

chapter 01

introduction

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To create sustainable architecture you have to listen to the users.

E.D. Melet

01_introduction

In architecture, adaptation for new use is not a new phenomenon; buildings have been re-used throughout history (John, 2008:1). The Baths of Diocletian in Rome were converted into the Santa Maria degli Angeli Church by Michelangelo in 1566, and the Hagia Sofia in Istanbul, Turkey, was once a church (360-1453) which was later converted to a mosque (1453-1931), and is at present functioning as a museum (Adams, 2002:295). Currently, new and sensitive architectural interventions are regarded as an inventive way to breathe new life into an existing historical layer of the city, whilst contributing to economic and social value (John, 2008:1). The marriage of new and old architecture brings life to a building while providing an appropriate new use. This will eventually add to the building's historical fabric as well as contribute to the urban landscape.

To re-use an existing building retains a certain amount of the existing embodied energy, which otherwise would be completely wasted. Thus a project is enabled to take an environmentally sustainable stance as opposed to an entirely new constructed building. The current increase in climate change and economic pressure globally has affected the earth negatively. It is evident that if the world continues with its careless attitude, greater deterioration will steal the 'mundane' and turn them into luxuries.

This project will investigate the re-use of an existing building in which the mitigation of negative environmental impact, and respect for cultural value will be explored.

1.1 THE CHANGING ENVIRONMENT

The earth is experiencing rapid urban sprawl and population growth. Most of the future growth of urban populations is anticipated in the developing world (Wilby, 2003:1).

By 2005, the average global temperature was 0.76 °C above the level in pre-industrial times, according to the UN Intergovernmental Panel on Climate Change (IPCC). The panel projects that the earth is likely to warm by a further 1.8°-4 °C this century, and in the worst case scenario by as much as 6.4°C, unless the world acts to cut Green House Gas emissions (GHG) (EU Climate Action, 2010:2).

In many developing countries, climate change is not a pressing factor; the focus rather falls on economic development. Poverty is exacerbated by the impacts of environmental change, and in turn by the deterioration of the landscape.

South Africa is awakening to the shift in paradigm. According to the Department of Environmental Affairs, “changes in climate already affect various sectors of South African society and the economy as well as the biophysical environment, and the effects are predicted to be significant in future. The areas of highest vulnerability are the health sector, maize production, biodiversity, water resources, and rangelands” (South Africa. Department of Environmental Affairs, 2010:1). A National Climate Change Response Strategy for South Africa was compiled in 2004, which aimed to address issues identified as priorities for dealing with climate change in the country (South Africa. Department of Environmental

Affairs, 2010). The Kyoto Protocol was adopted on 10 December 1997. It aims to reduce the effects of climate change by reducing the emissions of six greenhouse gases (South Africa. Department of Environmental Affairs, 2010). However, South Africa is regarded as a developing country and signing documents to be part of the international effort to mitigate climate change does not bind the country to follow all the requirements. Thus, these protocols and treaties are rather superficial in terms of implementation in the country.

According to the Department of Environmental Affairs, it has been predicted that by 2050 the coastal areas of South Africa will warm by around 1-2°C, and the interior by around 2-3 °C (2010:5). Certain areas of the country will be much drier, and increased evaporation will cause an overall decrease in water availability, significantly affecting human health, agriculture and the environment in general (South Africa. Department of Environmental Affairs, 2010:5). Given the significance of these impacts, it is clear that urgent and decisive international and local action is required to achieve a real reduction in greenhouse gasses.

Radical changes on earth require radical changes in society. The built environment is particularly implicated in the changing conditions, and should be a prime target in the war against catastrophic climate change (Smith, 2001:ix). If the built environment is a large contributing factor to the deterioration of the environment, it is heavily implied that architects have a specific role to play in protecting the environment.

1.2 CHANGES IN THE BUILT ENVIRONMENT

Global warming is unequivocal and it is very likely that the increase in anthropogenic greenhouse gas concentrations is responsible for the increase in temperature since the mid twentieth century (South Africa. Department of Environmental Affairs, 2010:4). “South Africa is both a contributor to, and potential victim of global climate change given that it has an energy-intensive, fossil-fuel powered economy and is also highly vulnerable to the impacts of climate variability and change” (South Africa. Department of Environmental Affairs, 2010:4).

