

Concepts for Revitalization and Development of the São José do Vale do Rio Preto Municipality, Rio de Janeiro State, Brazil

Research and Workshop Results of the ALFA-AURORA Network



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Project „AURORA – Architectural and Urban Research of Regional Agglomerations“ 2005 - 2007

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FOREWORDS

Dr. Karlheinz Borchert
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Mostly all Mega-Cities have been facing a variety of tremendous growth problems leading to a vital need for appropriate measures for a human, environmentally-friendly and sustainable urban development. This relates to establish efficient and citizens-based urban planning strategies as well as to urban architecture, infrastructure concepts and design. The revitalization and increase of life quality of cities and growing suburban villages, the improvement of basic infrastructure and housing, and a socially and economically balanced urban planning are among the cornerstones of sustainable urbanism.

From 2004, a group of seven universities with outstanding expertise in urban architecture, engineering and planning took initiative to create a powerful competence network working in this field, particularly with regard to the metropolitan

situation in the Latin Americans and Europe: UFRJ Rio de Janeiro/ Brasil, PUCS Santiago de Chile, CUJAE La Habana/ Cuba on the American side, UPM Milano/ Italy, UA Alicante/ Spain, HVA Amsterdam/ Netherlands and TFH Berlin/ Germany on the European side took the venture to establish the so-called AURORA group which stands for “Architectural and Urban Research of Regional Agglomerations”. The AURORA network creates an innovative and interdisciplinary approach for architecture and sustainable urban planning and development, establishes an active and powerful European-Latin American university network for research, training and transfer of expertise, establishes an effective multilateral collaboration, integration and joint activities among the partners, and runs successful joint training and research activities and mobility of students and staff.

From 2005 to 2007 AURORA – coordinated by TFH Berlin – has been enjoying a substantial grant under the EU-ALFA program to enable a concentrated and effective work on all these targets and makes us proud to put all important activity lines into practice and achieve valuable results.

Among the highlights of the joint AURORA research and training strategy is the holding of an annual workshop-conference in Rio de Janeiro (2005), Santiago de Chile (2006) and La Habana (2007). These events focus on the most important dimensions for a sustainable urban development, in each case, of course, taking into account the special regional circumstances, approaches under investigation and particular urban needs requested.

Respectively, this publication concerns the concepts, objectives and results of the project work in Brazil focusing on vital sustainable development issues for São José do Vale do Rio Preto, a smaller but fast growing village in the agglomeration area of the Brazilian Metropolis of Rio de Janeiro. This work builds on the basic understanding that the key problems of this kind of Mega-Cities like Rio can only be solved by stabilizing, carefully planning the development and increasing attraction of the surrounding suburban communities. Addressing the most important needs of the São José municipality for professional experience and expertise in areas like modern planning procedures, information tools, concepts for low cost housing, urban

infrastructure or environmental protection, the project work and its results were presented and summarized in the annual AURORA workshop-seminar held at the UFRJ of Rio de Janeiro in November 2006.

Besides, the practical implementation and dissemination to the municipalities and its actors is a still ongoing process. The publication should also contribute to the dissemination beyond the scope of the AURORA group, to have an impact on the conceptual solutions by municipal professionals and to motivate them being involved in the discussions. More details of activities and results are available from the AURORA website "<http://www.alfa-aurora.net>" and we like to invite academic and professional specialists to the fruitful development and spread of our concepts and results.

INTRODUCTION

Dr.-Ing Camilo Michalka Jr. UFRJ

The Alfa Aurora Workshop in Rio de Janeiro focused on the issues of sustainable urban development of the Rio de Janeiro Metropolitan Area. Rio suffers under the fast growing migration from rural areas into city, and the lack of a complex social housing program to manage the highly needed residential space for the new inhabitants.

In the opinion of the ALFA experts of the UFRJ a possible solution for this critical urban situation can be found by substantially improving the urban development of the smaller municipalities around the metropolitan areas as their lacking attraction and sustainability is one of the main reasons for the stream of immigration into the Mega-Cities as is – for example - the case for São José do Vale do Rio Preto (SJVRP) located closely in the Rio de Janeiro State.

As a challenge for the smaller cities they urgently need to develop sustainable urban concepts as an answer to the huge pressure on immigration into the Mega-Cities, in order to stabilize integration of the community and the countryside and so reduce the downtown migration.

It is important to consider that the smaller cities of Brazil, e.g. São José do Vale do Rio Preto in the state of Rio de Janeiro, still have a good opportunity to create a sustainable development and growth of their municipality. The development of cities like SJVRP can still be influenced, its small scale still allows for implementation of a well-defined structure of urban planning. This focus can contribute to solve the problems of an accelerating and uncontrolled agglomeration of inhabitants producing tremendous areas of informal settlements as can be seen across the whole Rio Metropolitan Area.

Most of the Brazilian and international efforts to give solutions for Metropolitan Areas deal with the most important and visible urban problems located inside the boundaries of the agglomerations which can be identified as the final result of an uncontrolled development.

However, as stated above, the AURORA project partners decided to work in a new perspective and treat the Metropolitan problems by considering the most important reasons of these inner city problems which are due to the uncontrolled and continuous immigration into town.

For this propose, the Rio de Janeiro workshop concept has been defined to work with smaller communities, taking the municipality of São José do Vale do Rio Preto as an “urban laboratory” case study rather than Rio City Centre itself.

Four major priority action lines have been defined:

- urban planning;
- social (low cost) housing;
- infrastructure;
- regional development.

All these projects have been discussed in the workshop sessions at UFRJ as well as during a public seminar addressing representatives of the municipality, private actors and inhabitants of the village.

It was the intention of UFRJ, first, to give the international participants a better understanding of the reality in smaller Brazilian urban communities as SJVRP. Second, the presentations of the international AURORA partners should help the SJVRP community to identify and apply new possible approaches and perspectives.

Above all, it was the overall task to show new ideas and concepts to the municipality to enable them adopting an improved strategy for sustainable development and establishing a well-adapted urban planning structure in their village.

