Rail Transport and Urban Renewal. Plans and Projects in the Florentine Area (Italy)

UNIVERSITÀ DEGLI STUDI
DI TRENTO
Dipartimento di Ingegneria
Civile e Ambientale

European Cooperation in the Field of
Scientific and Technical Research

Sustainable Urban Infrastructure

approaches - solutions - methods

edited by Bruno Zanon

COST C8
Best Practice in Sustainable Urban Infrastructure

TEMI EDITRICE

Sustainable Urban Infrastructure

approaches - solutions - networking

edited by Bruno Zanon

COST C8
Best Practice in Sustainable Urban Infrastructure

International Conference
Trento, Italy, 6-8 November 2003

TEMI EDITRICE

ISBN 88-85114-80-6

UNIVERSITÀ DEGLI STUDI
DI TRENTO
**Dipartimento di Ingegneria
Civile e Ambientale**

European Cooperation in the Field of
Scientific and Technical Research

COST Programme is administered by European Science Foundation and is supported by the EU Framework Programme

The materials collected in this publication were presented at the International Conference on "Sustainable Urban Infrastructure. Approaches - Solutions - Networking" held in Trento, Italy, on 6- 8 November 2003.
The Conference was jointly organized by COST C8 Best Practice in Sustainable Urban Infrastructure and Dipartimento di Ingegneria Civile e Ambientale - Università degli Studi di Trento.
The contributions, which were submitted after a call for papers, underwent a peer review procedure. The Scientific Committee consisted of: Pekka Lahti - Finland, Michiel Rijsberman - the Netherlands, Jan Stuip - the Netherlands, Enrique J. Calderón - Spain, Anne-Karine Halvorsen Thorèn - Norway, Raimondo Innocenti - Italy, Marjana Šijanec Zavrl - Slovenia, Bruno Zanon - Italy, Phil Jones - United Kingdom, Christopher Tweed - United Kingdom.

Table of contents

Transport

Water

Blue - green infrastructure

Holistic approaches

Built environment

Rail Transport and Urban Renewal

Plans and Projects in the Florentine Area (Italy)

F. Alberti & R. Innocenti
Università di Firenze, Italy; f.alberti@tin.it; r.innocenti@unifi.it

Abstract
After a long period spent in the choice and the definition of solutions to the project, the ambitious reorganization of the public railway transport system in the Florentine area is finally underway. It includes: a) the creation of a new urban railway underground connection for high-speed trains, with an underground stop connecting with the central station in Florence; b) the use of pre-existent railway tracks and the creation of new lines towards the activation of a metropolitan railway service within the Florence, Prato and Pistoia area; c) the creation of a new tram network.
Connected to the interventions on the infrastructural network there are urban interventions dedicated to the construction of new stops, the configuration of public spaces through which trams will pass, as well as the transformation of vast derelict areas, near to the railway tracks. The carrying out of these projects represents an opportunity for the requalification of urban fabrics and fringes, promoting the decentralization of super-local functions that are now concentrated in the centre of Florence, and contributing in some way in the development, around the public transport system, of a more defined identity for the entire metropolitan area.

Keywords
Infrastructure; Sustainable development; Florence; Railways; Tramways; Urban renewal.

1. Introduction

The urban growth of Florence, from the unification of Italy until present day, has been heavily conditioned by the presence of the railway system, in part handed down from the Grand-ducal period. Its layout is situated close to the ancient city walls and, after the walls were demolished, was gradually involved by the successive phases of expansion of the city, beyond the circles of avenue.

The crossing of the central area by the Milan-Rome-Naples line, that even today constitutes the principal railway line running in the north-south direction, reached its actual configuration between the end of the 1920's and the middle of the 1930's. The interventions carried out in that period include both infrastructural works and the building of the new central station. Such interventions rationalized and "ennobled" the pre-existing situation - the station of Santa Maria Novella constitutes the last example of monumental architecture carried out in Florence -, but also confirm a renunciation of the Italian Railway Company (FS) to more

ambitious projects, orientated at moving the tracks of the Florence-Rome line away from the city center.

