessary to upgrade the waterfront and connect it better to the city centre and historic city. A first essential step has been set by redesigning the Löhrrondell, the key location connecting Schlosstrasse, Löhrstrasse, Löhr-Center and the new railway station.



Part 4

Considerations

There is an increasing amount of competition between European cities. At the same time, people are becoming more aware of and articulate about their needs. Improving the experience of today's critical users is a key component of a city's success.

Downtown Disney

Lichtenstein's 'Look Mickey': is the big fish (consumer) imaginary?

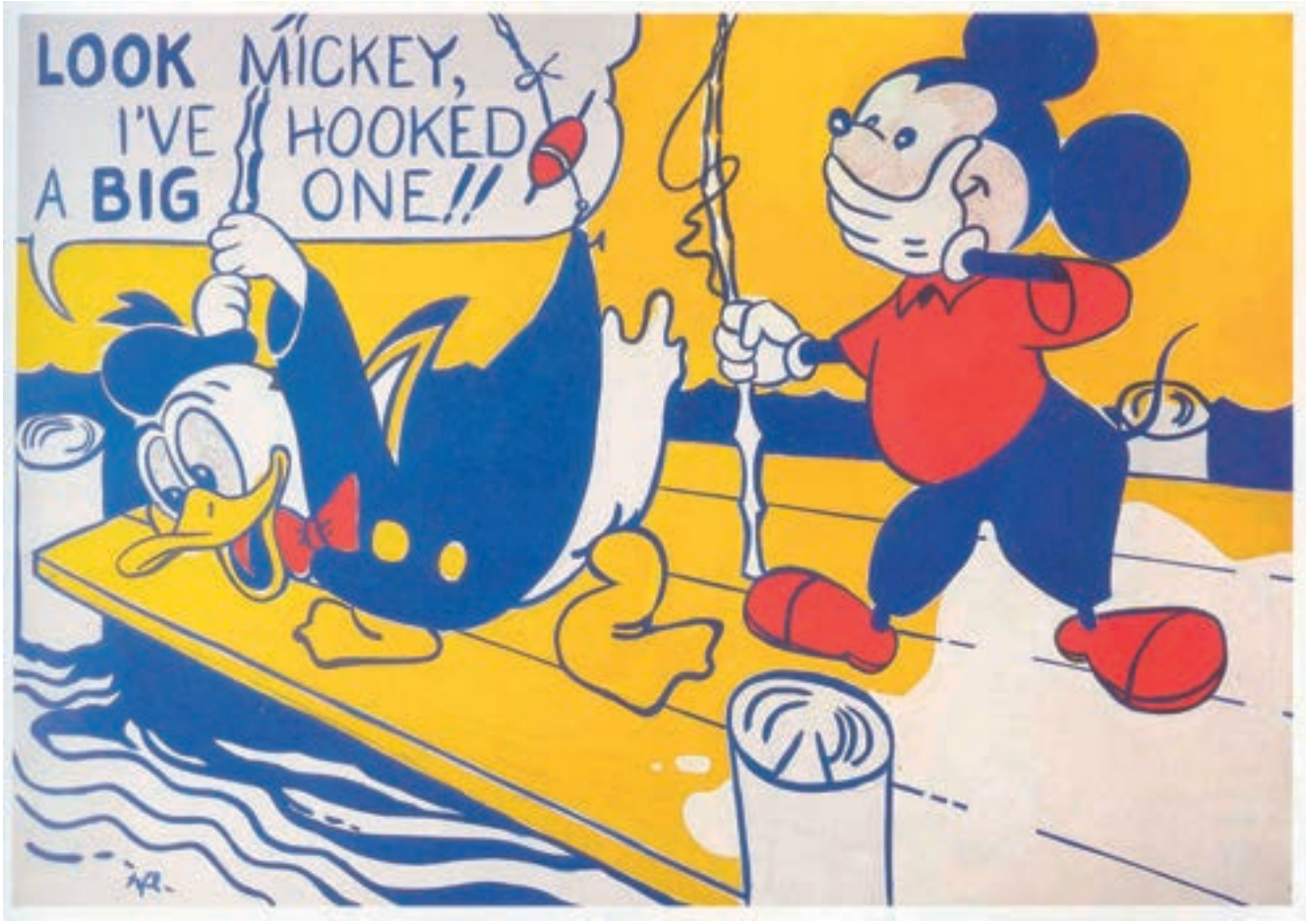
Are we giving up our freedom by turning our cities into fake themescapes and temples to consumerism? If so, then it is high time we took a critical look at our town and city centres and public spaces. Can we stop them becoming predictable and boring money-machines?

Ekim Tan

A fundamental shift is taking place in European town and city centres. In the past they used to offer a mix of production, trade, residential accommodation and services, but now consumption dominates. Increasingly, the city centres offer a range of consumer attractions (shopping), culture (museums, galleries, restaurants, bars and cafes) and leisure and entertainment (events). But are we going too far and simply creating 'downtown Disneylands'. The implications, as Michael Sorkin warned as long ago as 1992, may be far-reaching: 'There are no demonstrations in Disneyland. The effort to reclaim the city is the struggle for democracy itself.' [1]

The question that occupies the minds of commentators and professionals alike is whether cities can maintain their productive edge in the current service economy, while at the same time remaining attractive and pleasant places to live. Or should they even try? The upcoming creative industries that many predict will be the mainstay of new urban employment could follow manufacturing out to the urban edge.

The larger cities have been quite successful in maintaining diversity, while metropolitan cities such as London, Paris and Amsterdam also benefit from having a well-known and



distinctive character. On the other hand, many medium-sized European city centres lack a strong identity and urban redevelopment tends to be rather one-sided, so they feel the competitive pressure all the more. Local policies are heavily influenced by this 'battle of the city centres'. Fearful of losing out to other urban centres in the region, these towns and cities are upgrading their facilities in a process of constant renewal. This 'urban renaissance' is not a temporary hype, but began in the early 1980s and has been accelerating ever since. Running parallel to this is a heated debate on building unique city images, city branding and inventing new identities.

The ultimate objective of local authorities, real estate investors and retailers is to attract user groups and encourage them to stay longer in the city centre and spend more money. Besides the need to retain local users, the greatest competition is for the fun-seeking regional consumers and tourists. Redevelopments must be familiar enough to make the visitor feel at home, but also 'unique' enough to make them more attractive than other town and city centres. But although the aim is to create unique places, all too often the results are standardised commercial marketing machines and nameless open air museums devoid of inhabitants. According to Berci Florian, as long as these

transformation projects are inspired by the same homogenous market, the outcomes will all be identical, hopelessly dull and predictable.[2] The same old formula is repeated endlessly. Even cities with strong identities are falling victim to this process of 'Disneyfication'. Venice, for example, has seen its population plummet from 120,000 to 60,000 over the last 25 years.

Many cities feel compelled to take part in this rat race, but very few question whether it is the right approach to take. In his doctoral thesis, Bas Spierings doubts the mere existence of this 'promising mobile fun-shopper market' and questions the assumptions underlying the competition between city centres. He compares these consumers with the illusionary big fish illustrated by pop art painter Lichtenstein in his work 'Look Mickey' (page 115). 'The big fish is imaginary, but Donald believes in it. The duck feels the presence of the fish. He even seems to think he actually saw the fish. Donald might stand for the cooperating city centre actors that believe in the existence of the mobile shopping 'flaneur' (promenader – ed.). They feel the need to keep pace and perhaps even perform better than

Almere centre: diverse worlds co-existing.

other shopping centers in general and city centers in particular. …Mickey is laughing. He sees Donald Duck fooling himself, which is to say his fishhook is stuck in his coat.'[3]

We have seen how Spierings and others question the assumptions behind the competition between city centres. Now let us turn to the role designers play in this process.

Operations on European city centres

Divide and rule

One of the dominant interventions in the regeneration of medium-sized European city centres has been the separation of transportation modes, in particular the pedestrianisation of streets and squares. Shopping areas are usually turned into car-free zones, which are gradually extended. The centre of Copenhagen is a typical example of such an extended network, with 7 km of pedestrian streets and 4 km of other car-free areas. The accessibility diagram is consistent in all cases: visitors arrive by car and park in the underground or multi-storey car park, which has direct access to the pedestrianised zone. The alternation between covered (mall, arcade) and open-air shopping areas caters for all weather conditions, and most new urban shopping malls are cleverly plugged into the edge of the historical (pedestrianised) shopping streets. Alternatively, as in the case of Veenendaal in the Netherlands, public streets may be converted into a network of shopping passages.[4] An exceptional example is the Bullring in Birmingham, where several blocks have been converted into a shopping mall, and even the public streets and squares are covered with glass roofs.[5]

Extreme makeover

The second layer of operations includes road surfacing, planting and refurbishment of public spaces. In most cases, these kinds of interventions immediately follow the upgrading of the traffic network and pedestrianisation. Surfaces are replaced and the street furniture is renewed to make the public realm more attractive. Landscape architect Frank Josselin de Jong comments on this phenomenon as follows: 'Wrinkles are removed, pleats are filled in and the skin is stretched smooth. And despite all the effort and expensive design tasks, not all the time they are convincing enough to make the center serve.'[6] He describes a common tendency in Dutch cities when it comes to profiling public spaces, drawing particular attention to the type of surface materials: for example, the yellow bricks used in the city of Groningen to conjure up a Mediterranean

feel (in the ‘controlled city’ district in the plan ‘Space for Space’ by Mecanoo), and the use of light grey and rose coloured granite paving slabs in the Kerkplein in Den Bosch inspired by paving schemes in Barcelona.

Theme it, trade it

Another new trend in city centre projects that is closely connected to the core commercial city programme is the use of signage systems for pedestrians, themed routes and lighting master plans. Digital welcome booths located at entrance points, such as train stations, car parks, deliver ‘necessary information’ on hotels, restaurants, bars and cafes, leisure activities, ongoing sales, expected weather conditions, etc. Sometimes the user is persuaded to consume the city, which is presented like a series of IKEA boxes along predetermined routes.

Surveillance

Not directly related to the design discipline, but definitely related to the planning concepts and design of public spaces, is the widespread presence of closed-circuit television (CCTV) surveillance to promote public safety.[7] CCTV cameras are now commonplace in and around train stations, underground car parks, bus stops and shopping areas. The De Demer shopping street in Eindhoven, with the new shopping mall at its head, is an interesting case in point. Cameras belonging to a big chain store in the mall survey the entrance and the whole street 24 hours a day, every day of the week, turning the public domain into an ultimate ‘controlled space’.[8]

Non-critical collaborators

When I discussed my scepticism about contemporary city design practices with Christine Boyer,[9] she referred to her book Cyber Cities,[10] in which she is explicitly critical of the future of urban physical public space:

‘… surveillance video cameras scanning and interpreting more and more parking lots, entrances, banks, supermarkets, malls, theaters, and ball parks. These fortified enclaves that seem to be on the increase around the western world. … space of our contemporary cities is disappearing from sight/consciousness/memory into the realm of the virtual.’

The Mobile Speakers Corner, Delft.

‘In the beginning of the nineties, when everyone was euphoric about computers and the cyberworld, I wanted to show the other side of the coin. Definitely, physical space did not disappear and we did not erase face-to-face contact. But our city spaces continue to be more fragmented than ever before.’ City centre regeneration processes tend to be defined into specific zones with clear borders, and each zone even has its own specially designed litter bins. She finds all these efforts rather counterproductive. ‘These over-controlled city spaces also filter the audience, a process which ends up in social fragmentation as well. I am very critical about the beatification of certain parts in the city without looking at the locations in between.’ In her opinion, more or less the same questions can be raised in relation to the separation of transportation modes. ‘I never liked pedestrianisation. It simply takes away the dynamism. Yes, maybe traffic needs to be slowed down here and there, but there must be a way for different movement forms to survive together. I cannot imagine New York city without yellow cabs.’ Planning within certain borders creates non-planning outside these borders, or creates left-over spaces, she claims.

All in all, Boyer is critical about the role of designers. ‘Architecture is in crisis. Both theory and practice have a problem in communicating with each other, and more important, neither one is capable of producing a strong social agenda for the city.’ The majority of architects and planners seem to be silent and uncritical collaborators in the conversion of city centres into places of contemporary consumerism. ‘What we observe today is that designers turn away from the city and the essence of public space.’ People like Alison and Peter Smithson and Team 10 in the 1950s and 1960s, she says, were the last ones who produced clear and operational ideas about how the city and society needed to be organised. It is time they took back their active operational role and pursued a vision for urban development.

Counter action

Contemporary practices in the regeneration of medium-sized European city centres seem to be driven by nothing but consumerism, and in turn trigger further waves of consumption fever. This leads to one-sided development and anonymous environments. How can we escape from this tunnel vision? What role could designers play in countering this process, and are there any signs of a fresh approach? Three conditions need to be satisfied.