MEGA-CITIES:

**WHY they exist and
HOW they develop?**

Dr.-Ing Camilo Michalka Jr. UFRJ

As an introduction into the problematic and approach to investigate mega-cities, two questions should be raised at the beginning: Why do mega-cities exist, even in countries with a smaller density of population measured in number of inhabitants per square kilometre? And how are extremely concentrated mega-cities created?

Here the focus lies with the situation of Brazil but the results of analyses and investigation can be easily transferred to other developing countries as well.

The ALFA-AURORA project provides the background frame for this approach. During the Rio de Janeiro workshop of this project it was the idea to hold the seminars not only at UFRJ in Rio

but also to organise events in a small municipality so the network members could get a much better view and understanding of the very big differences of small and big communities of Brazil. The aim was to make the AURORA experts aware of what happens to most of the people who move from the small communities to a mega-city agglomeration, often motivated by improving their life-quality.

The small city chosen as urban laboratory for the AURORA workshop is São José de Vale do Rio Preto (SJVRP), located about 110 km north of the City Rio de Janeiro. The Universidade Federal do Rio de Janeiro has already been working with the local authorities since the year 2000, collaborating in many SJVRP-projects with the AURORA project co-ordinator TFH - University of Applied Sciences Berlin.

São José do Vale do Rio Preto is located in the state of Rio de Janeiro. The following first picture shows a map of the 26 states of Brazil.

Geographical and Political Context of Brazil

Brazil covers 8.500.00 km² with an overall population of 169.800.000 people living in 5.560 communities. This comes up to a 19,9 hab/km² so there is – at least theoretically – left a lot of open space for each individual.

Of course, the Brazilian people are not distributed equally across the whole country – not even in regions with similar geographical characteristics. The next tables show the spatial distribution of the population in urban and rural areas of all 26 States of Brazil, the Government District (in percentage) as well as the number of municipalities of each state.

Since 1950 the urban population of Brazil strongly increased. While in 1950 yet only 36% of the inhabitants were living in an urban area, it was already 81% in 2000. The table below shows the development of the comparable distribution of inhabitants living in urban as well as rural areas from 1950 to 2000.

However, it is not only this migration of people towards the cities that determines the enormous growth. The development started with migration into the capitals of the States which, as a consequence, became

metropolitan areas – the so called mega-cities. The table further below lists the most important metropolitan areas of Brazil and their population.

Today, there are 5.560 communities to be found in Brazil. In comparison to the metropolis the number of inhabitants of smaller communities varies a lot. The picture below shows the amount and size of these communities in relation to the number of citizens. Only 0.2% of the cities are mega-cities whereas 79% of the villages still don't have more than 25.000 inhabitants.

Distribution of the Population in the states of Brazil

State	Urban Population	Rural Population	Number of Municipalities
Acre	65,20	34,80	22
Alagoas	63,11	36,89	101
Amapá	87,12	12,88	16
Amazonas	73,92	26,08	62
Bahia	62,41	37,59	415
Ceará	69,21	37,59	184
Distrito Federal	92,88	7,12	1
Espírito Santo	77,64	22,36	77
Goiás	85,78	14,22	242
Maranhão	51,92	48,08	217
Mato Grosso	75,84	24,16	126
Mato Grosso do Sul	83,22	16,78	77
Minas Gerais	78,42	21,58	853
Pará	53,51	46,49	143
Paraíba	68,43	31,57	223
Paraná	77,88	22,12	399
Pernambuco	74,02	25,98	185
Piauí	58,21	41,79	221
Rio de Janeiro	95,43	4,47	91
Rio Grande do Norte	72,05	27,95	166
Rio Grande do Sul	78,87	21,13	467
Rondônia	61,93	38,07	52
Roraima	70,52	29,48	15
Santa Catarina	73,13	26,87	293
São Paulo	93,10	6,90	645
Sergipe	70,22	29,78	75
Tocantins	70,66	21,64	139
Brasil	78,36	21,64	5507
Fonte: IBGE			

Population of							
Brazil							
Total	2000	1996	1991	1980	1970	1960	1950
Urban	137.953.959	123.076.831	110.990.990	80.437.327	52.097.260	32.004.817	18.782.891
Rural	31.845.211	33.993.332	35.834.485	38.573.725	41.037.586	38.987.526	33.161.506
Percentual							
Urban	81,25	78,36	75,59	67,59	55,94	45,08	36,16
Rural	18,75	21,64	24,41	32,41	44,06	54,92	63,84