On this strategy - consisting in operations of low profile adaptation of the network - the FS based its policy for the Florentine junction for at least the following fifty years. This strategy clashed, at the beginning of the 1960's, with the city master plan - the so called "Detti's plan", from the name of the architect who devised it - that has remained unrealized precisely in the part regarding the main infrastructural projects: the creation of an underground railway by-pass to the north of the town with a station at Castello, and reuse of the existing layout for the realization of a roadway.

The presence of a "railway noose" has thus continued, until today, to be - whether as a physical barrier or as a restriction to the reorganization of the mobility system - one of the town-planning problems that limit the transformation and renewal of the existing urban fabric. And this, almost paradoxically, shows of the lack of a system of public transport on individual routes.

In Florence, as in many other European cities, after the second world war a still relatively modern and efficient tram network that ran the streets of the historic city centre and passed through the suburban areas had been dismantled. In the mid 1950's its presence in the city had become incompatible with the new necessities imposed by the rising mass motorization.

The fact that of the two above stated problems, a different definition of the first one may allow for the solution of the second is probably an approach taken for granted in the light of strategies now widely shared such as those of modal re-balancing, intermodality, and more generally urban sustainbility. Moreover these principles and objectives have become part of the conceptual reference framework of the regional legislation on territorial governing. The physical and geometrical characteristics of the "railway noose" - its limited capacity and the impossibility to widen certain bottlenecks, without heavily destructive intervention on the urban fabric - defer the solution of these problems to a third matter, which has therefore become the keystone for the reorganization of the whole system of mobility: the creation of a new junction line, connected at its extremes with the national tracks towards Rome and Milan, to be dedicated to long distance traffic.

2. Towards an Integrated Transportation Development of the Area

The first proposals for an integrated railway system at the service of cities and minor centres of the metropolitan area begin to be studied and defined during the 1980's, through initiative and plans promoted by the Region of Tuscany. For example, the 1989 "Integrated regional transportation plan" and the "Structural scheme" approved in 1990 foresee a regional railway service for the whole

Florence-Prato-Pistoia area. However these are still hypotheses which have not yet been validated by an agreement with the FS, that is the principle party interested in the realization of these interventions.

With the new Florence's master plan of 1993 and subsequently with Prato's one in 1996, these hypotheses assume a greater concreteness, and an agreement between local authorities and FS begins to be outlined, then perfected by way of protocols sealed at various institutional levels within the project of the new high-speed Milan-Naples railway line.

In regards to the crossing of Florence, the definitive version of the project forecasts the realization of an underground through-line - from the eastern station of Campo di Marte to Castello. This decision puts an end to a many year long debate, archiving both "Detti's scheme" (already officially abandoned by the municipal administration, but ever present in the background) and the hypothesis - upheld for many years by the Region - of a longer tunnel passing underneath the historic centre, with a stop corresponding with the station of Santa Maria Novella

- A new underground station, located at about 800 meters north of Santa Maria Novella: it will be designed by Norman Foster, winner in the 2002 of the international competition called by FS.
- The activation on the surface tracks, opportunely integrated and strengthened, of a metropolitan railway service (SFM) integrated with the regional service (SFR), "characterized by high frequency, mnemonic rhythm and numerous stops" both existing and planned (FS, 1999).
- The construction of the so-called "Technological Railway Pole" on the plain of Osmannoro, to the west of the city, a new hi-tech plant which will host the train maintenance services and a research centre on rolling stock.

Moreover, the stipulated items agreed upon by the Municipality of Florence and the FS include:

- The realization at the expense of the latter of interventions to the city viability - centred on the improvement of the circulation from/to the new station and the nearby exhibition and congress centre of the Fortezza da Basso.
- Other interventions to reduce the barrier effect of the "railway noose".
- The participation of the FS itself in the creation of the new tram network, interconnected with the SFM.
- The establishment of an Environmental Observatory - that has been operative since November 2001 - for the evaluation and the monitoring of the environmental aspects during the works for the through-line and the station.

Metropolitan railways and tramways are therefore the two major projects of the "iron cure", carried on by the Municipality of Florence and other municipal governments of the area for the relaunching of public transport over private and for the progressive rebalancing between rail and road transport.

Actually, between the beginning of the '80s and the mid '90s, the public transport on road had lost, within the urban area, more than 40% of its users, going from 120 million passengers per year, to around 70 million. Even though in the last few years this trend seems to have inverted itself, private transport still absorbs about 55% of commuting journeys and almost the whole amount of non-commuting journeys (equal to about 60%). Moreover, according to estimates, the total demand for mobility inside the area grows every year to a measure of 1.8%. In respect to 2002 values the increase in 2015 will therefore be in the order of 30%.