The first condition is a recognition of the fact that every design intervention by architects and planners is a social intervention as well – even outside the borders of the plan, as Boyer stresses. Designers should be fully aware of the fact that the way spaces are organised can convert city cores into well-balanced containers for a diversity of development programmes. Design strategies with vision can provide and sustain creativity and a multiplicity of lifestyles, as well as the production of different ideas and cultures. For example, at first glance the central area development in Almere by OMA (Floris Alkemade) looks like another shopping-dominated area, but the project illustrates the power of permitting a range of different worlds to co-exist above each other. An elevated neighbourhood, which is diverse but coherent, has been created on top of the shopping level. This neighbourhood makes clever use of the roofscape, with continuous paths and public terraces overlooking the world below and the nearby lake. The underground world for cars is also well connected to the life above (page 116). A more or less comparable attempt to bring the function of housing back into the centre is the 'Living above the shop' initiative in Maastricht, which has spread to about twenty towns and cities in the Netherlands.

The second condition is the understanding that identity can only evolve, and cannot be built or created by city managers, city marketers or urban designers. Identity is embedded in the genotypes of a particular environment (history, geography, sociocultural profile, etc.). Designers can only decode and strengthen these authentic qualities, and at best make room for possible future mutations. A real understanding and positioning of a region also requires a holistic interpretation instead of disconnected interventions. An interesting step in this direction is the latest report of the VROM Council (which advises government on policy relating to housing, planning and the environment) on leisure tourism and spatial quality.[11] It basically recommends that different players pool their efforts to collect clear and consistent regional images and stories, and form alliances to create a coherent picture of natural areas, cultural institutions, commercial activities and so on.

The third condition is the exploitation of bottom-up processes for profiling central urban areas. Although such local initiatives often start in a piecemeal way, they can have a major effect. Their strength comes from the high level of acceptance by the local population. The Sprekershoek Foundation in Delft (launched in September, 2005) is a good example. It aims to

The Mobile Speakers Corner, Delft.

close the gap between politicians and the residents and bridge the gulf between cultures. Inspired by Speakers Corner in Hyde Park, London, the members organise meetings in a city centre café to discuss local issues. A Mobile Speakers Corner has been built to allow these sessions to be held in a public space, bringing them to a wider audience (page 119-121).

Although new and limited in number, these examples show that alternative approaches are possible. However, it would be premature to see these isolated examples as pieces of a coherent and robust planning and design movement with a strong social agenda.

Notes

1 M. Sorkin, *Variations on a theme park: the new American city and the end of public space* (1992). Hill and Wang, New York.
2 B. Florian, *'The City as a Brand'* in City Branding: Image Building and Building Images (2002). NAI Publishers, Rotterdam.
3 B. Spierings, *Cities, Consumption and Competition: The Image of Consumerism and the Making of City Center* (2006), PhD thesis, Radbout University Nijmegen.
4 Veenendaal is town of 60,000 inhabitants in the province of Utrecht. Although the city has no well preserved historic centre or well designed street furniture or paved areas, its booming shopping centre is considered to be successful.
5 The scale of this transformation is enormous, with a retail package consisting of two department stores and nearly 150 shops, cafes and restaurants. The new Bullring pulls together the city's fragmented retail components and turns Birmingham's city centre into a market town. It is dramatically capped by the 7,000 sqm SkyPlane glass roof.
6 F. De Josselin de Jong, *'External Space is given Botox treatment'* in Landscape Architecture and Town Planning in the Netherlands 0-03 (2004), Uitgeverij THOTH, Bussum.
7 The first CCTV cameras used in public spaces were low-definition black and white systems without the ability to zoom or pan. Modern CCTV cameras are able to focus on minute details and computerised control systems allow semi-automatic tracking of objects. For example, they can lock onto a single object in a busy environment and follow it. The new systems can check many thousands of faces in a database in less than a second.
8 This street is the subject of the book *De Vierkante Meter* and the DVD *Control Space* by the Dutch journalist Tijs van den Boomen, which describe in great detail the changes that have taken place in this main shopping artery of the city. The book tells how the small shops with their owners living above were replaced by the major retail chains that are increasingly turning the shopping areas of Dutch cities into generic zones. The DVD is a documentary on 24 hours in the life of De Demer.
8 While researching this article the author interviewed Christine Boyer on September 22nd, 2006.
9 M. Christine Boyer, *Cyber Cities* (1996), Princeton Architectural Press, New York.
10 *Groeten uit Holland, Qui e fantastico! Advies over vrije tijd, toerisme en ruimtelijke kwaliteit* (2006). VROM-raad, advies 055, The Hague.

Photography

p.114
Look Mickey by Lichtenstein, www.kunstikeskus.ee
p.119–121
Ekim Tan.

The Swiss experience

Analogue and digital information for pedestrians

What information do pedestrians need to find their way through our cities? What offerings are necessary, appropriate or desirable now and in the future to facilitate this process? IT offers new possibilities alongside the traditional fixed pedestrian signage, and also creates new demands and sets new standards. The Swiss Pedestrian Association has been considering these issues within the framework of the Europe-wide 'Spatial Metro' project, which is aimed at the development of modern wayfinding systems. The Swiss cities of Biel and Zurich have also been participating in this project.

Christian Thomas

Pascal Regli

The current increase in mobility for business and leisure purposes increases the need for wayfinding information, since more and more pedestrians are venturing beyond their accustomed bounds. The growth of mobility has led to a rise in the demand for such wayfinding information. A mature system of road traffic signs has been in existence for many years, and is subject to detailed regulations concerning such matters as the size of the letters used and the design of the symbols. It allows drivers to find their way to their destination without the aid of maps, and without geographical knowledge.

In Switzerland, the signposting of footpaths for ramblers and walkers has also reached a very high level. Thanks to a network of more than 60,000 km of well signposted attractive nature trails, hiking is one of the most popular leisure and holiday activities in the country.[1] In addition, there are about 20 National Trails and a hundred well signposted 1 to 3-day routes leading to scenic or sightseeing highlights for hikers

The need for wayfinding increases.

(5,300 km), cyclists (7,500 km), mountain-bikers (2,500 km), skaters (1,100 km) and canoeists (400 km), which with effect from this year have been under the aegis of SchweizMobil[2] – a national organisation set up to promote sporting and leisure mobility. A new standard is being developed for uniform signage of all these routes. Switzerland thus has a first-class network of routes for leisure activities outside the urban areas, which are well-signposted in accordance with national standards. The situation is different in the towns and cities. While there are statutory requirements which stipulate that networks of footpaths in larger towns should be signposted in a uniform manner in order to help pedestrians to find their way,[3] there are as yet no signs of a uniform standard in this field.

The analogue tradition

There are two different kinds of information that may be supplied to pedestrians in the public space: wayfinding information (Where am I, where does this street lead to?), and local information including tips for sightseers (What is this building in front of me? What other sites of interest can I find in the locality?). Wayfinding information is generally presented in the form of plans, signposts or traffic signs, while the local information is presented on pillars or panels containing a variety of relevant details. In addition, pedestrians can take a wide variety of printed information with them, such as national maps, town plans, travel guides, public-transport time-tables, address lists and the like, which they can consult en route to help them find their way.

Pedestrians and their requirements

Motorists generally want to get from point A to point B as quickly as possible, and are not very interested in what they see along the way. Pedestrians have quite different requirements. People going to or from work form a special case in this connection. They know the way, and are generally only interested in completing the journey on foot in the available time without looking at the sights they pass. They are however interested in such matters relating to their personal comfort as the temperature, the presence of sunshine and shade and the availability of canopies and other building features that will help to keep them dry in case of rain. People on the other hand who are strolling through the town with time on their hands have quite different priorities from motorists. They want to enjoy their walk through the network of streets that separates them from their chosen destination, without losing their way. Often, in fact, they do not have a fixed

Wayfinding information for pedestrians in Zurich

The municipality of Zurich has devoted many years to ensuring that each tram or bus stop is provided with the relevant section of the official city plan. This is greatly appreciated by travellers, since it means that you no longer need to take a city guide with you on your travels: you just have to know which stop is closest to your chosen destination, and then consult the map at the stop where you get off the bus or tram to check how you can walk the last part of your route. Many cyclists and motorists who are not sure of their way are also glad to be able to consult these maps.
It should be mentioned, however, that the system in Zurich has been compromised of recent years because the timetables for the night buses have been displayed at a number of stops, thus hiding the wayfinding information originally provided.
On the other hand, many of the sectional town plan displays at public transport stops have been upgraded during the past two years by providing internal lighting. This creates attractive areas of light during the hours of darkness, which improve the appearance of the street scene in general and of the public transport stops in particular, and are greatly appreciated as such by local residents and public transport users.

The municipality of Zurich has also been trying to develop new pedestrian wayfinding systems in urban development areas, where so much building work has gone on during the past decade that even local residents have some difficulty finding their way around. The first project investigated the possibility of including details of local business, cultural establishments, restaurants etc. in the wayfinding information. The idea was not to provide advertising space for such locations, but merely to indicate where they could be found. This scheme was never put into practice, however, since it was found that the owners of the locations in question were in general not interested in participation. This result led to reconsideration of the role of the municipal authorities in such matters, and it was decided that wayfinding information provided by the city should in principle be publicity-free. A pilot project has been set up to deliver a new urban wayfinding system for the Oerlikon neighbourhood of Zurich in the course of 2008. This will comprise high-quality display units containing the relevant part of the city plan and any other wayfinding information considered necessary. The system will be designed so that suitable state-of-the-art display elements (such as monitor screens) can be included later if so desired.

destination but simply want to explore a certain neighbourhood. In any case, they do not want to get lost and will use landmarks and main thoroughfares to guide them. They are often glad to see unobtrusive signposts pointing the way to well-known sights which, even if they do not want to visit them, will help to give them a sense of direction.

Need for systematic information

A wayfinding system for pedestrians is designed as a network of nodes, arranged so that even if one deviates from it at a certain point one can still rejoin it at the next important point along the route. A number of Swiss cities (Basle, Lucerne, Chur and Berne) have built up a wayfinding system, aimed mainly at guiding tourists to destinations – chiefly in the inner city – of interest to them. Such a wayfinding system should comprise a fairly large number of uniform elements, so that visitors can recognise them and know that they should stop there to find the information they seek.

It should be realised in this connection that such a wayfinding system is only a small part of the overall street scene. A large number of well-meaning organisations try to help pedestrians by putting up signposts pointing them in the direction of a wide variety of sites. The street scene is further occupied by the whole system of traffic signs, traffic bollards cutting off access to certain routes, lampposts, pillars or billboards where posters may be placed, public seating, parking facilities for motor vehicles, bicycles etc., pavement displays of greengrocers and similar shops, outdoor seating of cafes or restaurants, all of which reduce the space available for pedestrians. The latter may have to compete for space with slaloming skaters, while all the street furniture will give the municipal street cleaning services extra work. Wayfinding systems for pedestrians must thus be compact and relatively unobtrusive, while the individual units should still be designed for recognisability and so as to contribute to the image of the city.

The project for provision of comprehensive pedestrian information in Biel is initially aimed at updating the conventional system of information panels and signposts. However, it was decided at a certain point in the planning process that a much more radical approach to modernisation of the wayfinding system would have to be introduced. Biel, the watch and clock capital of the world, needs to use the visual elements present in the street scene to project the

The town maps provided at the stops of VBZ public transit system in Zurich are not just appreciated by pedestrians.

image of the city as a dynamic centre of technology. Conventional signposting is too old-fashioned to provide a future-proof solution to this problem. The planners therefore started from scratch and developed new interactive techniques for the presentation of local and wayfinding information (cf. separate article on Biel). An interactive element that can be used for this purpose has been developed at Delft University of Technology in the Netherlands. This allows the relevant section of the city plan to be printed out, and provides interactive information on museums, restaurants, shops and other services that might interest tourists. The old signposting system used in Delft no longer provides the kind of information that is expected from a future-oriented 'information gateway'.

The digital revolution

It was decided right at the start of the Spatial Metro project in 2005 that a modern pedestrian information system should include the possibility of audible information picked up from information gateways via the mobile phone. In the pilot trial set up by the University of Koblenz, however, it was decided that the system used initially should be independent of the mobile phone network,[4] since it was assumed that mobile phone users would not want to pay for the pedestrian information they received. They therefore tested a system supplying tourist information via the (free) Bluetooth service currently installed on many mobile phones. It may be expected, on the other hand, that more and more people will use their mobile phones so much in the future that they will switch to a flat-rate contract in the future instead of a pay-as-you-go set-up. This group of users will then be able to download as much graphic information as they wish via an ADSL connection without extra charge. With such a configuration, the information gateway will be able to supply pedestrians (in particular tourists) with all the local information the pedestrians might want – or as much information as the information suppliers would like them to have. Pilot projects similar to that in Koblenz have been set up elsewhere, for example in Winterthur near Zurich, where 'Bee Taggs'[5] – information carriers similar to bar codes – are photographed with the aid of the mobile phone. The code picked up in this way is sent to the information supplier, which sends information about the relevant location in reply. The Legible London[6] wayfinding system introduced early in 2008 also makes use of information gateways that can provide pedestrians with audible information in addition to traditional local and wayfinding information.

