

RETHINKING THE RAILWAY STATION AREA

Research by design in architecture and urban space

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ABSTRACT

Railway stations and their urban surroundings are undergoing a 'renaissance' for some years now. The movement towards rethinking and renewing these places in cities is based on concerns with sustainability on economical, social and environmental dimensions. In Europe, a great boost to it was given by the High Speed Train (HST) Network implementation. Many projects have been and are being developed. Some of them embrace greater areas than the building itself, transforming both on a requalification effort. To understand how architectural design can improve the performances of these spaces in different cultural and physical contexts, two cities in Europe, Amsterdam in the North and Lisbon in the South, were chosen as case studies. The study was conducted with students at the graduation studio 'Hybrid buildings' at the Architecture Faculty of Delft University of Technology, using 'design research' and 'research by design' as research methods. Results show that design should focus on solving two spatial issues: 'barrier effect' and 'functional mix layout', as these issues seem to be quite relevant for the success of the station building and its surroundings.

KEYWORDS

Railway station, urban area, design research, research by design, barrier effect, functional mix layout, hybrid space

1. INTRODUCTION

In the last few years many (re)development projects and building works were and are "on track" at railway stations and their surrounding urban areas in Europe, dealing with great challenges but also with many opportunities. On one hand, there is the need to address accumulated problems through time and to update these spaces to the new requirements created by the evolution of social, economic, environmental paradigms and technologies. Because the built environment hardly changes at the same pace as societies do, for technical, economical and even political reasons, stations have become often inadequate for mobility, marginal to urban fabric, unattractive, and economical and environmental burdens at several scales. On the other hand, the (re)development of these spaces can address: 'sprawl' and 'car-dependent' urbanization patterns; the freed space in inner city locations (by railway or industrial facilities that became obsolete or relocated outside cities); the market oriented view of transport related companies (many privatized and divided into several companies managing the different branches of activity, namely real-estate); and the quest of cities for a competitive position as places to live, work and consume [Bertolini98, Berg98, Pol02, Peek06]. And to do so, the station buildings as well as their urban surroundings must be rethought, balancing their roles as infrastructural nodes and places in the city.

The implementation of the Trans-European HST Network is one catalyst to the rethinking and restructuring of railway stations and their urban surroundings at inner cities. The arrival of HST is seen as an opportunity to strengthen local economies; for urban and social restructuring; for the improvement of the image of the inner-city and the urban region; and for the proclaimed environmental benefits. Thus, the synergies involved in station area (re)development projects related with the HST in inner cities in Europe, gives them the potential to transform the spaces of stations and of their surroundings into lively sustainable ones.

However, the results of the qualification efforts of station areas' (re)development projects do not always match the intentions mentioned above. The weight of financial driven decisions in these projects tends to overlap social and environmental concerns. Even if balanced solutions on the three sustainability dimensions are stated by the projects, and together they can boost even greater economical benefits [Conceição09]. Also, the interdisciplinary character of the planning of these projects, which could contribute to the development of better spaces, seems instead to be relegating architecture to a marginal role on station areas' design.

Therefore, it is relevant to understand what innovative solutions designers can offer to these spaces. The question is thus, how a contemporary railway station area on an urban scenario can be designed on a balanced way, so that the potential of its opportunities is grabbed and its problems are diminished.

2. METHOD

This study, which aimed to contribute to the rethinking of the railway station on an urban scenario through the research of new design approaches, was carried out within the graduation studio '*Hybrid buildings*' at the Architecture Faculty of Delft University of Technology. Students were invited to answer the research question using two research methods, sequentially in two stages: '*design research*' and '*research by design*' [Duin98, Aken04, Duin08], as described bellow.

2.1. Design Research - Analysis

On the first research stage, several HST European projects were studied in order to learn from them what and how is addressed in such operations. Students were divided into five groups, which studied one case each. Their problems, opportunities and proposed solutions, from urban level to building level, were analyzed. The chosen cases were the stations of: Breda Centraal in Breda, the Netherlands; Gare do Oriente in Lisbon, Portugal; Torino Porta-Susa in Turin, Italy; and Stuttgart Hbf and Berlin Hbf in Germany. These projects were selected because they present several innovative design solutions for the integration of the building with its urban surroundings. And they are through stations, the type of the majority of European HST cases within an urban context, to which this study was limited.