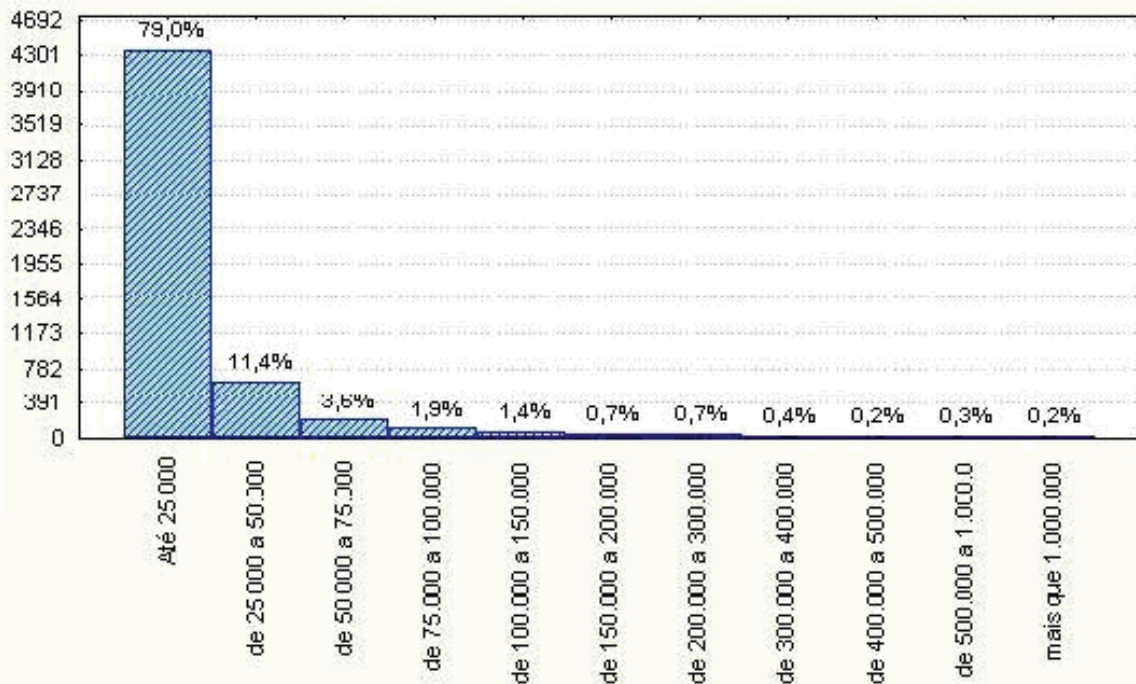
Fonte: Censo Demográfico

Evolution of the population in urban areas

Metropolis	Population / 98 - 1000
São Paulo	17.054.900
Rio de Janeiro	12.270.100
Belo Horizonte	3.957.700
Porto Alegre	3.337.500
Recife	3.157.100
Salvador	2.797.600
Curitiba	2.584.900
Fortaleza	2.699.500
Belém	1.550.000
Total Áreas Metropolitanas	47.485.200
Total Brasil	161.340.000

Population of the metropolitan areas

Number of Communities



Distribution of the population in the Brazilian communities

FOCUS OF THE ALFA-AURORA WORKSHOP IN RIO DE JANEIRO

Camilo Michalka Jr., UFRJ

After this brief introduction, the most important question is: which circumstances led to the actual unequal and critical situation of growing mega-cities and declining rural communities?

As was said before, the Universidade Federal do Rio de Janeiro, together with TFH Berlin - University of Applied Sciences, have been working continually with the municipality of São José do Vale do Rio Preto, in the State of Rio de Janeiro.

This work assumes that there are similar urban sustainability problems in other small communities, too, compared to those analyzed in the São José do Vale do Rio Preto municipality and considered to be key elements for changing and counteracting the present development. The most important difficulties are as follows:

The small communities:

- don't have the support of a skilled technical team in their administrations
- have difficulties in accessing the needed information
- have, as a consequence, difficulties in making the best decision, because they neither possess the information nor the staff to analyze and solve the problems

While facing this kind of problems, it is difficult for the small communities to plan the economic and social growth of their municipality. However, a professional urban development plan is an absolute necessary "must" in order to create new (qualified) job opportunities and attractive conditions for a good lifestyle and quality. Without such a plan on the long run young people don't enjoy sufficient opportunities to stay and make a living in their hometowns but are forced to migrate to the big metropolitan areas looking for jobs and a better future.

Without any doubt the problems of the Mega-cities won't be solved unless the smaller urban dwellings don't find solutions for their own people. Of course, all mega-cities try to improve the situation as well but if there are no jobs in the

small cities while the big cities do provide – no matter how bad the payment and the habitation conditions are – more and more people will continue to migrate into the big cities. The challenge of improving and re-habilitate the big urban agglomerations will be an endless story where the targets of a better urban life will never be achieved.

The ALFA-AURORA workshop on sustainable urban development in Rio de Janeiro focused on research and projects needed in the small communities having selected the community of São José do Vale do Rio Preto as the “urban laboratory” for testing and realizing the conceptual work. The universities (UFRJ, TFHB) and the community have experience in working together since 2000 and know how to benefit from each other. The community needs consulting and the Universities need to adopt an appropriate way of providing the necessary information and disseminating expert knowledge from the academic to the practical world so the expertise can be easily understood and applied also by less educated technical and administrative staff.

The Community of São José do Vale do Rio Preto

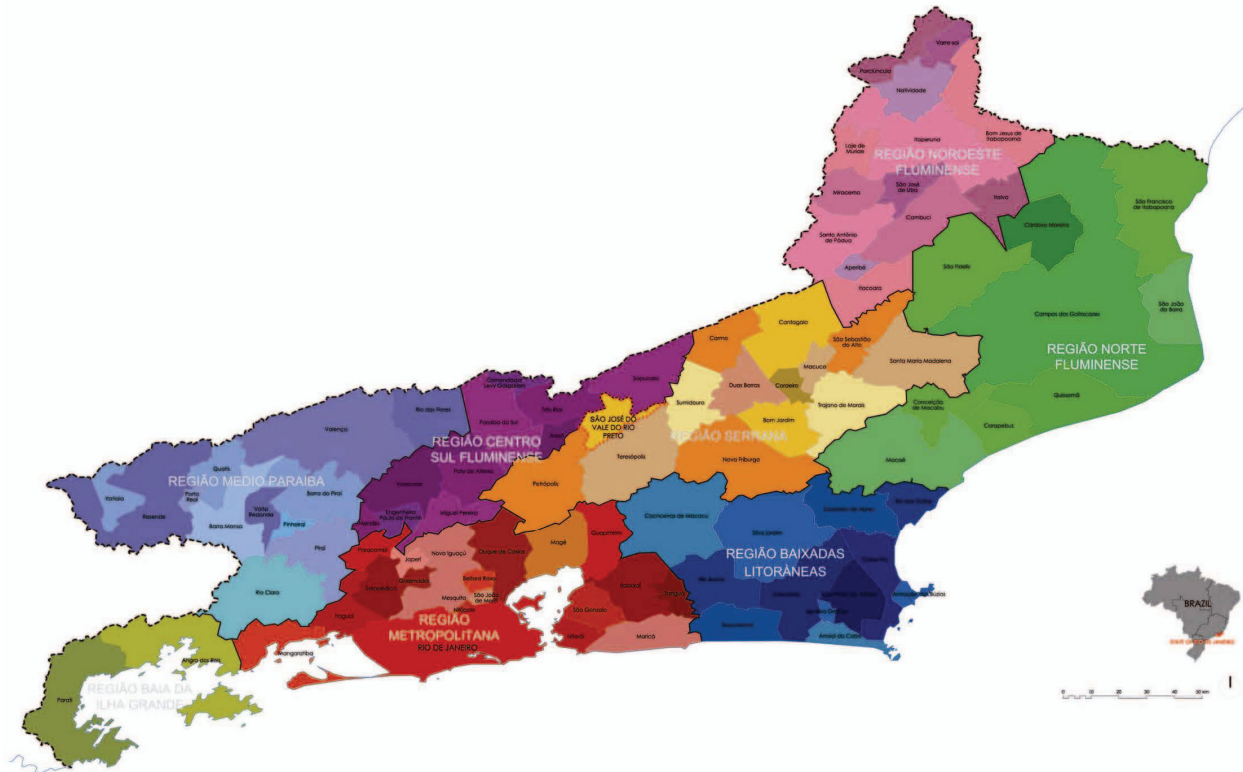
São José do Vale do Rio Preto is located in the state of Rio de Janeiro and in former time used to be part of the municipality of Petrópolis. In 1989 it became independent.