The provision of such digital information from designated

Wayfinding system in the Oerlikon neighbourhood of Zurich.

information gates is however only of limited use to tourists who travel from town to town as long as each town has its own standard for the architecture of the pedestrian information system. There is thus an urgent need for uniformity in these standards.

Digital timetables for various forms of transport, digital cameras, on-line dictionaries, telephone directories and GPS navigation systems for motorists have all been available since 2005. It would seem an obvious idea to combine all these services, but there are no signs that pedestrians can make use of such combined services at present. Interactive town plans left much to be desired. Now, however, the use of mobile phones to pick up information from fixed information gateways may already almost be a thing of the past, since many mobile phones have their own GPS navigation system and/or computer keyboard. A kind of digital 'Swiss army knife' – an all-purpose pocket information acquisition device – is already reality or very nearly so. Such a device could replace not only the phone booth but also town plans, tourist guides, cameras, signposts, diaries, a stack of credit cards, soon even the coins in our pocket and even the keys on our key ring – in short, everything whose use is information-based. The current trend is thus towards the situation where everyone who wants to receive information via their mobile phone (or laptop) will get it from the Internet and not from local information points that have to be separately fed with data and updated from time to time.

GPS navigation has the disadvantage that the system cannot 'see' in which direction our interest extends starting from a given point. The technical problem that a GPS system does not work in towns with very narrow streets, or in an underground transport system, because it does not have a direct line of sight with a navigation satellite will however be solved in the foreseeable future as the number of WLAN antennae (which replace the satellite as a source of navigation information) grows.[7]

Another very recent possibility is to take a picture of something with the mobile camera, feed this into an image analyser and thus create a link to all kinds of information about the object of interest which is then displayed on the screen of the phone.

Wayfinding in Luzern.

In other words, instead of typing in the words ‘Eiffel Tower’ or ‘Matterhorn’ in order to find out how high the object in question is, you just take a snapshot of it and you will soon receive this information and much more about the entity shown in the picture.[8] At present, however, such systems only work for a limited number of selected images.

It is thus highly likely that the amount of information available to travellers will undergo a quantum leap in a few years, as private suppliers offer information mixed with advertisement free of charge. No prediction can be made at present about what various companies will offer, and in what sequence, since profit-making enterprises are understandably reluctant to release details of such schemes in advance of the market launch in order to keep ahead of the competition.

Another possibility is that the amount of information that consumers build up themselves for use while travelling will undergo an explosive increase. Open mobile communication (OpenMoko[9]) is based on software that has been under development since 2006, and the first mobile phone working on this principle, the ‘Neo1973’ (the name of which is derived from the fact that 1973 was the year when the first mobile phone appeared), was made available to consumers in 2008. No one can predict the results of this development, but it seems clear that users will be able to employ a system like Wikipedia to build up a huge mass of information for use on the move, employing not only a keyboard but also GPS coordinates or a photo to trigger the acquisition of the relevant data.

Effective division of tasks

It thus seems clear that much of the information currently available can in principle be accessed in real time with the aid of a mobile phone. The key question is no longer ‘What is technically possible?’ but ‘What are the information needs of the traveller?’ And even these needs are changing fast. A few years ago, it would have seemed unlikely that people would want to make phone calls to distant locations while walking down the street, and it would have been considered highly unusual – and undesirable – to use one’s mobile phone in a public space; while today it is very common.
When we now consider what the future division of tasks will

be between wayfinding systems for pedestrians installed in public space and mobile phones, we need to ask ourselves which solution offers us most comfort physically, mentally and emotionally. Even though much more information is stored on the Internet than in a newspaper, this has not led newspapers to die out. The fact is that it is a lot more pleasant to sit at one's ease in a comfortable armchair and leaf through the daily paper than to sit at a desk scanning web pages with the aid of the mouse and keyboard. Similarly, it is not to be expected that pedestrians will make much use of state-of-the-art information technology when they want to find their way in a new location. Even in the future, most people who are walking through a city street are much more likely to go to the nearest tourist information point – especially if this is a clearly visible piece of street furniture – than to get out their mobile phone.

In addition, there will doubtless always be people who prefer to be independent of any kind of gadget or who are not very good at handling the latest technology. Similarly, great efforts have been made within the frame of the 'design-for-all' philosophy to design products, systems and services so that as many people as possible – including those with disabilities – can use them.[10] There will thus always be a place for conventional wayfinding systems. They will never offer such detailed information as that available on the Internet, but the information that is provided must be well thought out so as not to contain serious gaps.

Tasks for the authorities

What is the role of the (municipal) authorities in the context of the rapid development of the (wayfinding) information market? They must ensure that even IT-illiterate, disabled and older people can still find their way readily through our cities. There will thus continue to be a need for a basic wayfinding system in our towns and cities. In every town of a reasonable size, a town plan or neighbourhood plan should be displayed near the railway station and at other prominent sites. A town that provides more information about itself is regarded as more interesting than one that does not, and that does not draw visitors' attention to noteworthy sights.

There are also basic services at a digital level that the local authorities should provide. A comprehensive, fully up to date digital map of routes open to pedestrians should be available, so that private information suppliers have a reliable basis e.g.

Getting rid of misleading information

Most information provided by road signs is mainly intended for motorists. For example, many indications of the route to follow to get to important destinations in city centres refer to the often circuitous route, involving many one-way streets that motorists have to follow. They are misleading for pedestrians, who can generally follow a more direct route. For example, the road sign 'To the Station' generally indicates not the most direct route to the station entrance but the circuitous route, full of diversions and one-way streets, that will lead the motorist to the station car park. In addition, many 'No through road' signs apply only to motorists, while pedestrians and cyclists can use these routes freely. It is important for the authorities to take the time to correct such minor errors, and make sure that the correct information for pedestrians and cyclists as well as motorists is presented on all road signs.

The municipality of Biel is trying out a new traffic sign indicating that there is no through road for motor vehicles but that cyclists and pedestrians have free passage.

for the tourist routes they recommend, without having to rely on guesswork. The elaboration of a coherent map of pedestrian routes gains added significance when it is made available in digital form: even before any signposting or road markings are put in place on the ground, a good (pedestrian) route map already proves its utility if the routes represented on the digital map represent short, direct ways of getting to the intended destination. In addition, the authorities must ensure that the providers of vehicle navigation systems do not indicate that vehicles can drive through pedestrian zones or down footpaths or streets where vehicular access is forbidden, since there is an increasing tendency for motorists to regard the information they receive from a navigation system as more reliable than the road signs put up, which they hardly look at any more.

The authorities should further ensure at least that correct information about buildings of interest to the public such as museums, hospitals and (local) government offices is readily accessible in the currently available digital information systems. For example, inspection of the maps available in Google Earth shows that the authorities have not yet taken the trouble to enter the basic information in their sector there, while the amount of commercial information is growing steadily.

Conclusion

There is an urgent need for coordination of the wayfinding and tourist information currently supplied via various media. For example, the analogue information supplied on strategically placed wayfinder panels and the digital information available via monitor screens and acoustic devices should be properly matched. The extent to which travellers can pick up information with the aid of their mobile phones from special information gateways situated along their route will depend on further technological developments and on the availability of a standard for such information systems that is adopted by a large number of cities.

Notes

1 www.wandern.ch
2 www.schweizmobil.ch
3 *Verordnung Fuss- und Wanderweg-Gesetz, Artikel 4, Abs. 3* (Swiss Regulation of Footpaths and Nature Trails Act, article 4, section 3).
4 www.uni-koblenz.de/~spatialmetro/Spatial%20Metro/Das%20Konzept.html
5 www.beetag.com
6 www.legiblelondon.info/wp01/?p=39
7 www.skyhookwireless.com
8 www.kooaba.com
9 www.openmoko.org
10 www.ask-it.org

Photography

Christian Thomas.

Vermeers wanted

Ekim Tan interviews Floris Alkemade, the veteran designer at Rem Koolhaas's Office for Metropolitan Architecture, who argues for an innovative future for European city centres. For more than a decade he has been building up a unique portfolio of city centre projects in Lille, Almere, Essen, Paris and many other cities in Europe and Asia.

Ekim Tan

Floris Alkemade has no doubt that the European City is a distinct entity, with deep Roman and Medieval roots. It clearly differs from the American City, which is not necessarily organised around a centre. In fact, in most American cities all the attraction has already moved to the periphery. But even in Europe, much growth now takes place between the cities and many cities have undergone a process of decentralisation. As the boundaries between town and country are blurring, scholars like the American professor Christine Boyer argue that it is pointless to use old-fashioned terms like 'centre' and 'periphery'. Indeed, all around the world the urban periphery is becoming denser, and the traditional central or downtown areas are increasingly envious of their peripheral counterparts, with their larger shopping malls, alternative housing settlements and less congestion. 'Nevertheless,' asserts Alkemade, 'there is resistance to give up the centre. In my opinion, despite this erosion the urban core will maintain its key role here in Europe.'

And the European city definitely differs from its Asian counterparts, where history is a more marginal component in definitions of urban identity. Even in cases where history matters, there is a huge gap in understanding. 'Take Singapore, for example. The city has just built a totally fake historic China

'Just like Johannes Vermeer used to draw inspiration from ordinary scenes of everyday life, we should be able to capture the culture of our time. It's foolish to repeat the cultural elements of the past.'

OMA's proposal for Les Halles: next generation solutions.

Town, for the sake of authenticity, alongside the existing one, which city officials consider to be run down and overused.' At the same time, these acts are evidence of a changing approach in Asia. 'After all, concern about the identity of the city core may be a sign of luxury!'

Preservation trap

Coming back to the issue of preservation here in Europe, Alkemade adopts a critical stance towards absolute preservationism. 'We need a more revolutionary approach. European cities are different, and they are trying to be different. However, copying historical forms creates only frustration. We have to find modern ways to respond to today's needs. In the design competition for Les Halles in Paris we tried to find next generation solutions. We initiated a public debate on adding modernity to a historic context in a way that transforms the way people think about the city.'

Les Halles, once the food-and-meat marketplace of Paris, is today an urban void, also known as the 'belly' of Paris. Beneath the surface lies a busy transport hub for metro and fast suburban rail services and a bulky shopping centre, the whole complex consisting of four underground levels. It is said to be the largest railway station in Europe, with 800,000 travellers a day. In the early 1970s, the steel-and-glass markets were torn down and replaced by 12 pavilions, but these were never popular. The city government is trying to reinvigorate the area again. It was the subject of a widely debated design competition in 2003 that sought to resolve the design triangle of complicated uses, the historical context and the infrastructure. OMA was one of the four international finalists, together with MVRDV, Jan Nouvel and David Mangin of SEURA. The winning entry was Mangin's scheme, which was deemed to be the most economically feasible, but was also seen by some as a rather conservative proposal.

Although OMA's proposal was not selected, Alkemade argues that blending the old and the modern was the right approach. 'We proposed opening up the deepest level of Les Halles to the sky, making both the transit and commercial centres

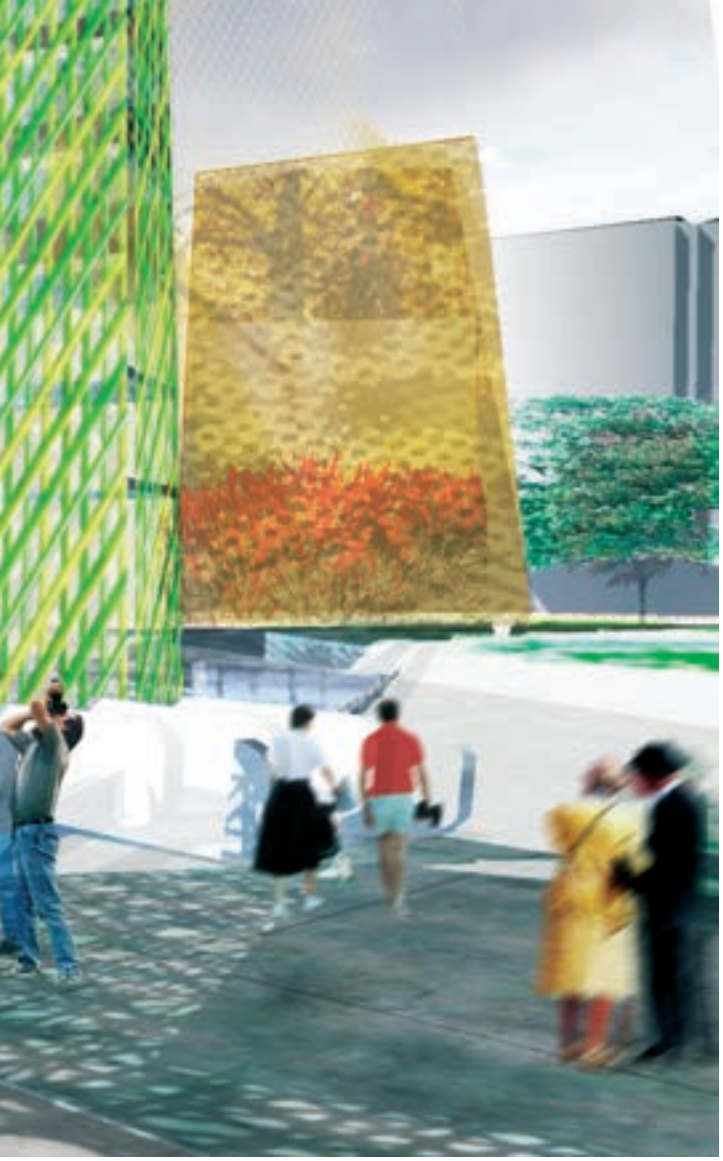
visible from the surrounding historic neighbourhoods, with an array of 21 towerettes emerging from different depths. A good example of how this would work is the Centre Georges Pompidou. This avant-garde urban intervention shows that people are open to a new language, if done in the right way. They love it. Ironically enough, under the current building regulations in Paris, a project like this would not be possible today. There seems to be an increasing desire to preserve heritage, but I am sure it is a dead-end street. Within ten years people will regret this as much as they regret what was done in 1960s and 1970s.