In this perspective, actions aiming to traffic distribution among different transportation modes - through the government of the supply and the orientation of demand towards more sustainable forms of transport - can no longer be postponed.

The Plan for mobility and logistics recently defined by the Region of Tuscany sets, for urban areas, the following main objectives:

- Stabilizing at the actual level, in absolute terms, the number of trips carried out with private motor driven vehicles (cars and motor-cycles).
- Increasing by 70% within the year 2010 and by 150% by the year 2015 the number of passengers carried on public transport, through the improvement of the offer and the recovery of efficiency of the existing services (Regione Toscana, 2003).

Metropolitan railways and tramways are therefore the two major projects of the "iron cure", carried on by the municipality of Florence and other municipal governments of the area for the relaunch of public transport over private and for the progressive rebalancing between rail and road transport. An integral part of this new multi-modal public transport system are park and ride spaces, some of which have been already realized, localized at the meeting places with the main road networks and placed at the fringes of the urban area, in order to create a sort of filter to the passage of vehicles along the main penetration roads.

It is therefore with such goals that the projects for the Florentine area enter, dedicated to the creation of a multi-modal public transport system. Existing and planned park and ride spaces are an integral part of this strategy, localized at the meeting places with the main road networks and at the fringes of the urban area, aimed at creating of a sort of filter to the passage of vehicles along the main roads of penetration into the city. Among these, a new parking area will be realized in the nearby of Scandicci, to the south-west of Florence, within the foreseen development works of the motorway A1: it will allow to park without exit from the motorway at the terminal stop of a tramline linking with the city centre.

1.1 The Metropolitan Railway Service

Besides the city of Florence and the sub-poles of Prato, Pistoia and Empoli in the metropolitan area of central Tuscany, the realization of the metropolitan railway service is of interest to the minor towns of the Upper Valdarno and

Mugello-Val di Sieve: in total, 34 municipalities belonging to four provinces (Florence, Prato, Pistoia, and Arezzo) for a potential catchment area of about 1.100.000.000 inhabitants. A first layout of the base standards of the future service - elaborated under the form of "guide lines" by the Regional Transport Division of the FS - comprehends in the new transport system all the trains in use within the entire area (direct, regional, and metropolitans), also foreseeing the harmonization of schedules and changes so as to obtain regular rhythms for each line and different frequencies between main and secondary stops. The actuation of the project implies an increase of about 80% of the railway traffic that today interests the same area, equal to 25% with respect to the entire regional service.

When in full swing - that is at the going into operation of the underground trough-line and the new high-speed trains stop, forecast respectively for 2008 and 2010 - seven lines, according to the plans, will be part of the network. Of these, five are already functioning, that is the three lines that connect Florence with Empoli, Pistoia and Montevarchi; the "Faentina" line (re-opened in September 1999 after 50 years of inactivity and under project for electrification) and the Borgo San Lorenzo - Pontassieve - Florence line. The realization of a sixth line is underway: it will connect Florence to Campi Bisenzio, another important centre of the hinterland, passing through the industrial, commercial and directional district of Osmannoro, close to the above mentioned Technological Railway Pole. On the contrary, the project for the seventh line still only exists on paper. It should connect the motorway exit at south Florence with the Rovezzano station, in the eastern part of the city.

While waiting for the work to end on the high-speed line, it is foreseen that a first part of the metropolitan railway service can become operational in 2005-2006, when the work for the adjustment of the existing lines will be finished and a new system of computerized management of the tracks will be made operative, capable of increasing their transportation capacity.

1.2 The Tramway

The new tramway network of the Florentine area has been conceived with two main objectives. On the one hand it has been projected for the commuting movements along the two directions - from Scandicci and Bagno a Ripoli - not served by the railway; on the other, to form the principal framework for the new urban public transport system, whose ramifications will substitute transport by road along the busiest routes that connect the most important urban points.