The state of Rio de Janeiro covers 43.700.000 km² with a population of 15.380.000 inhabitants, counted in 2005. 95% of the people are living in urban areas. The map below shows the location of the State of Rio de Janeiro.



Location of the state Rio de Janeiro

The state of Rio de Janeiro consists of 92 communities as shown in the political division map in the figure.

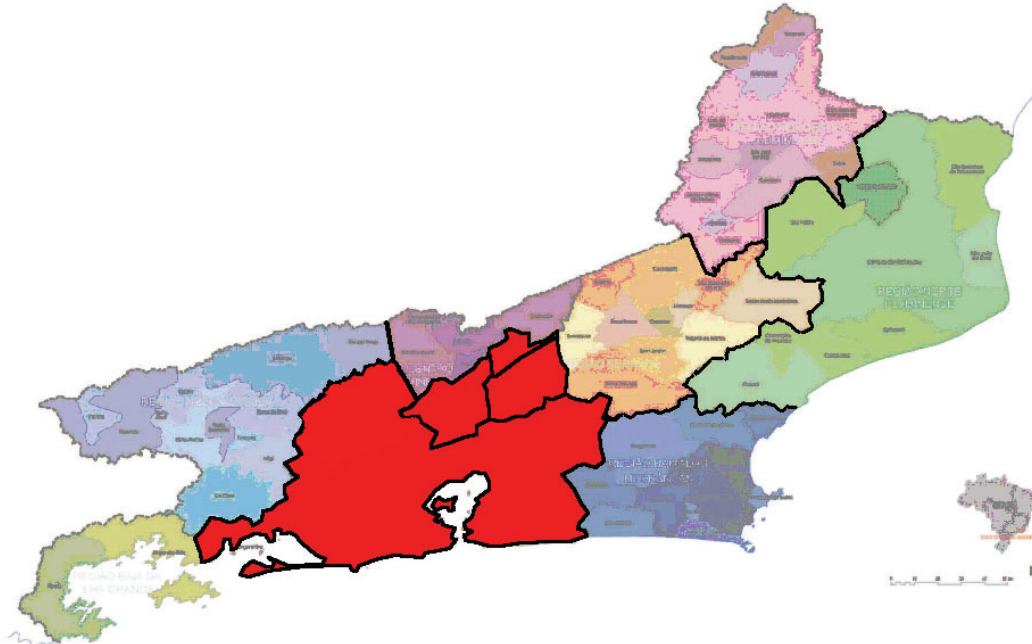


Political division of the state Rio de Janeiro – 92 communities

Rio de Janeiro state is divided in 6 *medium regions* (Mesoregiões) as is shown in the figure.

The Metropolitan macro region of Rio de Janeiro (figure) is one out of six medium regions of the

state of Rio de Janeiro. It is further divided in 5 micro regions: Itaguaí, Macacu-Caceribe, Rio de Janeiro, Serrana and Vassouras.



Mesoregions of the state Rio de Janeiro



São José do Vale do Rio Preto downtown

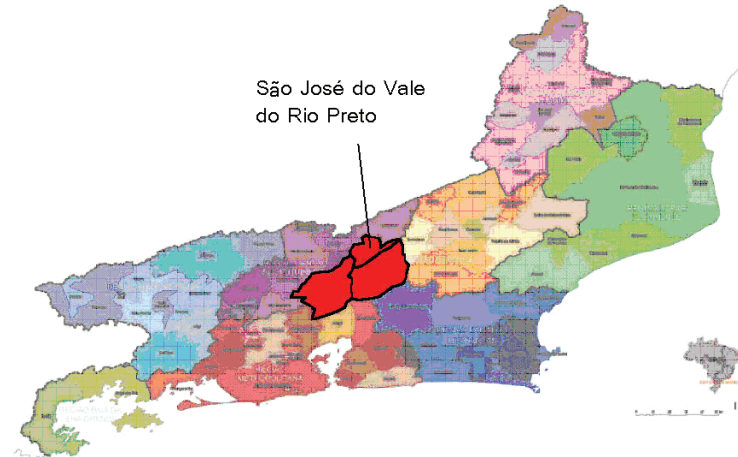
São José do Vale do Rio Preto is located in the micro region Serrana (Mountain Region) marked red in the map. This area is well known for its mild climate and the beauty of its landscape, reaching from the mountains of

the Natural Park Serra dos Orgãos to the remaining parts of the Mata Atlântica.



Main square of the city with church

Microregion Serrana



The map on the right shows the localization of São José do Vale do Rio Preto in the State of Rio de Janeiro as well as the neighboring states São Paulo (capital São Paulo), Minas Gerais (capital Belo Horizonte) and Espírito Santo (capital Vitória). The distance to the city of Rio de Janeiro is 110 km or a 2 hours car drive. SJVRP can be accessed over the Federal Road BR 040 on the way from Rio de Janeiro to Belo Horizonte. Another option is Federal Road BR116 from Rio de Janeiro leading northeast through the country. Other main cities in reach to SJVRP are Belo Horizonte (370km) and São Paulo (530km).