'In a way, there are fashions in preserving particular time layers in the city. At the moment, waterfront transformations are highly regarded, and who knows what will be next.' Alkemade points out the relativism in discussions on historic conservation. 'In 1985, Zollverein Coal Mine Industrial Complex in Essen was closed down. At that time, everyone found it ugly and wanted to see it demolished, but by 2002 the whole site was declared a Unesco World Heritage Site. Unbelievable, this shift in 15 years!'

European city ethics

In their struggle for survival, European cities always seem to refer to a set of basic requirements for success. Every city centre must:

— have culture and art – no one has the right to live in a culture-free city;
— have retail, mainly organised around pedestrian movement – trade fed by car traffic can be segregated in the downtown areas, and;
— offer a clear routing for its visitors – getting lost diminishes the quality of the experience and reduces shopping activity.



Almere, the Netherlands: new centre in a new town.

Given these 'ethical' notions, cultural preservation, pedestrianised shopping and legible routing are the inevitable one-liners. But can cities do without them? What about a culture-free city, a shopping-free city or a routing-free city?

A culture-free city?

'It is true that cities do need culture to exist, but it depends on what sort of culture. To me combining high and low cultures has always been very captivating. For example the popular TV show Big Brother was invented in the Dutch new town of Almere, east of Amsterdam. The show spread all around the world in a short time. That is already a cultural value to be taken into consideration. Just like Johannes Vermeer used to draw inspiration from ordinary scenes of everyday life, we should be able to capture the culture of our time. It's foolish to repeat the cultural elements of the past.' This raises the question of how to think about new towns with thin layers of history. A relatively short history may sound disadvantageous, but it is not. A new town like Almere has a free playing field to invent new cultures. Existing cities have the richness of their multi-layer cultures, but their challenge is to re-invent and re-interpret the use of this historical culture.

A shopping/pedestrian-free city?

'Obviously, shopping has its own physics. Sixty per cent of what we buy is impulse buying. That is the simple trick – if more people pass by, more people will see your products and more will buy them. This relies on there being no barrier between wanting and buying. From the retail point of view, therefore, pedestrianisation is important. On the other hand, the Calvinist notion that everything to do with the automobile is by definition bad is a poor basis for the development of an urban centre. For example, in Almere we first proposed a direct car connection on the Weerwater, the lake that is geographically in the centre of the new town. The reaction we got was that people would actually use the road! But why not let people experience the lake and the centre by car as well?'

Lille Europe under construction, back in the 1990s.

A routing-free city?

'Last week I was in Milan. I had no map and my mobile phone battery had run down. It is a great experience to get lost, but I have to agree that it may cause less shopping. From a commercial point of view, readability is significant. But then again, getting lost is part of what a city is all about. To my mind, some places in a city should be ugly, unsafe and unpredictable.'

(Un)predictability and the city

Talking about (un)predictability, Alkemade comments that designers and planners overestimate their influence on the city. 'Almere was planned as an anti-city. Despite that, it became bigger and bigger and its autonomous growth forced it to become urban. The same happened with nature. Oostvaardersplassen was planned to be a business park, but instead it became one of the most important natural environments in Europe. Even the main developments were not always planned.' Can unpredictability be part of a development strategy? 'One way is simply providing a well organised machine that also creates special conditions. A grid, for example. Organise it and then let go! But the city should not be just any city.'

So how does OMA deal with unpredictabilities and special conditions? OMA took an influential role in shaping the core in Lille and Almere – the first a historic city centre in France and the other a thirty-year-old new town in the Netherlands. What were the underlying design 'ethics' demanded by Alkemade? Lille was put firmly on the map as an important hub in Northern France between Paris and London by Euralille, the peripheral high speed train (HST) station. 'In Euralille, the synthetic new city was and wasn't part of the old town. That was the hardest thing to explain to the city council about realising this utterly complex programme located on the site of old city walls.' Until the end of the 1980s, Lille was a historic industrial and provincial city. It has gone through a substantial transformation, boosted by a mammoth development programme including the HST station, a World Trade Centre and 100,000 square metres of space devoted to retail outlets, offices, parks, residential buildings, hotels and cultural facilities. 'Our reaction was to create a kind of hypermodern central environment on the edge of the old centre. Instead of copying the old centre, we added a band of modernity around the historic city. Besides this contrasting language of forms, we proposed multiple linkages of mobility and functions between the existing and emerging new city. This subtle connection

Euralille: hypermodern central environment on the edge of the old centre.

organised mainly around the infrastructure between the old and the new city became the key to the project.'

Alkemade's approach in Almere, as opposed to the contrasting modernist attitude in Lille, is a centralistic downtown scheme. At first sight, this approach sounds very unlike OMA; why create a traditional central core for a new town that emerged in reaction to the city? 'Our first reaction to creating a centre was, why? To us, Almere was proof that you could live without a centre. But in the end, there is an unavoidable need for centrality in European cities.' For a new town like Almere this discussion must have been rather sensitive. Although Almere emerged as an antithesis of city in the mid 1970s, it later switched back to being a city with a traditional centre as a point in space.' Even in Los Angeles, of all places, it is possible to find similar instincts for centrality. In Universal Studios Hollywood, for example, a parking garage was built some distance from the theme park. People had to walk this distance. In time, some shops appeared. Then people needed shade and a second layer of development was added. This in-between zone was gradually filled in with offices, schools and shops. Without realising it, they were inventing the walking city centre.' Doubling Almere's new centre by adding an underground layer was the Alkemade's trump card. A multi-storey car park underneath the city now serves the upper shopping layer, allowing a large supermarket to be incorporated into the scheme, which otherwise would have been impossible.

Dare to change

Running through Alkemade's projects we can detect acceptance of and adaptation to change, capturing the contemporary culture and avoiding the monoculture of form and development programme. 'Today, the dominant development model, adopted by many cities without even realising it, is to create a centre as a theme park. Even in Amsterdam, which has an untouchable 17th century image, constant change has been unavoidable. Interestingly, while the building facades represent this identity, they are only envelopes that cover what is really going on inside.' Indeed, behind the well preserved facades of the stately canal houses there is a vibrant economy with the most advance services. 'After all, the only way forward is to modernise the existing city. You must dare to change. In the late 1960s our mindset was much more open to change. In Europe there now seems to be a very conservative mindset. We really need to tackle this.'

What the Pedestrian Wants

Many European cities face a common challenge: giving the old centre back to the pedestrian. The transformation of Copenhagen city centre provides many clues and the process was researched and documented by Lars Gemzøe and Jan Gehl. Lars Gemzøe told Ekim Tan what they learnt.

Ekim Tan

Cities often contain complex networks of roads, streets, parks and pedestrian networks or zones, making it challenging for pedestrians to explore the city or reach their destinations. If people find it difficult to navigate their way around, their experience is compromised and they are discouraged from spending time in the city. The successful pedestrianisation of Copenhagen city centre over a forty year period has been analysed, described and documented by Professor Lars Gemzøe and Jan Gehl.

The Copenhagen experience

Fourty years ago, when the pedestrianisation process began, the shopkeepers in central Copenhagen were unconvinced and apprehensive. 'We are not Italians, we are Danes. It will never work here.' 'Shops will die off if there are no more cars.' 'The climate over here is not suitable for mingling in the streets.' These were just some of the objections they raised. 'There was literally no culture of public space and public life; we used to sit at home and have a black coffee at the dinner table,' recalls Lars Gemzøe. 'However, since then, things have changed a lot in this city. When the first street was closed to traffic as an experiment, people found it interesting, and then came the next car-free street. The critical shopkeepers soon

Lars Gemzøe
Associated partner at Gehl Architects in Copenhagen and a senior lecturer in urban design at the Centre for Public Space Research, School of Architecture, Royal Danish Academy of Fine Arts, and at Denmark's International Study Programme in Copenhagen. He is the author of Improving Public Spaces, New City Spaces and Public Spaces Public Life.

Jan Gehl
Partner at Gehl Architects in Copenhagen and has recently been appointed by the municipality of Rotterdam to fine-tune and support their ideas in developing a more inviting urban network for the pedestrians and slow traffic in the inner city, such as by creating extra connections and shortcuts or dealing with longer urban blocks and creating more interactive building facades on the ground floor, etc. analyse the city's pedestrian public space network.

realised that it was working to their advantage, and people discovered that they liked to explore their city on foot. Because the city council made it gradually more difficult to drive and park, visitors had time to get used to the idea that it was too complicated to take the car, and took the bus or bicycle instead. And so the centre of Copenhagen underwent a dramatic change from a car-orientated to a people-orientated place.'

This transformation of the physical environment is indeed striking. The changing socio-economic environment played a significant part in driving the transformation of public space culture. This was a time when people became increasingly familiar with alternative lifestyles and travelled in growing numbers to southern European countries; incomes rose and the population enjoyed an increasing amount of leisure time. What makes the work of Gehl and Gemzøe special is the documentation of the effect of this radical shift in people's behaviour patterns from a largely home-based culture into active users of public space. They were the first to systematically study and record pedestrian movements in the same way that every city measures and records traffic flows. 'Facts – such as being able to point out that public life in Copenhagen has increased dramatically after twenty years of work – have played a major role in showing the value of what has been happening in the city,' declares Gemzøe.

Over the years the researchers systematically counted pedestrians and the numbers of people sitting and standing in certain Copenhagen streets, at different times of the day and in different seasons. This allowed Gemzøe to track the gradual change in the behaviour of the city's population, which he describes in his book Public Spaces Public Life. A unique working method was used to describe the urban complexity: study what is happening, examine the problems

GI Strand before and after pedestrianisation.

and potentials, improve the situation, re-evaluate, and then monitor developments.

As the monitoring study revealed the positive effects of pedestrianisation, such as increasing activity in the streets, a growing feeling of safety and diversification of activities in the centre, the pedestrian network was expanded. When the research results indicated that a saturation point was being reached (simply because the capacity of the streets to accommodate people on foot was fully used), urban designers created specially designed public places to sit and stand: places for visitors to rest, and thus extend their stay in the centre. The city architect calls this concept 'pearls on a string'. The individual squares along the city's main streets have their own design and the streets connecting them are surfaced with a simple, uniform paving materials.

The researchers also concentrated on the time dimension of public space, exploring the use of the public space network at night and during the winter. They counted the lit windows and shop fronts by night as an indication of public life and concluded that good distribution of night-time functions creates a safer and friendlier city centre. A balanced mix of retail, leisure and residential uses can have very positive results. On a cold winter night, for example, 6,800 inhabitants living in the centre of Copenhagen means 6,800 lighted windows overlooking public squares and streets.

Gehl and Gemzøe's research clearly shows that there is a one-to-one relation between the area of pedestrian space in the city and the rise in the numbers of people using the city centre. 'From 1968 to 1995 the number of people who spent time in the public space of the city centre increased three and a half times. Over the same period, the total area of car-free streets and squares increased three and a half times.' Not only has the number of visitors to Copenhagen city centre risen, but the time they spend in the centre has also increased. 'A good pedestrian network offers a pleasant experience through the centre,' stresses Gemzøe. 'Given the opportunity, people can walk for kilometres. Here the issue is not about the design of one grandiose square or a street, but more about the consistency of the network and the continuity of linkages. How does someone entering the city find their way to a particular destination? This does not necessarily mean connecting every square to another, but a conscious definition of entrances and continuities within the network.'

Saturation point for a pedestrian quay in Copenhagen.

Public life in Copenhagen has increased dramatically.

5 km/h versus 60 km/h

Understanding the perception of the user of the pedestrian public space is an important aspect of Gehl and Gemzøe's work on improving legibility. They explored the area where urban design and architecture meet; a dimension that has received little attention so far.