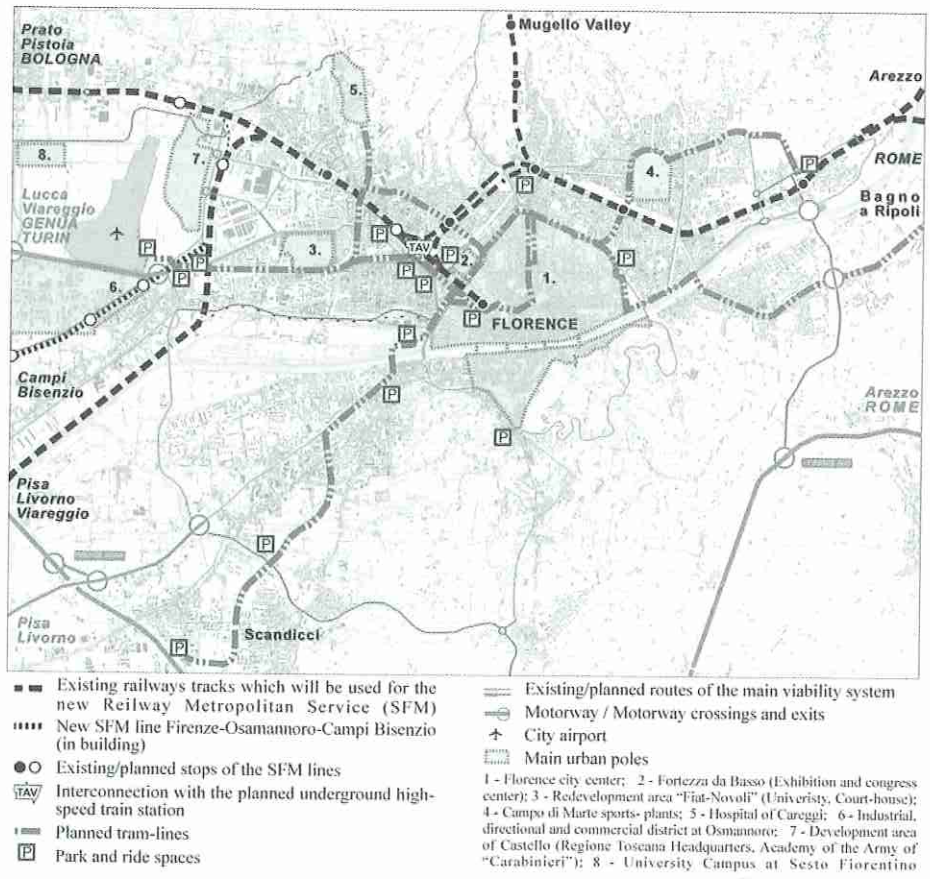

Figure 1. The re-organization of rail transport in the Florentine area.

The network will develop for about 35 km, with stops set at a distance of 500 m from one another and a maximum capacity, during rush hour, equal to 5000 passengers per hour (in respect to the 1000 passengers per hour of the road vehicles that circulate in protected lanes). The preliminary project has been planned, under the guidance of the municipal administration, by the engineering company of the national railways, Italferr, with the consulting services of Semaly, the company that constructed the tramways of Strasburg and Grenoble, which have been assumed as reference models for the Florentine one.

For the definition of the final projects and the realization of the works, two different procedures have been used for the tenders.

For line 1- Scandicci-Florence Santa Maria Novella - in 1999 a call for bids, whose first tender was deserted by all. After a series of petitions against the result of a second tender filed by the competitors, the contract was definitively allot in

September 2003. The City Council is expected to approve the definitive project by the end of 2003; then the construction companies will have 1000 days to consign the completed works.

For Line 2 - connecting the airport, the new directional and university district of Novoli, the high-speed station, the exhibition pole and the historic center, and therefore destined to become the most frequented track of the system - and for a first part of Line 3 - connecting Careggi general hospital, the station of Santa Maria Novella and the circling avenues - a solution of project financing has been used, including the construction and the management of the lines. At the deadline in December 2002, the only offer received by the Municipality was that of the French company Ratp, that acting as promoter must present, again within 2003, the final project. The next competition for the realization of the works will be based on this project. The City Council trust to be able to activate both of these tracks concomitant with Line 1, taking into account that in comparison of this they don't present so many technical difficulties.