A Short Introduction to São José do Vale do Rio Preto

São José de Vale do Rio Preto is spread out over more than 20 km alongside the beds of the river Rio Preto, covering an acre of 250 km². On an average height of 600 m above sea level, it is surrounded by several mountain ranges. The southern peaks top up to 1450 m, the northern summits reach 950 m. São José is split into several smaller sub-communities which form the urban village with a total of 20.000 inhabitants.



São José do Vale do Rio Preto in the context of the neighbor states

- The River

The Rio Preto (“Black River”) gains its name from the black stones covering the river bed which is only 1 to 3 metres deep. It flows from the municipal of Friburgo in the East to the Rio Paraíba in the West which leads into the sea at São João da Barra. The Rio Preto is the characterizing natural wealth of São José, however, unfortunately today its waters are heavily polluted.

When arriving in São José the waters are already polluted due to the direct und unfiltered pouring of sewage from the city of Teresópolis. Neither of the cities located along the river provide a water cleaning system



- Water supply

The city gains its fresh water basically from two main springs: Maravilha tank (60 m³, daily production of 500 000 litres), and Glória (180 m³, daily production of 115.000 litres). This covers the demand of nearly 70% of the local population. All distributed water is chlorinated

Besides, there are dozens of smaller gains constructed by the inhabitants alongside the small rivers for the water supply of their homes. In the communities of Barrinha, Pedras Brancas and Contendas, three bigger wells have been built each supplying about 500 inhabitants.

- Population and economy

There is no visible misery for the São José population: no beggars or homeless can be seen in the streets but anyway poverty does exist.

The poorest part of São José is the quarter of Pedras Brancas. Recently there is a range of programs in order to improve the situation.

Between 1991 and 2000 the city's average growth rate was 2.5 % per year the majority of the population being 20 to 49 years old.

In 1950 São José de Vale do Rio Preto was considered the biggest agriculture centre in South America based on poultry farming. As a side effect, São José produced tons of natural fertilisers – a contribution to the vegetable production of the following years. Until today São José has the biggest poultry farmer concentration in Brazil.

Its agriculture is also important for the city of Rio de Janeiro. To a large extent the production of São José do Vale do Rio Preto goes there, i.e. the municipality becomes economically highly dependent on the city of Rio de Janeiro.



TEAM WORK OF UFRJ, TFH BERLIN AND THE CITY OF SÃO JOSÉ DO VALE DO RIO PRETO

The joint collaboration of the Universidade Federal do Rio de Janeiro and the city of São José do Vale do Rio Preto is the result of a long track-record of team work of UFRJ with TFH Berlin.

The first steps were made in 1999 when a group of TFH Berlin took part in a project in order to help developing small Brazilian cities. In 2000 the Escola Politécnica, a faculty of the UFRJ, invited professors of TFH Berlin to attend a conference in Rio intending to create the team group doing joint research and initiate projects to develop the environment in the small communities. Since then the two universities have been realizing successfully many interesting projects.

An important part of these project activities is the exchange of students, staff and professionals where a number of German students had the opportunity to live and work in São José do Vale do Rio Preto and contribute substantially to the projects.

As mentioned above, small communities are dealing with big difficulties in order to access basic knowledge backing the vital economic, social and environmental decisions of the municipality relating the urban development. The participation of students offered a good opportunity of information transfer provided for the community in a simple comprehensive way: On the other hand, during their stay the students learned about the “everyday problems” of the municipal practice, how to solve problems and develop plans for economic, social and environmental growth. Moreover, universities and students know better about the reality conditions for decision processes in the small cities.

Many decisions made by the community since the associated working have started, have been influenced by students as well as by meetings with professors from the UFRJ and visits of professors and experts from TFH Berlin in São José do Vale do Rio Preto. Since 2002 regular conference and workshop events have been realized between the university and municipality partners.

As an example, two initiatives were chosen from the long list of successful project work results

which have become implemented in the SJVRP municipality.

The first example concerns the concept of a sewage system developed and designed by a TFH student. Based on this concept at hand, the municipality was able to raise more funds for a pilot scheme to realize part of the sewage net. Furthermore, the convincing results enabled the community to get even more resources for the implementation of sewage systems in the urban center as well.

The second example is an architecture project for public urban housing of the executive, legislative and judicative powers. Taking into account that the young community only exists since 1989, it is not surprising that the three powers are not yet properly and efficiently accommodated. The community has launched research work leading to the result that it was better to construct such a new building - being aware of the fact that they can easily provide the necessary space for this project. In the first instance it was planned to construct only the public buildings. Then students made further suggestions to improve the concept. As a result the present concept is to build a complete new quarter covering the needs of a range of different functions such as public housing, trade and habitations.



Aerial view of São José do Vale do Rio Preto downtown and surroundings

One of the most important objectives of the joint collaboration of UFRJ, São José do Vale do Rio Preto and TFH Berlin was to develop a concept on urban sustainability. Especially here the associations of universities and the community have been of utmost importance. The universities provided international expertise and considerations for the community. On the other hand the universities learned a lot about the most common problems of a small community and their difficulties to find appropriate solutions in terms of social, political and economical questions.

Usually the small communities do not have sufficient resources and a clear understanding of how to succeed in tenders of public institutions and foundations. Therefore, a convincing development concept, for example, concepts for education, sanitation, health etc. are required. They are also lacking basic pre-requisites for running these projects successfully themselves. Therefore, consulting by universities is essential for the communities. Normally there is a range of public universities available in each state. For them it is much easier to work with the public administrations because being themselves financed by public resources.



“Morro Redondo”, the area where the new quarter will be erected

CONTRIBUTIONS OF THE ALFA – AURORA PARTICIPANTS TO THE OBJECTIVES OF THE RIO DE JANEIRO WORKSHOP

The aim of ALFA-AURORA research on São José do Vale do Rio Preto topics is to provide various project strategies for its sustainable development. This will contribute to give useful background for regional planning in areas surrounding mega-cities.

The topics correspond to the special problems and requests of the municipality which have been worked out by the university partners and presented to the community public on the seminar held in the city.