Gemzøe recognises two masterpieces in the urban design literature that investigated the perception and orientation of the city user moving through the urban space. The first is the famous study by Kevin Lynch, The Image of the City, in which the city is rendered legible by five basic structural elements; paths, edges, districts, nodes and landmarks. The second work is The Concise Townscape by urban theorist and graphic artist Gordon Cullen. Cullen's sketches illustrate legibility as a serial vision, the frames representing the subject's perception at regular time intervals based on movement through the urban space at the uniform pace of a pedestrian.

While Lynch's work reveals a much larger vision about the urban environment, the importance of Cullen's work is the structure of surfaces and depth of detail. The difference in the definition of scales depends on the speed of perception. 'Lynch refers to a car driver, whereas Cullen looks through the eyes of the pedestrian,' explains Gemzøe. The speed of movement in the street influences the exchange of information and quality of communication in urban space, and thus its legibility. Stressing this difference in the speed of movement, Gemzøe refers to the research paper he wrote with Gehl at the Centre for Public Space Research in Copenhagen: 'Close Encounters with Buildings'. 'While our perception of public space naturally depends on viewpoint and distance,


CAR
WASH
Welcome
PLUMBER'S FRIEND
VILLAGE CLEANERS
Residential Mortgage Store

Mismatch between 5 km/h and 60 km/h signposting.

60 km/h architecture: short on details, signs are large and simple.

the speed at which we move is crucial. Rooted in its biological history, the human sensory apparatus is designed to perceive and process sensory impressions while moving at about 5 km/h.' He went on to describe the difference between 5 km/h architecture and 60 km/h architecture. The first corresponds to our walking pace. On this scale the viewer's interaction with the environment is more intimate: you can smell, hear and feel all the details. Signals and signs are viewed at a close range and so they can be small and refined. Walking becomes even more appealing if the details and displays along the way are carefully crafted, and if there are things to smell and touch so that all the senses are engaged at some point. In contrast to this 'slow' architecture, the 60 km/h architecture along the roads used by vehicles is short on detail and signs are large and simple to allow easy communication of information.

5 km/h architecture: interaction with the environment is more intimate.

According to Gemzøe, some European city centres originally characterised by 'slow' architecture have been invaded by cars, leading to a 'perceptive gap'. Some parts of these centres present a rather blank three-dimensional surrounding that contains insufficient detail for a user on foot. 'This mismatch needs to be overcome if the experience of the pedestrian perceiver is not to be compromised.'

Conceptual model

Copenhagen's consistent urban design policies dating from the 1960s and the works of Professor Gemzøe provide a source of inspiration for the EU Spatial Metro project, which aims to provide a way of making city centres legible and navigable for visitors and local people. Like Gemzøe's work, this project tries to understand the pedestrian's experience of historic city centres and adopt a conceptual model for pedestrian movement. Delft University of Technology, one of the research partners in the project, has already conducted field studies in Norwich (October 2005) and Rouen (December 2005) that focus on the user's experience. The ambition is to integrate street interviews with electronic surveillance, such as GPS tests and video observations, to enable the movement patterns of the visitor to be documented and understood more precisely and effectively.

Photography

Jan Gehl.

En·core enjoy

Shopping, esthetics and culture.

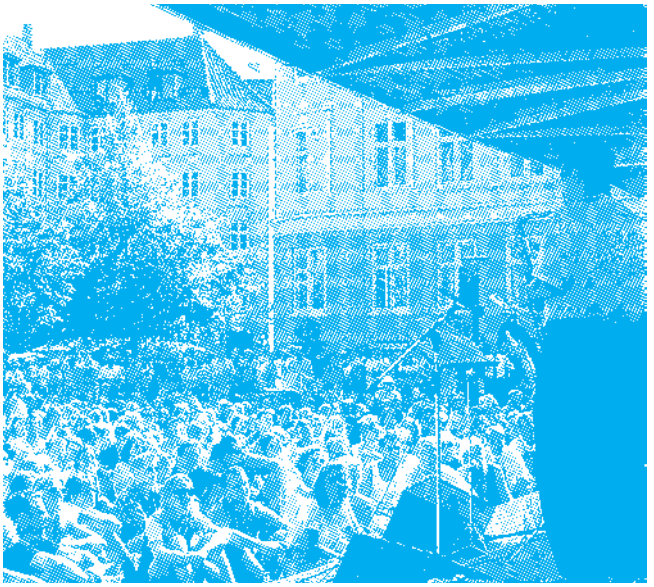
Historical city centres. The part of the European city where 'it all began', where a great part of our collective consciousness developed, places we love to return to on holidays. They still form the cores of many cities and in the last century, they have been challenged to face modernity, industrialisation, the invasion of the car and lately the rise of consumer society. In this consumer society, it is not just goods that are consumed but increasingly ambiances too.[1]

Bob Mantel

The experience economy [A] is big business and the (urban) environment is gradually becoming a consumer good, also in the historical city centre. Amidst the thriving competition, city centres are in search of a unique identity to attract visitors. What is the task of urban designers in this process? Are we becoming mere producers of consumer goods or can we aspire to being the directors of the theatre referred to as the 'city centre'?

Conditions of stay, state of the art

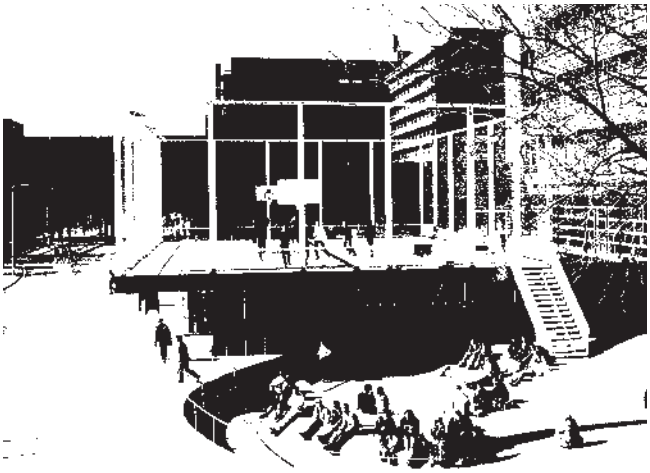
The conditions of stay in the public space are an important part of the urban experience and are therefore often included in economic revitalisation strategies. By offering a pleasant and unique ambiance, the city centre is made more attractive and more competitive in relation to other city centres. The general idea is that people will thus tend to stay longer and spend more money. In search of this ambiance, city centres are renovating their cultural heritage, repaving their streets and organising events. In 1990 for example, Groningen wanted to improve its city centre. It consequently had its pavements renewed, removed a large part of its commercial signboards and appointed a 'city-guide' to organize and advertise events.[2] This example reflects a common method of policy-making.



In most cases the ‘formula’ is very similar, emphasizing the physical environment and entertainment. But is this the right way? A similar approach used in different city centres naturally results in very similar city centres. They look the same and attract similar kind of people. However, similarity is not the only argument that can be used to question the approach. Social science points out that the social environment and the encounter with other people play an important role in the experience of the urban context. We often hear that the goal is ‘to see and to be seen’, but in post-modern society, the encounter with our fellow man has an ambivalent character, state Hajer and Reijndorp[3].On one hand we have social segregation because people are looking for space which suits their particular lifestyles, and therefore avoiding the ‘other’. On the other hand are we are curious about what is different and therefore looking for ‘other’ people. We actually search for the encounter. The encounter becomes an experience. The second argument is the logic of the experience economy. In this economy, trends and hypes have a brief character and the impulse of the experience must therefore be new to make an impact.[1] However, the physical urban environment functions very differently. It is difficult to renew and therefore in a way, static. How long does the impulse of a newly refurnished public space last? For the ideal conditions of stay, both these issues should be integrated in revitalisation strategies. The question is how.

Hypertopia

The hypothesis offers an alternative approach to compose the conditions of stay. As other approaches, it embraces



Basketbal bar.

‘ambiance’ or experience as its main component. However, instead of a preset evolvement of the ambience, it suggests that it can be more dynamic. Essential in this approach is the focus on the public domain and the way ambiances are directed. Both are key elements in generating a changing, renewing and even partly self-directable experience.

Configuration of the public domain

The public domain becomes a means for conditions of stay when it allows encounters and exchanges; a space should allow several lifestyles to converge and there should be a ‘in between’ space. This ‘in between space’ is a conceptual space which divides and connects lifestyles niches. If one is only interested in one’s own lifestyle, this ‘in between space’ is a safe barrier. If one is interested in the lifestyle of the other, this is then the space within which the encounter can be sought. In this way, an exchange between lifestyle groups is defined by the members of the groups themselves. The exchange becomes ‘autobiographical’, and is therefore always optimal. This exchange is important as it is said to stimulate the development of culture.[3] By creating a spatial layout in which such an exchange is optimal, the development of culture is also optimized and reaches a state of acceleration. Gadet[4] states that it is especially culture that makes people visit cities. The more people visit the centre, the more the exchange is ‘fed’. The circle is complete. Within the conditions of stay, the public domain is a means with a self-generating characteristic.

Directing significance: Snooze, open specific

As mentioned above, within the experience economy, the urban environment becomes a consumer good. Generally, spaces or objects are given a significance to direct an experience. Some even compare the directed experience of city centres with Disneyland, where everything is designed, directed and thought through. Such an experience allows virtually no space for one’s own interpretation. The durability of such a system is questionable -see before. A possible way of dealing with this issue is to let go of total directing. Van ‘t Spijker refers to the concept of ‘snooze’[5]. Snooze is a state between wake and sleep, between hyperactivity and deadly calm. It refers to a situation in which no dominant significance is given, leaving space to shape one’s own significance. For example, if you visit a market in the middle of the day, you will probably experience a busy place where people are buying and merchants are selling goods. This (generic) identity is produced by a set of unwritten rules. But if you visit the same market at the end of

the day, its identity will be totally different. A few salespeople will still be selling their goods, while others will be moving their stalls and cleaning wagons will be driving around… In short, the market 'will be changing into an indeterminate space, and becoming free again. 'There are no rules, only a genial chaos of delivery vans and pick-up trucks'.[5]
The latter situation is the type of impulse generated by the context, which stimulates but does not determine the experience. This is called 'open specific'.[5] The impulse is given but is not intense enough to direct the whole experience. One is automatically much more seduced to anticipate or respond to the impulse. Significance becomes 'autobiographical' too, and this is precisely the key to a unique, renewing and above all spontaneous experience.

Norwich

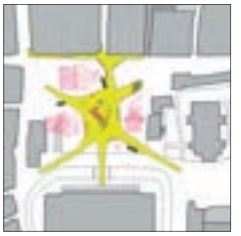
The city Norwich, East Anglia's capital, is situated two hours drive north from London. With approximately 250,000 inhabitants in greater Norwich, it would seem to be a modest town but due to its regional setting, it functions very differently. With no other cities close by, Norwich is the region's main destination for work, shopping and (governmental) services. It serves over 1,000,000 people[6] and in 2004 was even rated

The Norwich Market.

8th in the Experian Retail Centre Ranking! In their research, Pellenbarg and Kooij[7] describe Norwich as a regional capital and distinguish an important characteristic of these types of cities; 'the face value'. 'An urban centre becomes an avertable regional capital when it is esteemed and accepted as such. It is not only the actual number of shops that is important, but also the feeling that the town can fulfil everyone's needs. This indicates the significance of the mental picture of urbanity in a city's identity.
Norwich's town planning has been remarkable, as for decades, the city has focused on an 'Urban Renaissance'[8]. In 1962, for example, Londonstreet was the first shopping-pedestrian street in the U.K. and recently, huge down-town development has taken place. Instead of having large shopping facilities developed out of town, Norwich chose in the late eighties to build an underground shopping mall and parking garage in the hill of Norman Castle, one of the city's unique monuments! Recently, the development of the Chapelfield Mall and the Forum (library, BBC offices, information centre and a restaurant)

Free use of area.

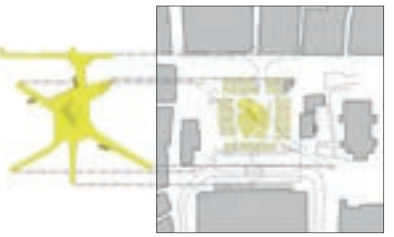
Wedding.



Jazz concert.

Examples of how to use the 'Deck'.

Upper and lower floor area.



in the city centre have followed suit. Although these developments have meant an important step in the process of vitalising the city centre, the public space is lagging behind. It is not just the physical quality of the public space and the embedment of these new programmes that need to be reconsidered, but also the development of relatively large interior semi-public spaces. Should public space, like these interior spaces, be conditioned too? Or could it offer an alternative, taking on a complementary role?