In an era when climate change and construction processes are costly, a city cannot afford to ignore buildings that potentially have historical and cultural value that may contribute to the rich layers of the city. Jane Jacobs, writing on urban planning and decay, argues in her seminal work *The Death and Life of Great American Cities* that “if a city has only new buildings, the enterprises that can exist are automatically limited to those that can support the high costs of a new construction” (1993:200). She further emphasizes that “time makes certain structures obsolete for some enterprises, and they become available to others. Time can make the space efficiencies of one generation the space luxuries of another generation. One century’s building commonplace is another century’s useful aberration” (Jacobs, 1993:202).

“Buffeted by economic uncertainty, globalization, and disruptive technologies, architects today have more questions than answers” (Pearson, 2011:20). It is clear that changes in lifestyle are imminent in society. Environmental issues have affected all parts of society, including the built environment. Many questions are being asked without being answered. There is a sense of uncertainty in terms of what the future will bring, especially if the world continues in its materialistic, competitive manner.

“Can design change the world?” or rather, “Is the world changing design?” Warren Burger’s approach is, “What design actually can do [is], solve problems on a case-by-case basis around the world (2009:2). As it does that, it changes the world, because it changes the reality for people wherever the situation is happening” (2009:2). The approach of this thesis is to understand the specific problems of the project and apply this understanding through architecture. This enables a building to function successfully, while respecting and contributing to its

urban environment. Every building designed responsibly is a “case-by-case” step forward.

A starting point in the built environment is the recycling of buildings. Existing structures are re-used consistently in first world countries, taking advantage of prime location, finances and an existing structure to work with. South Africa is currently taking to the idea of recycled buildings, with well-known examples such as Turbine Hall in Newtown, Johannesburg.

There are two possible scenarios concerning an abandoned building intended for re-use. Firstly, a building can be sold or rented to a new company, then retrofitted or adapted to suit specific needs. The second scenario leaves the building abandoned and thus ‘dormant’ for years to come. In a city, the latter poses issues of security, expense and wasted space. The abandoned building’s embodied energy has now gone to waste and is not contributing to the city; it is deemed unsustainable.

1.3 PRETORIA’S POTENTIAL

A dormant building can be defined as an abandoned or unused building that is not currently operational.

The City of Tshwane was established in 1855 (Holm, 1998:61) and is considered a young city, yet a number of buildings are dormant in the Central Business District (CBD) and its surroundings. This gives the impression of deteriorating urban areas. Abandoned buildings can be found in many cities in the world, and it is uncommon that the City of Tshwane has such a high number of abandoned buildings. What happens to these abandoned buildings will determine the future of the surroundings and the city at large.

Abandoned buildings provide opportunities for interventions that can breathe life into these dormant shells and their surrounding areas. The architectural history of the City of Tshwane relates to the pre-Modern era, Modernism and Post-Modernism. Many of these dormant buildings have value in their architectural expression, allowing for interventions that can draw on a rich heritage.

1.4 DORMANT BUILDINGS IN PRETORIA

Mapping studies were conducted during the Heritage Congress in 2009 as part of research on buildings in the City of Tshwane. The mapping expresses issues concerning the quality of building stock in the city. This includes, buildings that can be re-used, altered, demolished and buildings of heritage value.

The Agrivaal Building has been identified as the proposed site for this dissertation. According to the information gathered by the mapping exercises the Agrivaal is a deteriorating abandoned building, which does not respond to its surroundings. Majority of the surrounding buildings have been classified as 'neutral', implying that the buildings are in good working condition and contributing to the urban fabric.