To complete the learning on the design solutions of the above mentioned projects and prepare the next stage of the research, other actions were carried out. Meetings and lectures with experts and authorities were attended. Data on the two locations proposed for the second stage of the work, was also gathered and analyzed. These two sites were visited and subjected to morphological, infrastructural, social and economic analysis. The results from these analyses together with inputs from experts and authorities delivered the material for the development, critic and improvement of design guidelines in the second stage of work.

2.2. Research by Design - Design

On the second research stage, having systematized the results obtained on the first research phase, students went on individually on the '*research by design*'. As described by L. van Duin, '*research by design*' is a method to characterize design as a scientific activity. "In general, three criteria apply to design as a scientific activity: the design should provide a solution for a class of problems, the modes of thought and rules used in the process must be documented and the design must generate new knowledge or alternate skills, or demonstrate how existing knowledge and skills have been used to generate a new and unique design" [Duin08].

On this stage each student developed a design proposal for one of the two studied locations: Entrecampos in Lisbon, and Zuidas in Amsterdam. Both sites didn't have projects for a HST station building, even if in the case of Amsterdam this is the chosen location for it. This absence of projects was considered beneficial for the study, as their existence could limit the students design options. Also, this choice introduces different cultural and physical contexts to the design task, in order to explore if and how they influence it.

Through the design, firstly of a Masterplan and later of a station building, students further investigated innovative spatial solutions for station areas. This was done on the basis of the learning done on the previous stage of research, by testing and improving it.

3. RESULTS

The conducted research led to the results described bellow.

3.1. Analysis – Reference Cases

In the analysis of the projects of Breda Centraal, Gare do Oriente, Torino Porta-Susa, Stuttgart Hbf and Berlin Hbf, two spatial issues emerged as relevant for the success of the station building and its surroundings. There is a great focus of these projects on solving the 'barrier effect', created by the transport provision onto the urban space; and on offering a 'functional mix layout' able to support a lively environment in the building spaces, complementary to that of the city and not in competition with it.

Spatial solutions to respond to these aims vary among cases, but some tendencies are observable. Regarding the 'barrier effect', these projects either bury the rail infrastructure or elevate it to a level higher than that of the street. Regarding the 'functional mix layout', many different uses are added to the transport offer, and their spatial organization presents urban characteristics. The classical are the shopping areas, but there are also offices, services and even housing within the station building, as in Breda.

3.2. Design – Lisbon / Amsterdam

The study focused on the search for spatial solutions which could provide solutions for the 'barrier effect' and the 'functional mix layout' problems. Again, the burying of rail infrastructure was the most chosen for option. It is argued that in this way it is easier to integrate the station building in the city. This solution was advocated for both sites. Even if in some cases there is an attempt to maintain a strong (visual) connection to the rail [Buurman10, Macedo Juca10], and in others the rail is completely secluded from any relation with the city [Cheung10, Plugge10]. Opposite to this, is the choice to place the rail infrastructure higher above street level [Bouma11, Vugrinec11]. This option arguably promotes the relation of passengers with the city, contrary to the bury solution. But it increases the problems of access between street and platform.

Regarding the 'functional mix layout' the proposals widened from the shopping, office, services and housing provision to entertainment facilities such as theaters and cinemas, University facilities, conference centers, green corridors, etc. Urban like layouts, within the station building, organized these uses in space.

4. CONCLUSIONS

The different cultural and physical contexts of the projects' locations do play a role on the way planning processes are conducted. However, their influence is more limited on the found spatial solutions. The latter tend to have common features among the cases, independently of their contexts.

There is a general tendency to fuse the station building with its urban surrounding area. The station building is becoming a hybrid with the urban space. Formerly, station buildings and city were clearly separated entities. The frontier between the two is not so obvious anymore when projects aim at integration between them. The station is no longer a conventional building, but also it is not transformed into a conventional urban space. Both the elimination of the 'barrier effect' and the 'functional mix' variety and layout contribute to this "fusion" and by it, to the creation of a new hybrid space. But this can also generate new problems. By gaining urban features, the station building is in some cases becoming a little city within the city, which can drain out the latter instead of creating bonds with it.

5. ACKNOWLEDGEMENTS

The author thanks her PhD supervisors for making it possible to conduct this study within a graduation studio environment, the teacher with whom she held the studio, all the experts and authorities who granted the study their knowledge and time, the students' work and interest on it, and the Portuguese Foundation for Science and Technology (FCT) for its sponsorship.

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