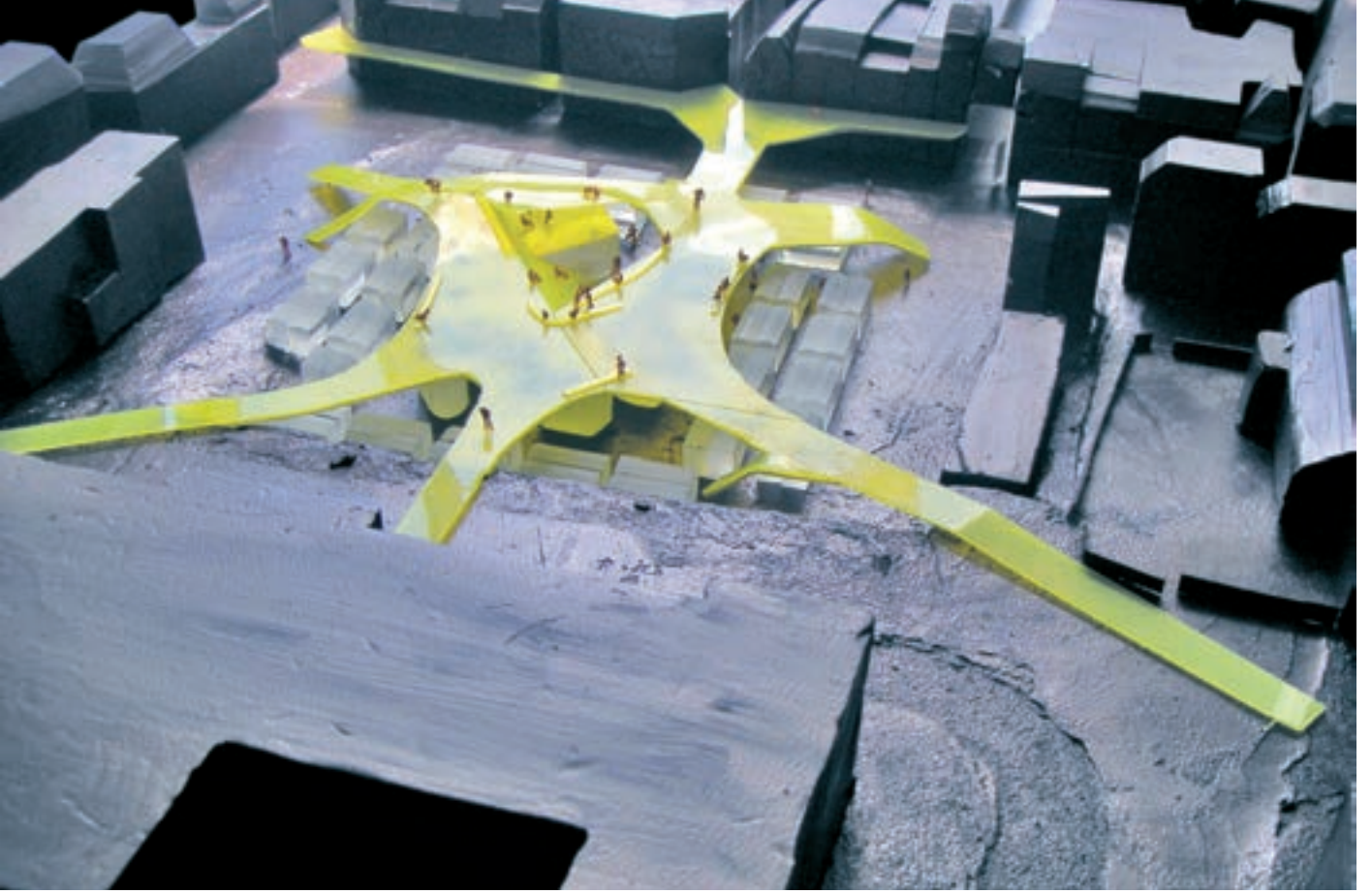
Norwich Market Square

Located in the heart of the old city, Norwich Market Square is still a centre of commerce. Where hundreds of years ago merchandise was brought in by the river, today, fashion, food and other consumer goods are sold. The dynamic history of the place can be recognised in the surrounding architecture. Representing the design philosophies of different times, the buildings give the place a strong and unique identity. Although at first sight the space seems to function well, there is however a number of aspects that gives a different perspective…

Thanks to its central position in the city's shopping and pedestrian area, the market square is fed by large flows of people. People pass by or visit the market but there is very little space to sit and watch the public. This means that very few spend any length of time there. Moreover, the market itself has a very autonomous character. Its rational grid layout has a limited interaction with the context and fails to produce places to stay. Both issues point out that the dynamic public domain has failed to evolve to its full potential.

As said before, the distribution of flows is no longer adequate. The developments of the Chapelfield Shopping Mall and the Forum have changed the use of the network, both spatially and in time. Both developments are important for their programmes (see above) as well as for their car parks. Forum provides 204 and Chapelfield 1,004 spaces. The latter is open at night and feeds the evening economy, which is located just north of the Market. This elementary change brings in new flows on the west side of the Market. Unfortunately, a number of aspects frustrate these new flows: the natural difference in height of approximately four meters between the eastern and western side of the market, the day and night presence of the market and the current design of the public space.

Lastly, like most others, the city wishes to organise events in public space. Due to the high density of the build-up area, there are however few large spaces available. The municipality's



plans mention a few, but these are all located on the outskirts of the historical centre, away from restaurants, pubs and shops.

The design

The difference in height and the lack of space have prompted the need to introduce a second ground level. This is a connecting element which will provide the missing links in the network and will redistribute space and programme. It will free space for new niches to develop and negotiate the use of the space between the niches.

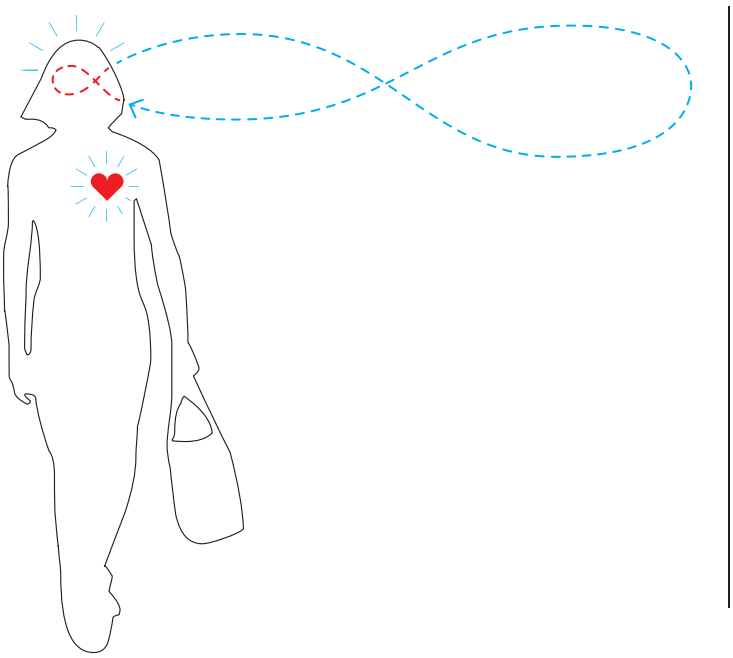
This 'deck' will follow the logical pattern of flows and at the sides it will be recessed to reserve open spaces. When events are scheduled, these spaces can be used for large objects such as fair trucks or stages. By following the flow pattern, the deck will cover part of the market and provide shelter from rain. Although its outdoor character will be preserved, the market will thus be less dependent on the weather.

In the middle, at the crossing of the flows, the deck will be widened to provide a place to stay. People can therefore leave the flow, sit down and take time to sit down. It is at this spot that the deck folds down and connects with the market. Both worlds meet; a mix of staying, passing by and shopping converge at this point.

By following the flow pattern, the deck will cover part of the market and provide shelter from rain.

The market itself will also be reorganised. The current market layout is a grid pattern that does not connect to its surroundings at all. The new configuration adapts to the flows at ground level and creates diverse spaces within the network of the market. Instead of being an autonomous unit, the market will thus become much more of a part of its surroundings and will moreover offer a place to stay.

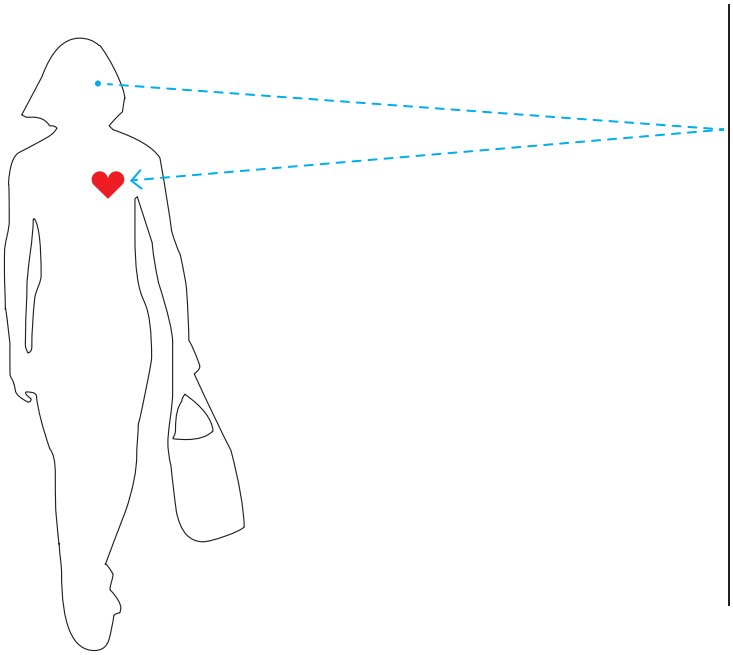
In the current situation, the market is constantly present. It occupies the whole square, even when it is not open. In the new configuration, under the influence of the new European law, one part is made architectural and the other part flexible. After opening hours, this part can be removed and the open space used for other activities such as festivals and events. The space can also be used by the programmes in surrounding buildings, for example as outdoor terrace areas. In this way,



the range of programmes and related lifestyle groups will be increased and the public domain further diversified.
In this (re)distribution of programmes, the deck will generally be free of programmes to minimalise the preset and commercial significance. Embedded in a context full of preset significances, the deck will be a place which one can give one's own significance. Visitors, passers-by and neighbouring programmes, will all be able to use the deck according to their own needs. This diverse, unplanned use is a slumbering impulse for a changing, multi-coloured, undefined significance.
The three-dimensional shape of the deck will naturally produce a wide range of relations between the lifestyle niches. The 'in between space' is diverse and a choice can be made as to how to relate to the other niches. At the edges, the encounter can be close without losing the spatial barrier. The groups will be able to get quite near to each other, with the difference in height preventing an actual physical encounter. A very intense but safe interaction is thus created. At the top of the deck, the visual relationship with the greater context is important. From a seated position on the deck, there will be a clear view all the way to the Forum. The square in front and the restaurant on the first floor can both be seen. In the middle, the deck folds down to the market. People can sit on the stairs and position themselves between the market and the deck. The 'in between space' is 'autobiographic'.

Reflection

At the start of this article, I questioned the role of urban designers in the planning process of creating conditions of stay in historical city centres. The Hypertopia suggests a different course to that witnessed in many regeneration strategies. The physical environment is less important in this theory. Rather, the experience of one's fellow man and one's undetermined, autobiographical experience is leading. As a result, the ambiance or the experience is not predetermined but merely initiated. It comes to its full expression with the participation of the visitors, who shape their own experience and give significance to the place. By this participation, the ambiance becomes dynamic, spontaneous and above all, specific. After all, different people at different places will participate differently.
The Hypertopia is not an 'invention'. It does not reject existing means, but simply uses combines and slightly redefines them. The change is not major, but is simply a matter of redefining the synthesis of our 'tools'… we can remain urban designers, we just have to be creative with that what we already know.



Notes

1 H. Mommaas, *De vrijetijdsindustrie in stad en land* (2000), SDU Publishers, Den Haag.
2 *Binnenstadsvisie Hart in de Stad* (2002), Gemeente Groningen.
3 M. Hajer, A. Reijndorp, *Op zoek naar nieuw publiek domein* (2001), NAI Publishers, Rotterdam.
4 J. Gadet, *Publieke ruimte, parochiale plekken* (1999), PhD thesis.
5 J. Van 't Spijker, *Snooze, immersing architecture in mass culture* (2003), NAI Publishers, Rotterdam.
6 *http://www.historicalnorwich.co.uk/chapelfield.html*
7 P.H. Pellenbarg, P. Kooij, *Regional Capitals; Past, present and prospects* (1994), Van Gorcum, Assena.

A *Experience economy*
The Experience Economy, according to B. Joseph Pine II and James H. Gilmore in their 1999 book of the same name, is an advanced service economy which has began to sell 'mass customization' services that are similar to theatre, using underlying goods and services as props.
B *Urban renaissance*
'…urban renaissance is the process of improving the quality of life in towns and cities and ensuring they are places that people choose to live, work and play…' (Government's Urban White Paper (2000), UK).