The construction times of the second part of Line 3 - which includes two branches towards Bagno a Ripoli and the town quarter of Campo di Marte - are much more uncertain. These interventions are inserted in the list of strategic works of the so-called "Objective Law" and - according to the agreement between the Government and the Region of Tuscany - are infrastructural interventions with priority to financing. However it is not yet clear if or when the state will make available the 173 million Euros requested by the Municipality (of the hypothetical comprehensive cost of 220 million Euros). With such a sum, the complete investment for the tramway will reach a foreseen cost of about 620 million Euro.

3. Urban Transformation and Metropolitan Identity

Numerous interventions of urban renewal and recover are tied to the realization of the new public transport services; different in scale and in strategic value, they are destined to deeply influence the entire metropolitan system and the single urban fabrics crossed.

Vast abandoned areas are actually located along the overground railway tracks and are already or soon will be available to host new functions and equipment. In some of them redevelopment works are already underway, in other cases the recovery projects are still to be defined: from Pontassieve, at the eastern gateway of the metropolitan area, where the ex-railway freight yard will be transformed into an urban system of public equipments, office facilities and housing, to Prato, where realization is underway of the new terminal and car park in the area of the Porta al Serraglio station, to Pistoia, where the recovery project for the ex-Breda industrial area will be soon completed.

In Florence, the new station of the high-speed line will be served by a

tramway and by the SFM and will be integrated with a new terminal for regional services of road transport. The area interested to the work, between the ex-slaughterhouses and the station of Santa Maria Novella, forms a strip of about 20 hectares, neighbouring the exhibition and congress center, that will be assigned to equipment and qualified services such as a Simphony Hall, an international school for restoration and/or a "Youth Citadel". Other railway areas, located at the fringe of the historical center (ex-freight depot at Campo di Marte, ex-railway workshops at Porta al Prato), will in turn be available once the infrastructural readjustment of the junction is completed.

There is therefore the opportunity - to be cultivated through the strategic relocation of key-functions and through coordinated decisions between the different institutions and operators involved - to make the railway become the principal transport system for the accessibility to the single poles of activity, to the specialized equipment of regional importance and to the parks in the metropolitan area. On the other hand, the balancing of functions between Florence and its suburban communities constitutes - along with the improvement of internal mobility and access from outside - one of the points of priority intervention fixed by the Strategic Plan of the Florentine metropolitan area, the elaboration of which has recently been terminated.

On a more detailed scale, the "metropolitan" reuse of local stations and the realization of new stops (five are forecast just for Florence, in addition to the already active eight) will also imply the functional reorganization and the renovation of the surrounding urban fabric.

As well, other important interventions are linked to the new tramway, the realization of which will change the face of many streets and public spaces, both in suburban districts and in the central area. A special competition was announced to resolve the layout and environmental insertion of the most delicate stretch of Line 1, including the crossing of Piazza Paolo Uccello and the building of a new bridge between this square and the park of Le Cascine, on the other side of the river Arno. But even the end part of the park will be reconfigured, with the tram running over the surface and the vehicular traffic diverted through the underpass that has already been built. In this way, it will be possible to advance the main entrance of Le Cascine to the Lungarni, therefore realizing a project conceived about 150 years ago by Giuseppe Poggi.

At Scandicci, the foreseen stop of Line 1 near the Communal Building provides the opportunity for a radical intervention of urban transformation, finalized upon the construction of a new city center.

This marked multi-scaling of the intervention is probably the most interesting aspect of the realization of the new system of urban and metropolitan transport in the Florentine area. It is not, obviously, a peculiarity exclusive to this case: multi-scaling is in fact a typical characteristic of the intersection points in

network systems, where the local dimension meets the virtually global one of the network itself (Dematteis, 1996). In this case, however, the range of relationships involved by the railways reorganization and the new tramway is especially wide, referable, as we have seen, to two distinct territorial spheres - the town of Florence defined by its communal boundary and the entire metropolitan area of central Tuscany - and to four different levels of transport service. Among these are the regional and the national one, symbolically represented by the Santa Maria Novella station (which will be reorganized as the urban terminal for the regional traffic) and by the new high-speed station.