1) Approaches and Contributions of the ALFA – AURORA Project¹

Claudio Pavesi

This fieldwork was conducted together with the students Ilaria Baccocchi, Federico Cazzaniga,

¹ Excerpt from: “Project Proposals for New Housing and Urban Renewal in São José do Vale do Rio Preto”

Valeria Lenner (Politecnico di Milano) and José Antonio Martín Moreno (Universidad de Alicante) and has highlighted some practical information and a practical approach of the corresponding topics, to be used by and from the ALFA-AURORA partners. A resume is presented here. More details are available from the AURORA website "<http://www.alfa-aurora.net>".

- Urban revitalization and social housing in the quarter “Pedras Brancas”

Pedras Brancas is the quarter where the poorest people of São José do Vale do Rio Preto live under relatively bad conditions.

Some years ago the administration of São José started to supply existing houses with water. In 2002 the administration and government of the State of Rio de Janeiro started to work out solutions for the habitation problems of this area. As a result, 50 social houses were established for those people who were already living there under most difficult conditions. These houses are rather small (21 m²), however, the original project made prevision for a possible addition of room and space. Until now, unfortunately only five owners were economically able to do that.

Besides, in Pedras Brancas are also 100 to 150 other houses which do have at least electricity and running potable water. The municipality knows well about the most difficult social and sanitary problems of this quarter.



Social Housing – two units

- A second concept of social housing

The most common concepts for social housing projects are for one floor houses. There are, too, some projects of more-floors houses which is normal for big cities short of enough free grounds for large, space-consuming constructions.

In São José do Vale do Rio Preto, there is an initiative to construct social housing with three floors and four apartments on each floor. The motivation for this decision is due to two reasons:

- the geographic configuration of a mountain topography does not leave to much free space,
- the administration does not want to create ghettos so that it is planned to construct these buildings in many quarters.

- Downtown revitalization and embellishment

The most important street of São José do Vale do Rio Preto is located aside the river. Here you can find the most intensive traffic flow of the city.

The old downtown of São José do Vale do Rio Preto is an historical quarter of the community which is necessary and worth to conserve, revitalize and improve. It is, in particular, problematic that the main road leads straight through the old urban center so one of the mayor challenges is to get the traffic out of downtown. Without the hitherto big traffic flows and congestions, it will become much easier to design an effective urban plan for revitalization and embellishment of the downtown area to become an attractive place for citizens and for tourists.



- A new urban centre

The community independence was awarded at the end of the 1980s. Since then it has become necessary to provide appropriate public buildings for the executive, legislative and juridical powers.

To meet these ends, the community has been looking for a suitable geographical location, focusing on the central round mountain, the so-called “Morro Redondo”.

2) Social Housing and Urbanization of the Quarter Pedras Brancas in São José do Vale do Rio Preto²

Friso ten Holt March, Menno Trautwein
Arnold Blankenstijn, Martijn Blom

Introduction

During the first phase of the project it was done a lot of research in São José do Vale do Rio Preto in general. This has led to a well founded decision for the project location: Pedras Brancas.

In phase two, the focus of research and investigations laid on Pedras Brancas where the project group developed an urban vision which can be used as a basis for future developments in the neighborhood. Within this vision they determined a specific location to design 20 to 30 new social houses for poor people “on a slope”. Preparing the next phase of realization, some first

² Extract from: “Social Housing on Slopes - São José do Vale do Rio Preto – Brazil”, Phase 2 and Phase 3

sketches for possible, universal building structures on slopes have been designed.

Physical situation

The neighborhood is situated 1.5 km from the old downtown (Bairro Matriz) and lays 150 higher. As a matter of fact, the neighborhood is physically isolated.

It has a lot of agricultural ground. The main road through Pedras Brancas is a very quiet road that runs from *Bairro Matriz* (the town center) to the small neighborhood *São Lourenço*. About half of the houses are located along this road, half of them on the hills around the road.

Pedras Brancas has about 175 residences which differ in size and quality. There are also some decent houses but most of them are rather small and simple, and the average occupancy is about 4.6 persons per house. Although most of the houses are built on slopes and are quite simple, there are no dangerous constructive situations.

The residences on the steep slope behind the main street are accessible by narrow sandy paths; the main road and the roads to the social houses

are paved and in good condition. Some houses have a little yard where to grow fruits and vegetables. Most of the residences have conveniences like a refrigerator, a radio and a television.



Aerial view of Pedras Brancas

Social economic situation

The largest source of employment is agriculture. Some inhabitants of Pedras Brancas attend the *Programa da intergração das famílias* (PIAF), this is a program where people can learn a handicraft.

Almost all children attend a school. Most of them finish primary school, a part of them continue with secondary school and only a few attend higher levels of education.

For primary school, children have to go to São Lourenço; for secondary school they have to go to downtown.

Pedras Brancas has a few facilities: a little shop, two little bars, five churches, a sports field and an informal bakery. Most neighborhoods have a little medical center, Pedras Brancas, however, does not have this because it is too small for more neighborhood facilities.

A great disadvantage of Pedras Brancas is that there is 'not much to do'. Since a couple of months 50 children from Pedras Brancas are one day a week entertained with games and sports.

The inhabitants of Pedras Brancas are only organized by their churches. In the beginning of 2006 the municipality has adopted incentives for

the creation of a '*Conselho*' (group of volunteers who represent de population).

Pedras Brancas is known as a 'problem neighborhood'. Twenty percent of the elder men, but also some of 20-25 years of age have an alcohol problem. Other 'problems', especially with the youth, can be blamed on the lack of social and cultural stimulus, shortage of activities in the neighborhood and of future prospective.

Because the inhabitants of Pedras Brancas are used to their poor life and do not have another frame of reference, they have not got any progressive future prospective. Some people live totally 'by the day'.

Used building methods and costs

The people build their own houses. The used building methods are: houses made of a wooden frame stuffed with wet earth (pau a pique) and houses with walls of terracotta building stones and roofs with tiles or sheets of corrugated iron and houses with a concrete skeleton, filled up with terracotta building stones The used ways for preparing the parcel for building are: making a terrace by removing the soil, making a terrace by cutting a free space out of the hill or making a concrete terrace floor on columns. Some of the

terraces are stabilized by a wall of concrete building stones.