This dissertation proposes to house the new Delegation of the European Commission (EC) for South Africa in the Agrivaal Buildings because:

- The building is located on the 'Government Boulevard' identified in the ReKgabisa Framework, which will be analyzed in a later chapter.
- It is located close to the Union Buildings, symbolically important in terms of the position of the New EC Headquarters
- It is located on a street that has a number of office buildings
- The building's scale and surrounding space allows for an appropriate intervention for this dissertation

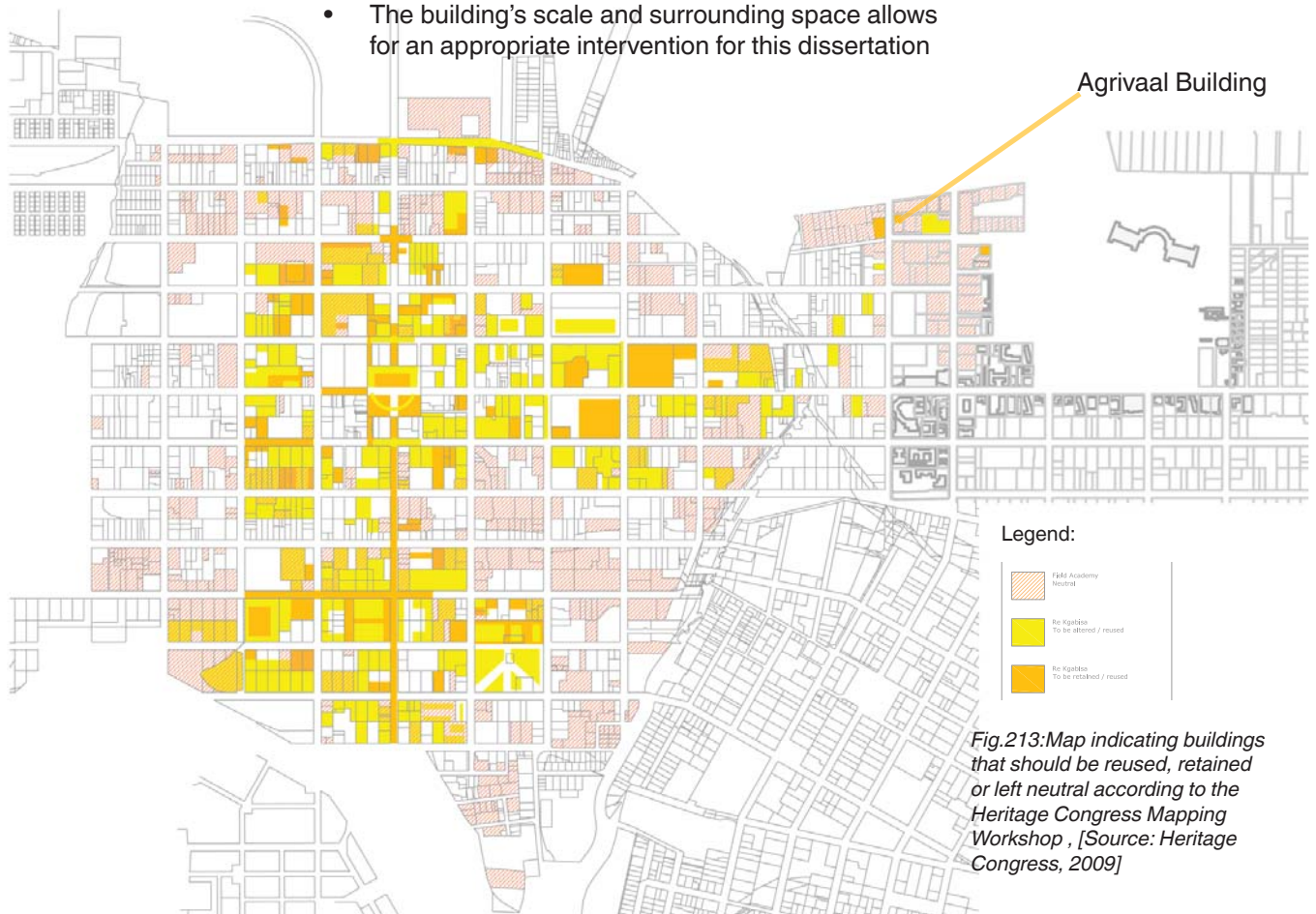


Fig.213:Map indicating buildings that should be reused, retained or left neutral according to the Heritage Congress Mapping Workshop , [Source: Heritage Congress, 2009]

1.5 DEFINING THE PROBLEM

This section will define the problems, aim and research methodology concerning the Agrivaal Building. The refined and focused 'problem statement' will feature in the following chapter.