The intermediate level, the metropolitan one, although establishing an already evident social and economic reality, has not yet been perceived by the inhabitants as a sphere of recognizable citizenship: moving from one pole of the system to another for reasons of work, study, or pleasure is still seen by most of them as a sort of unavoidable business travel. The reorganization of the system of public rail transport described above, integrating with tram systems that are already under study also in other municipalities in the area (Prato, Sesto Fiorentino), can therefore become the decisive factor in bridging this identity gap, assuming a unifying role. An objective that must be pursed by all the concerned municipalities, with co-ordinate choices and plans, starting with those regarding the reuse of the abandoned areas nearest to the tracks.

References

Alberti F., Massa M., 2001. 'Ferrovie metropolitane e rinnovo urbano: il caso della Toscana centrale', in: *Progetti d'infrastrutture e piani territoriali in Toscana* (Metropolitan railways and urban renewal: the case of central Tuscany. *Projects for infrastructure and territorial plans in Tuscany*), R. Innocenti, M. Massa (ed.), Florence, Italy, pp. 113-144.

Dematteis G., 1996. 'Grandi opere e contesti territoriali locali', in: *Infrastrutture e piani urbanistici* (Major works and local territorial contexts. *Infrastructures and urban plans*) A. Clementi (ed.), Roma, Fratelli Palombi Editore, pp. 229-245.

FS, 1999. 'Area metropolitana Firenze-Prato-Pistoia', in: *Linee guida per il Servizio Ferroviario Metropolitano. Accordo integrativo tra Ministero dei Trasporti, Fs Spa, Tav Spa, Regione Toscana, Provincia di Firenze, Comune di Firenze.* (Metropolitan area of Florence-Prato-Pistoia. Guidelines for the Metropolitan Railway Service. Integrative agreement between the Ministry of transport, Fs Spa, Region of Tuscany, Province of Florence, Town Hall of Florence) Annexe, Florence, Italy, 3.03.1999.

Regione Toscana, 2003. Piano Regionale della Mobilità e della Logistica (Regional plan of mobility and logistics) Florence, Italy.

The book collects the papers given at the International Conference on "Sustainable Urban Infrastructure. Approaches - Solutions - Networking" held in Trento, Italy, on 6- 8 November 2003.
The Conference was jointly organized by COST C8 Best Practice in Sustainable Urban Infrastructure and Dipartimento di Ingegneria Civile e Ambientale - Università degli Studi di Trento.
Introductory papers present the Cost C8 Action and the issues of the six strands of the Conference: Approaches and Methods: Assessment and Implementation, Transport, Water, Blue-Green Infrastructure, Holistic Approaches, Built Environment.
The contributions cover a wide range of aspects and sectors, highlighting how challenging is the search for sustainability in the urban environment.

Authors:
Francesco Alberti, Anwar Ali Kahn, Daniela Anceschi, Massimo Angrilli, Antònio Antunes, Barbara Badiani, Susanne Balslev Nielsen, Marco Brambilla, Enrique Calderòn, Marco Cattani, Diego Ciccarelli, Alberto Colorni, Angela Colucci, Veronica Cremasco, Mauro d'Incecco, Corrado Diamantini, Morten Elle, Stefano Erba, Maurits Ersten, Antònio Ferreira, Davide Geneletti, Sara Giacomozzi, Begoña Gonzalo, Natalia Gullòn, Simon Guy, Irmeli Harmaajärvi, Raimondo Innocenti, Phil Jones, Juhani Korkealaasko, Daniele La Rosa, Pekka Lahti, Simon Lannon, Nils Larsson, Alessandro Luè, Pier Luigi Paolillo, Marcello Magoni, Per-Arne Malmqvist, Hannu Maula, Raffaele Mauro, Liz Mills, Nolberto Munier, Jo Pattinson, Paolo Pileri, Paulo Pinho, Marco Ponti, Paola Pucci, Rachele Radaelli, Michiel Rijsberman, Damiano Rossi, Adalgisa Rubino, Christine Ruelle, Francesco Sartori, Mojca Šašek-Divjak, Marjana Šijanec Zavrl, Margaret Sutherland, Jacques Teller, Michela Tiboni, Marian Tracz, Maria Cristina Treu, Chris Tweed, Anke Valentin, Alessandro Vignozzi, Maria Rosa Vittadini, Nikki Weaver, Bruno Zanon, Roko Žarnič, Alberto Ziparo.

€ 15,00

ISBN 88-85114-80-6