The estimates of the building costs are usually made with the help of an index system made by a company of the government of the state of Rio de Janeiro. Within this system materials, labor and taxes are already included. The indicative costs for a simple house (social housing) are R\$ 400,00/m² and for a larger house (also social housing) R\$ 450,00/m². The costs for the proposal made here are much higher than the indicative costs (R\$ 725,00/m²).



Urban planning

Pedras Brancas has been developed without a vision for the future. Some of the present problems could have been prevented with a decent urban planning. It would be of great importance and absolutely needed for the future socioeconomic development.

This work was made for three urban planning scenarios: 2011, 2016 and 2026. It was made a prognosis of the population growth to determine how many new houses will be needed in the future.

To prevent that present bottlenecks will interrupt the developments of Pedras Brancas, several

proposals for improvement have been made. These proposals contain aspects on urban and building engineering level, but as well aspects on social economic level.

The schematic map below shows how Pedras Brancas is built up and developed.



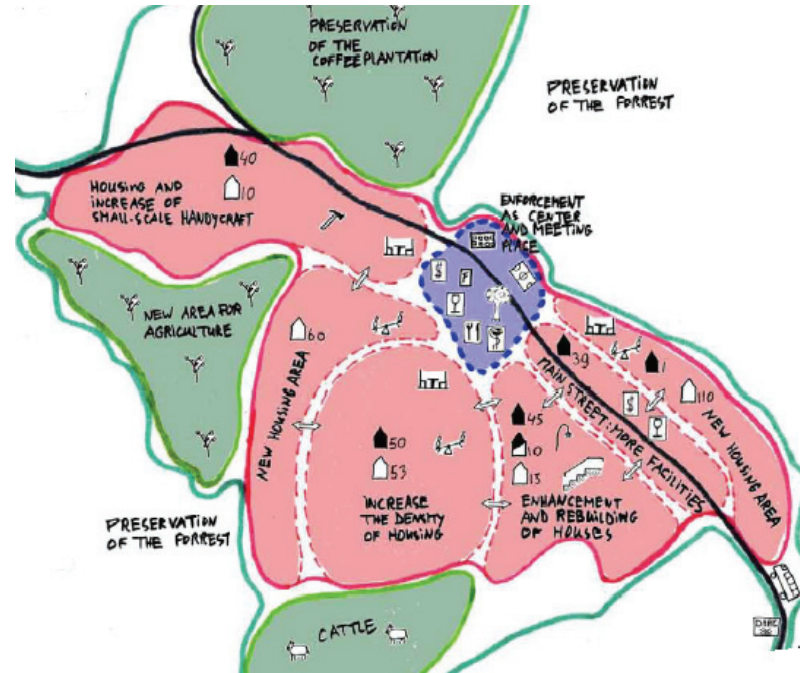
In the figure, the proposed urban plan is at the side where:

- The central area with the tree, the sports field and the bus stop is the heart of the neighborhood;
- The area on the steep slope, where at the present time most of the poor people live, is to be upgraded.
- The social housing area can be condensed by filling up the empty spots with housing and little playgrounds with benches.
- The area which has, besides houses, also several workshops, can be a living working area with some little handicraft industry.
- The two areas where presently several farmers cultivate vegetables can be new housing areas.
- There can be a new agricultural area and a new area for cattle.
- The several forests around Pedras Brancas can be declared as holy property.

Social housing project

It was made a design for a building structure of 20 to 30 houses on a slope. The main objectives are first to design a “universal” structure which can be

applied in other parts for the world and second, foresee Pedras Brancas in its need for new housing.



It was tried to look further than just the technical aspects. It means to use the building engineering, architecture and urban planning to improve social bottlenecks.

Studies on building structures on slopes

The objectives for a “universal” building structure are:

- possible on every slope
- in many parts of the world
- residences large enough for four occupancies
- within existing and new structures
- connectable and plied up housing units
- inexpensive and easy to construct
- also constructible by the occupancies themselves
- in rural and urban areas
- extendable houses
- houses with a garden, porch or balcony
- harmony between public and private environment

The proposed area for social houses in Pedras Brancas are shown in the map at this page.



São José do Vale do Rio Preto is a typical mountain municipality. Because of this reason there you don't see any flat areas.

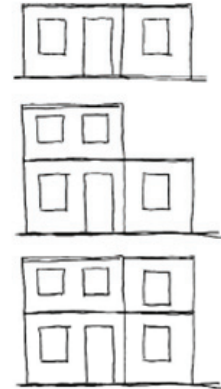
The conception of the social houses developed here takes into account that the majority of residences need to be constructed in slopes.

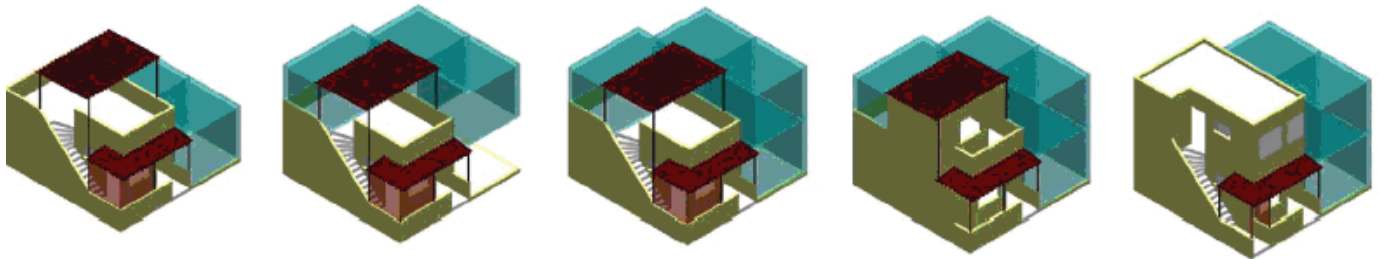
In order to create a design which can actually be used in various situations, the design started from the idea of a modular system. This modular system led to a concept with one basic unit on which different extensions can be attached. By combining the basic unit with a number of extensions, starting dwellings of different appearances and sizes can be realized.