Photography

p.143 (upper and bottom left)
J. Gehl, L. Gemzoe, *Public Spaces Public Life* (1996), The Danish Architectural Press & The Royal Danish Academy of Fine Arts, School of Architecture Publishers.
p.143 (upper right)
M. Hajer, A. Reijndorp, *Op zoek naar nieuw publiek domein* (2001), NAI Publishers, Rotterdam.
p.144 (left and right)
Basketbalbar, NL architects.

Spatial Metro map

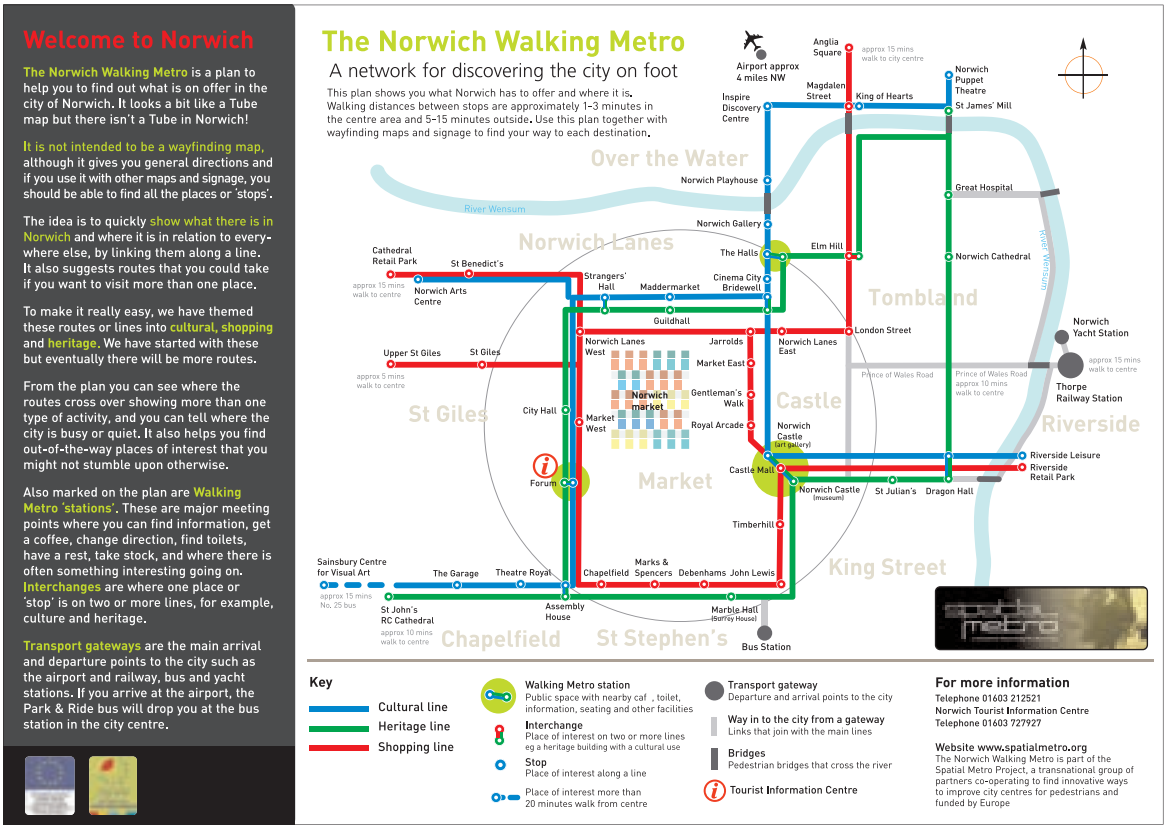
Norwich Walking Metro, a network for discovering the city on foot.

Frank van der Hoeven

Interreg is a generous programme that provides European partners with additional funding for the kind of projects they aspire to undertake in order to strengthen the social and economic cohesion of their city or region. From the perspective of the programme, it is essential to assure that expenditure and investments are sound and comply with the goals set by the European Union with a view to realising its regional policies. The Interreg programme therefore requires that partnerships are clear about the activities to be undertaken in connection with a specific project and the products to be thereby delivered. One of the products to be delivered by the Spatial Metro partnership is a specific kind of plan or map. The original proposal for the Spatial Metro project promised to:

... provide a structured transnational response to the challenge of making Northwestern European cities and their component elements intelligible, legible and navigable for visitors and local residents by adopting a conceptual model for pedestrian movement based on a diagrammatic plan used to orientate users around metros, U-bahn or underground railway systems and to support such a model with a broad range of media, human and small-scale physical infrastructural systems...

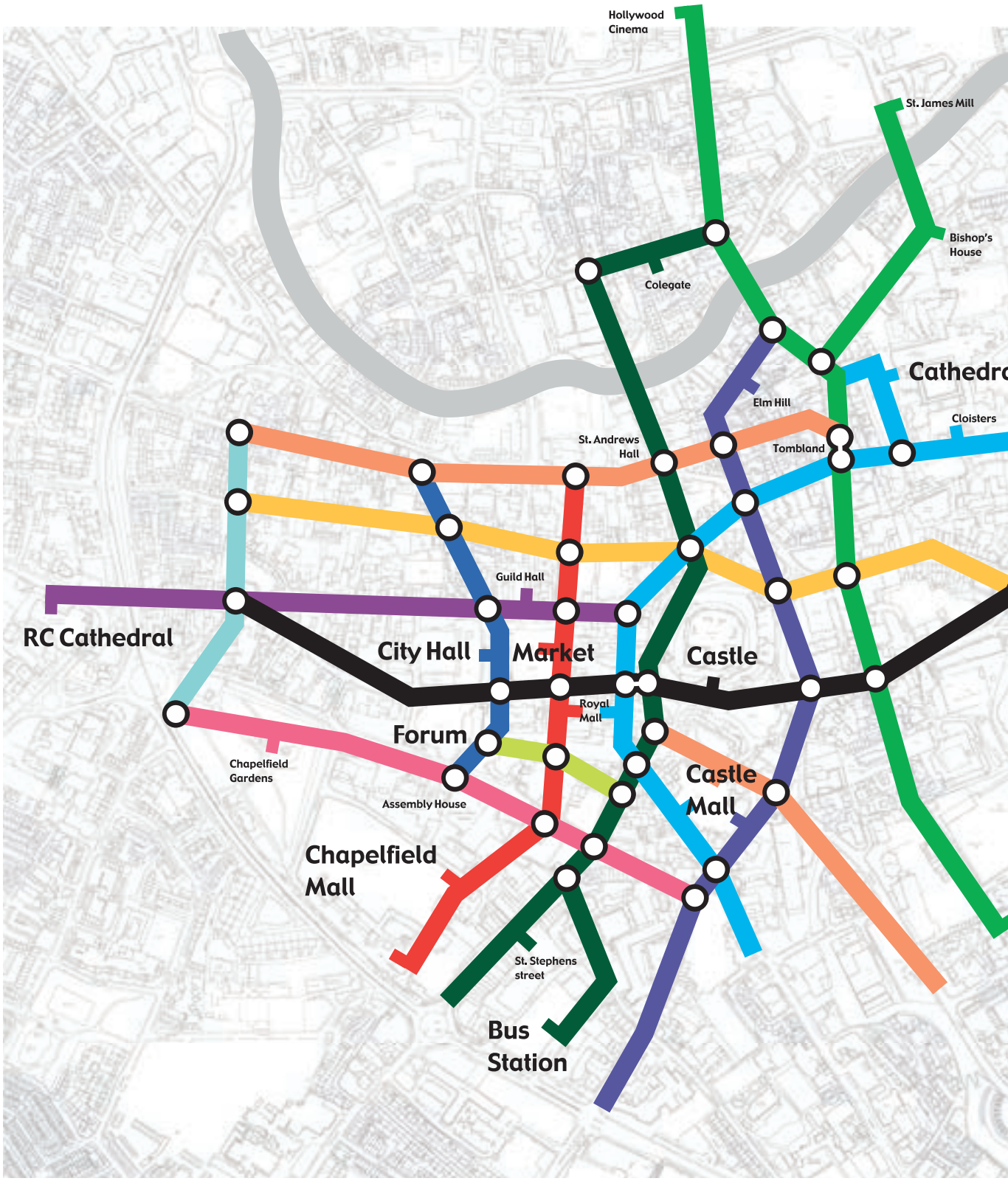
The idea was to learn from the London 'tube map'. This is recognized worlwide for its clarity and has been and still is frequently reproduced. The Spatial Metro project set out with a similar goal. It aimed to produce a diagram that could aid walking through a complex system of public spaces in the same way that the London tube map aids orientation through a complex system of metro routes. Given the context of the project, this is a sound goal. It also explains the title of the endeavour; a metro map for public spaces or in short: spatial metro. As a good lead partner, Norwich has already produced such a map. However, there is an interesting twist. In March 2006 the Central London Partnership delivered a land-mark study on wayfinding titled Legible London. The study was conducted by AIG. The report explains among other things the problems faced by London in attempting to persuade people to do more walking. One of these problems is posed by the use of a London tube map. The most commonly used tool by

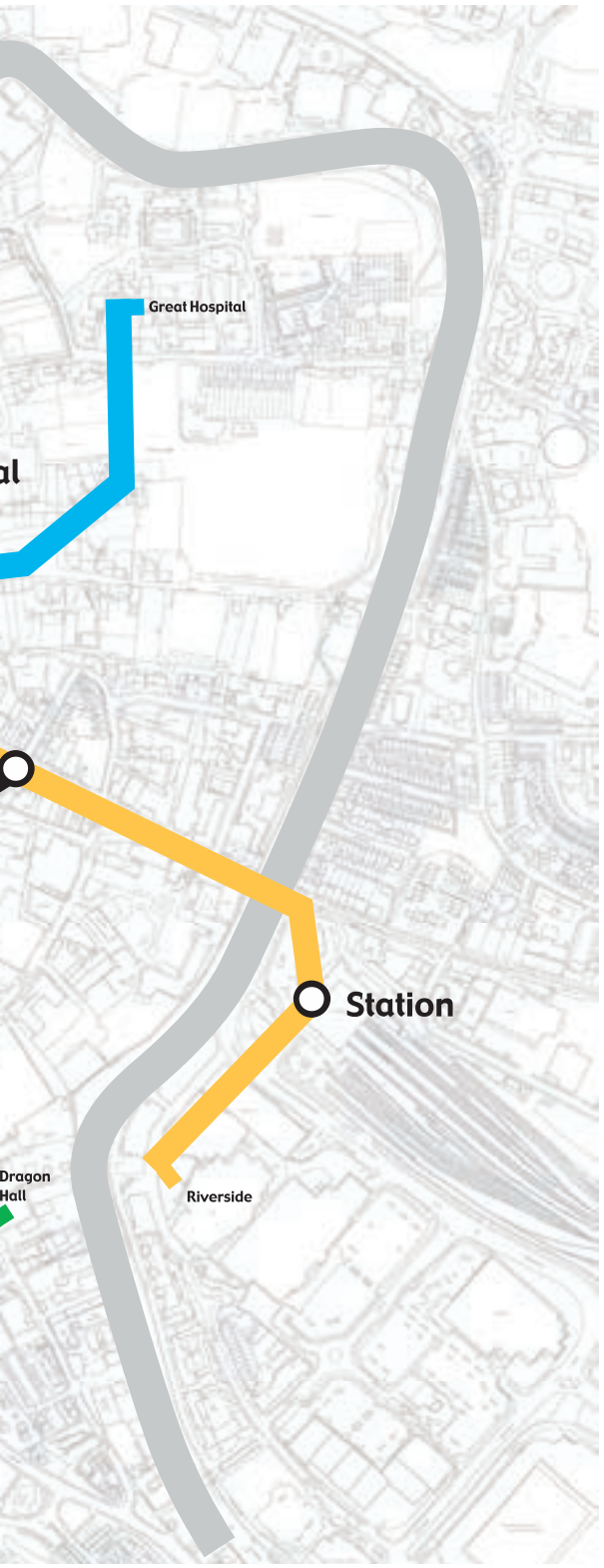


pedestrians in London to find their way around is the tube map. Over 40% of pedestrians rely on this diagram. The problem with the tube map is that it distorts actual distances between places. Especially in the city centre, tube stations seem to be relatively far apart while in reality, they may be extremely nearby. As stations look far apart, people tend to take the tube when walking would be a more efficient way of getting to the desired destination. For their wayfinding, pedestrians rely on actual distances, and on whether a street is curved or straight for instance. When they see two elements on a map or diagram that are far apart, they assume that there is in actual fact a great distance between them. If elements are straight, they expect them to be straight in real life too. Diagrams are abstracted for the sake of clarity, but at the same time, this abstraction causes something essential to be lost. This explains why pedestrians sometimes make the wrong decisions.