This procedure is intuitively used in flat areas of poor quarters of big cities like Rio de Janeiro. Because of lacking too many free areas, it starts with the construction of one initial module and adding further units until the free area has been filled. The next step is then to build a second one etc. There are lots of houses in “favelas“ of Rio de Janeiro which finally grew up to 4 to 5 floors.

The project concept which has been developed under ALFA creates an evolution of construction on slopes. A rationale procedure has been introduced in order to optimize the use of rare ground. Simultaneously, the extension of the existing buildings by new modulus can be done by the inhabitants itself.

Together with this modular system, different architectural solutions for the modules are presented. In the next page see some examples

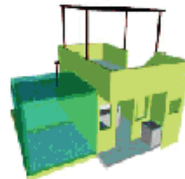




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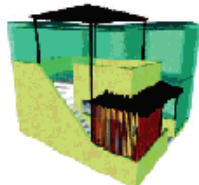
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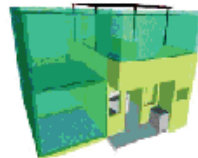
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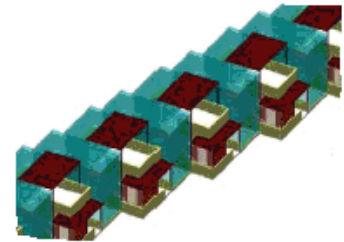
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SIDE FACE



REAR FACE



Dwellings rotated in relation to the street
for more a dynamic street-image and
more sight lines

CONSEQUENCES AND CONTINUITY OF THE ALFA-AURORA PROJECT IN SÃO JOSÉ DO VALE DO RIO PRETO

Initially the tasks for São José do Vale do Rio Preto to support the town with ideas of sustainable urban concepts for developing and improving the urban structure has been launched by UFRJ and TFH Berlin

This was the basis for strengthening the work with the help of the ALFA-AURORA project. The contributions of the international network experts, their views and ideas have been of valuable importance to pave the way of a sustainable urban future of the São José municipality.

The on-site visits, contacts and explorations of ALFA-AURORA partners in São José do Vale do Rio Preto were necessary to elaborate realistic development concepts and start working on concrete project. When knowing the handling of “everyday problems” in the community, it is much easier to provide practical help and advise in a way which can be directly implemented by the

municipal administration and taking decisions for urban planning, housing, land use and the like which are more appropriate to the real situation.

This is even more important because, as mentioned above, small communities are facing tremendous difficulties to get access to basic professional knowledge backing wise economic, social and environmental decisions.

The effects of the ALFA-AURORA project for the municipality of São José do Vale do Rio Preto and, as consequence, the work with UFRJ, have been substantial. This can be outlined for the priority lines stated in the introduction:

- land use;
- social (low cost) housing;
- infrastructure;
- regional development.

Land use and infrastructure

The urban planning proposal for the Pedras Brancas quarter was evaluated carefully by the municipality and strongly influenced the initiatives of the community.

There are two closely related objectives of urban planning which have been worked out in two complementary initiatives: Downtown revitalization on the one hand side, embellishment and creation of a new urban centre on the other.

Firstly, for achieving revitalization of the old downtown and to plan the new urban center, it is necessary

- to make a traffic plan that considers the flow in the municipality, strongly concentrating on only one road / street along the river;
- to draft a project on public transportations.

Secondly, it is necessary to work out a master plan which gives clear information on the various forms and intensities of land use.

For the first objective, the ALFA-AURORA project has been working together with expertise from students of UFRJ and Universidad de Alicante.

UFRJ has been collecting all information which is necessary for a master plan and making an “diagnosis” to improve the available data base and enable both university and municipality to go hand in hand developing the Master Plan.

Traffic concept and master plan are to be developed, of course, under the conditions and frame of the regional context, i.e. they need to

consider and strengthen the Rio de Janeiro regional development plans as well.

Social housing

Brazil's government provides the “Caixa Econômica Federal” offering – by very different programs - bank funding and finance for housing. One of these programs is particularly tailored for finance of social low cost housing addressing poor people who otherwise can't pay for this.

The initiative must come from a municipality, state or federal administration. The bank may give a subsidy of 90% of the total expenditures. The administration needs to pay only a 10% share. The size and value limits for this project are clearly determined: houses cannot have more than 40 m² and can not cost more than R\$ 9.000,00.

Normally houses are constructed on plane ground; an example can be seen from the photo of Pedras Brancas on the pages before (Social houses constructed by the State government of Rio de Janeiro).

Using the concepts for low cost housing on slopes, developed by Hogeschool van Amsterdam, the municipal administration of São José designed a suitable project for Pedras

Branças by taking into account the above mentioned restrictions and asking for funding by the Caixa Econômica Federal. They finally succeeded and raised state finance for 30 pilot houses.

According to the method of finance, the construction process is divided into two part: The community has to start with its own resources (10%) before they meet the conditions to request the State funding; therefore, as a first step, the municipality decided to start with 10 houses, complete, raise the funds and then continue with the next part of houses until all 30 houses are finished.

CONCLUSIONS

The ALFA-AURORA project contributes substantially to the improvement of the environmental development in Brazil. The most important results are:

- the project offered a convincing concept how to deal better with the problems of sustainability of the Mega-Cities;
- outstanding professional experts of a range of European and Latin American universities have been involved in the project; they continue to offer their services and expertise;

- the projects and conceptions of the AURORA network are going to concretely in the municipality of São José do Vale do Rio Preto;
- these practical results are disseminated to a wider range of other communities and provide a good basis to continue with further projects, actions and municipalities.

Besides, the results of the workshop in Rio de Janeiro can be used for other countries of Latin America as well. There are lots of similarities in the urban problems of sustainability in Brazil and many other countries.

Another focus of the project work with Rio and São José do Vale do Rio Preto refers to the downtown rehabilitation problems which are mostly of historical importance. This work is been done already in cities like Rio de Janeiro, São Paulo and Salvador. UFRJ staff and students have now been working out these aspects with La Habana de Cuba preparing the next AURORA workshop. With this, all partners can learn a lot from the synergy and similarities of the problematic which is vital for both cities.



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