TU Delft attempted to develop a spatial metro map based on actual topography. We firstly carefully examined complex metro maps such as those of London, New York, Tokyo and Moscow. We observed that 10 to 13 different colours is about the maximum that a diagram can handle. If such a system is more complex, other techniques than colours are used. Among information specialists in the field of visualisation, it is a well know fact that people can only distinguish between a limited number of colours. With this in mind we reduced the complexity of the original Norwich street pattern to 13 coherent lines or paths.

Remarkably, most of these paths mainly follow a north-south or east-west direction with some intersecting curved paths. Although the historic street pattern was not precisely planned, there seems to be more regularity than one would guess from a first visit. As a result we were able to produce a clear map. However the map has its own limitations. If a pedestrian wants to use such a system of spatial metro lines, the intersections between the lines are essential. It is at the intersections that the pedestrian needs to make a decision, for example, as to whether to continue along the same path or to turn left or right, following a different path (symbolised by a different colour). Most of these intersections lack a proper name or other identifier. There is no good way of identifying these essential 'transfer stations' in this spatial metro. At the same time, many of the commonly used points of reference (buildings such as the city hall, the cathedral or the castle) are often located between streets and intersections. The role they plan in such a 'metro scheme' is consequently less important. This

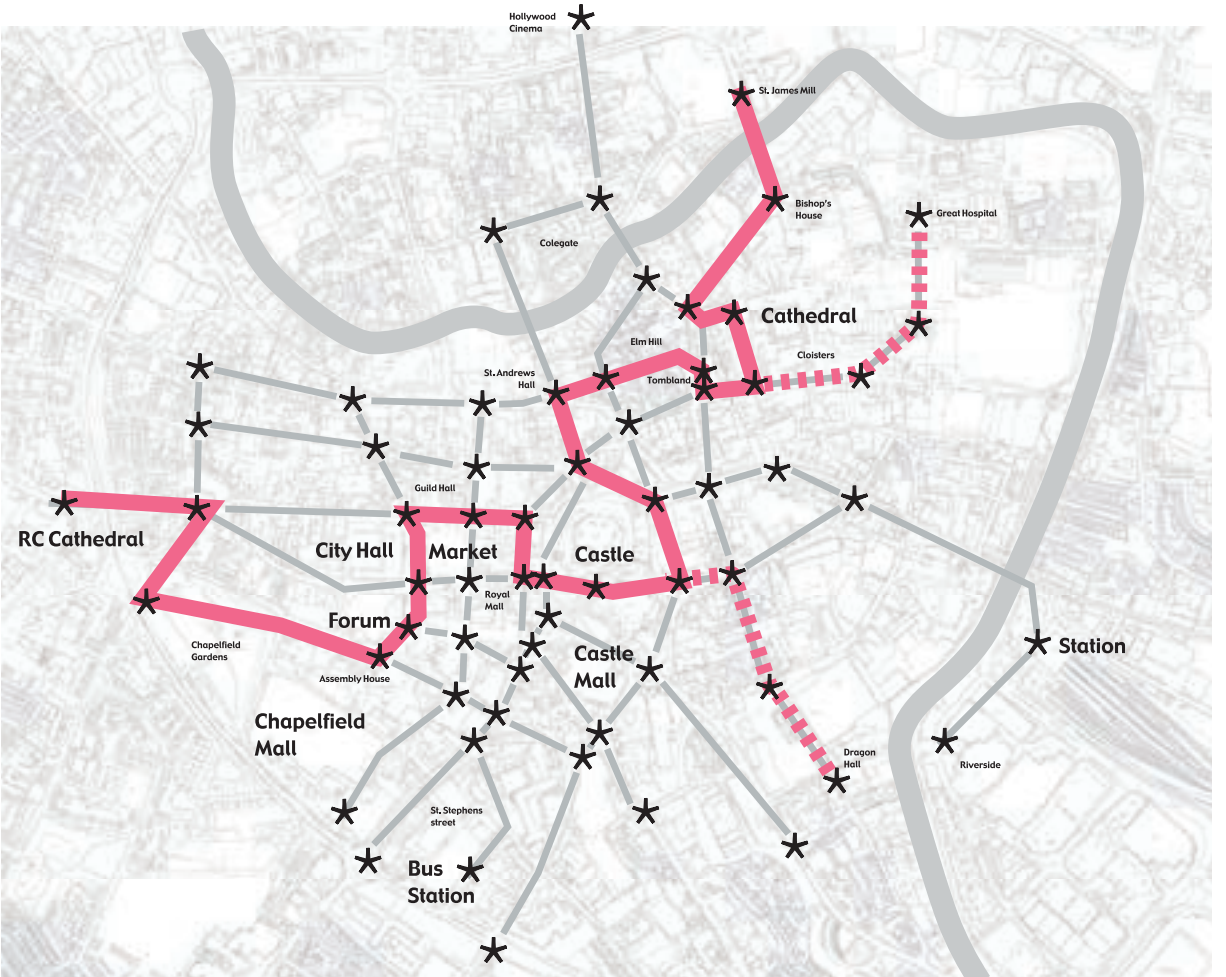

Hollywood Cinema
St. James Mill
Bishop's House
Colegate
Cathedra
Elm Hill
Cloisters
St. Andrews Hall
Tombland
Guild Hall
RC Cathedral
City Hall
Market
Castle
Royal Mall
Forum
Chapelfield Gardens
Assembly House
Castle Mall
Chapelfield Mall
St. Stephens street
Bus Station



Spatial Metro map based on a maximum of 13 paths.

is in contradiction to they way that pedestrians walk through a city. For pedestrians, the final destination is more important than where to turn right or left.

The main problem with applying a metro-map approach to pedestrians is that there is nothing comparable to an interchange station when you are on foot. Pedestrians do not need to switch vehicles, but continue along their unique path. Considering this, one may ask whether identifying specific continuous paths crossing the city makes sense. No one would actually take such a path on foot from start to finish. The concept used in GPS systems could be of some assistance here. GPS handhelds define lines or paths by means of ‘way points’. 60 to 70 of such way points are used to describe a city’s main paths. Based on these points, any individual path is possible. With navigation systems rapidly becoming accessible to mobile phones, such an approach is a real option in the near future. However, we still need to ask ourselves in all honesty whether pedestrians really need the same kind of accurate descriptions as motorists, for example, especially when they are merely visiting a city for leisure purposes. One part of such a visit might be aimed at a specific goal or reason, but another part will be about discovering things that were not expected. How can these two needs be balanced?

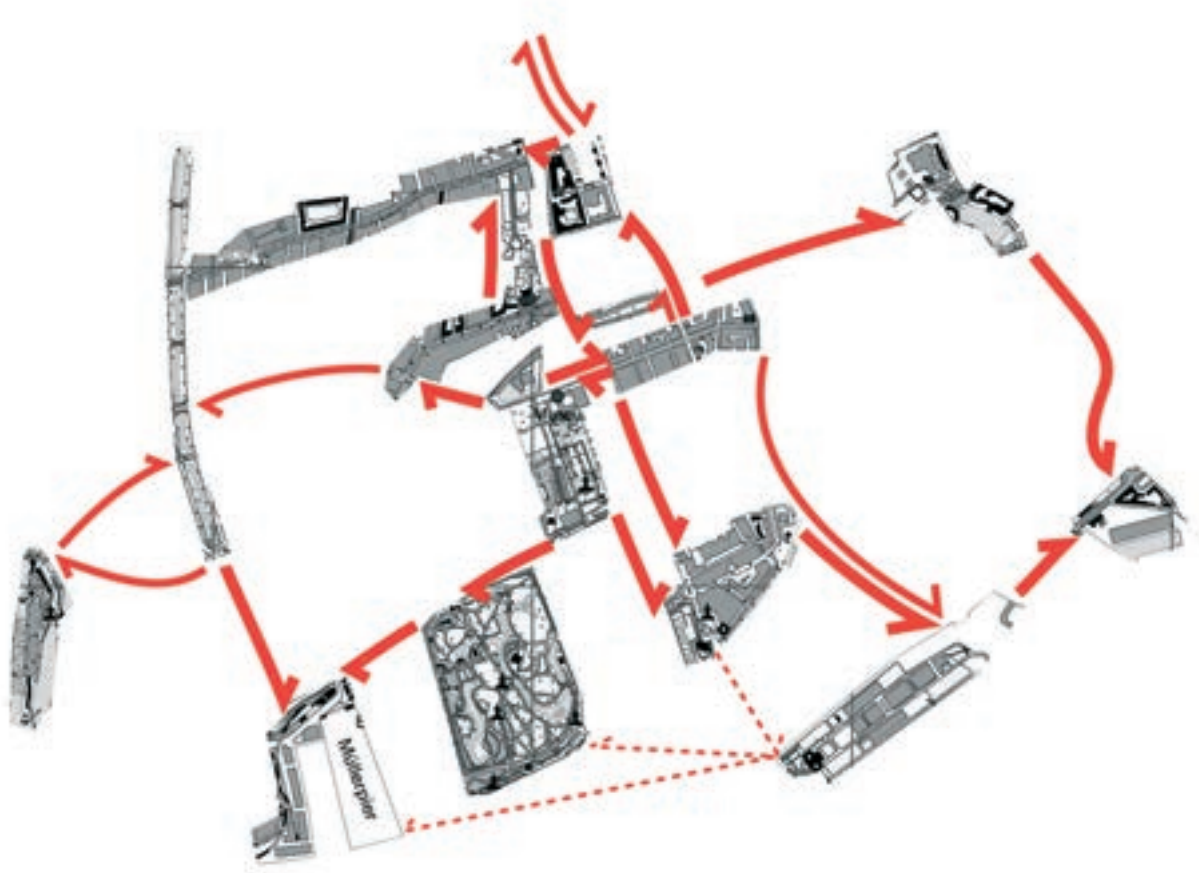


In our GPS research, we noticed that each entry point in the city is linked to a specific realm it serves. People starting out at the Chapelfield Mall cover a different part of the city centre than people starting at St. Andrews. People need to know what they can find within the reach of such an entry point. Depicting areas or districts in the city which can each provide something (thematically) specific, visually identifying those areas (such as the Lanes in Norwich) and providing information on how to get to other areas of interest on foot could provide the strategy we need. Such a strategy would converge with the functioning of our mental maps. This approach would make it possible for visitors to wander around and discover a city without providing detailed information that would spoil any potential surprises. At the same time however, it could guarantee that areas are also visited that are not generally easily found. In this way, cities could become more successful in presenting what they have to offer their visitors.

Photography

p.151
Norwich City Council.
p.152 and p.154
Frank van der Hoeven.
p.155
Ekim Tan.

Individual path based on waypoints.



Districts linked by paths (in this case Rotterdam).

Part 5

Reflection

How can we summarise what has been carried out up to the present? In the light of current knowledge, what would we do differently if given the chance?

A learning experience

Frank van der Hoeven

The Spatial Metro Interreg IIIB project allowed its partners take part in a valuable transnational exchange of experiences, ideas and practices. It also allowed them to invest in the quality and the legibility of their public spaces, essential ingredients in strengthening the vitality of the historic centres of the cities involved. With the knowledge, partners were able to sharpen their tools, instruments and skills to address 'real world' issues, with regard to orientation, navigation, visualisation and information. What did we learn? What would we do if we had to do things all over again?

In a perfect world, we would first make a thorough diagnosis of the way in which a network of public space works or fails to work using technology that can track the

movements of pedestrians and using interviews with people. Based on the assessment thus obtained, we would determine where to invest and what to invest in. Is identity an issue? Is legibility a problem? Is light an issue? Is there a lack of information? Is it necessary to improve urban design? In this same perfect world, we would thereafter make a second diagnosis similar to the first. We would then assess if and in how far the investments made had been effective.

We feel that the current structure of the Interreg programmes makes such an overall approach difficult or even impossible. The general timeframe reserved for a project's implementation is limited to approximately three years, which is a relatively short period. The programme requires that a partnership be clear about its activities or investments. A proposal can't just describe a well-defined first step and then tell: we will see what comes next. It can't say it will make an thorough analysis and base its investments on that with out becoming specific on what it will spend the money on. Such a proposal will obviously be less successful than more clearly-defined proposals.

We should nevertheless be aware that most of the necessary ingredients for a 'perfect project' were explored and further developed in this project. Building on the experience thus obtained, a follow-up project would be well-advised to aim for a tight-knit integration of all the elements involved.

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Pedestrian mobility and the regeneration of the European city centre

Cities can be chaotic and confusing places at the best of times – even for local people!

Spatial Metro, a project largely funded by the EU, aims to make city visits more enjoyable for pedestrians by making cities easier to navigate, easier to walk around and easier to understand and appreciate.

This is achieved in various ways, including illuminating characteristic buildings, providing 'metro style' maps as well as appropriate information and signposting for pedestrians and the application of GPS technology.

Together with municipalities and universities, five cities (Norwich, Bristol, Rouen, Koblenz and Biel/Bienne) in North West Europe have carried out pilot studies and exchanged experiences. In this publication, their findings are shared with the reader.

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