1.5.1 PROBLEM

- A dormant building implies waste of space, materials, and a building that does not contribute to the urban fabric.
- Changes in environmental, social, political and economic settings bring about a need for self sufficiency, adjustment, flexibility, and consideration in the built environment. Thus, an architectural response in terms of change must be investigated. In this project, responding to change will encompass the needs of the existing Agrivaal Building. A focus on sustainability, heritage, security issues, client demands and the brief are amongst the issues that will guide the design process.
- The appropriate and respectful representation of the European identity within the South African context.

1.5.3 THE AIM OF THE STUDY

This study aims to investigate the reuse of an old dilapidated building that can be revived, and thus respond and contribute positively to the urban landscape. The investigation will include expression of the principles of sustainability and respect towards existing heritage.

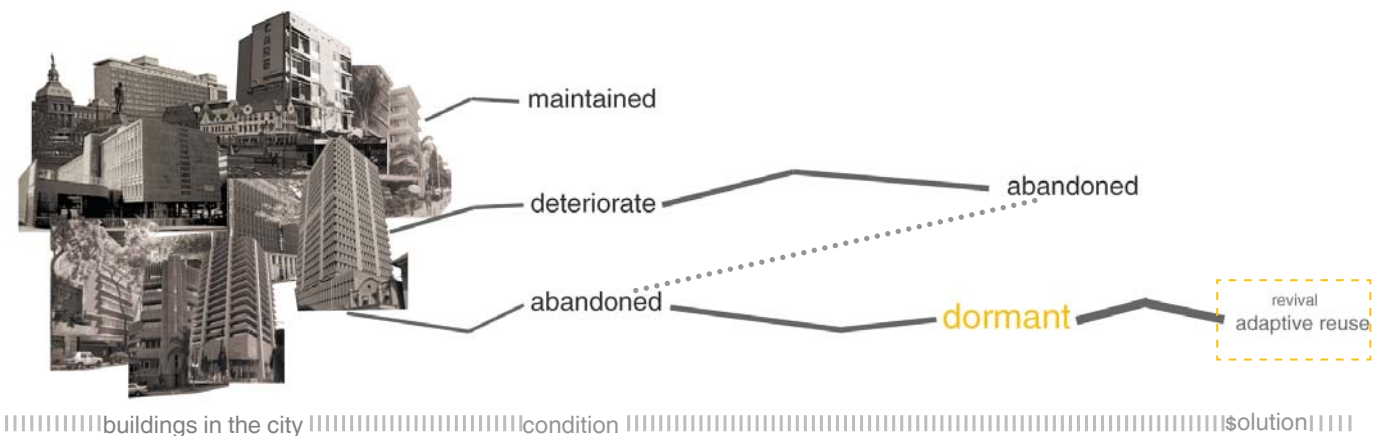


Fig.214: Adaptive reuse of dormant buildings [Source: author 2011]

1.5.4 RESEARCH METHODOLOGY

This project will investigate two main theories concerning sustainability and adaptive re-use. These will be consolidated with the Green Star Office Manual and rating tool, as well as the standard SBAT tool, allowing for more insight and detail on environmental issues. Heritage charters such as the Burra Charter will be used as a guiding heritage tool, providing an international standard for dealing with buildings of sensitive cultural significance. Other investigations were conducted for the design (e.g. context study, programme, client needs etc.)

_theoretical investigation

_theoretical focus

theory 01_sustainability:

focus: Ecological Design and Construction

summary: The concept of ecological design and construction is based on the systems of nature. It emulates biomimicry, where systems in nature are adapted and applied to architecture.

theory 02_adaptive reuse:

focus: 'Altering Architecture'

Alteration, Adaptation and Adjustment

summary: Fred Scott's (Scott 2008:11) idea of alteration offers an alternative to preservation or demolition, a more general strategy to keep buildings extant beyond their time, enabling them to be inhabited and occupied. Sensitivity to existing architecture and surroundings are part of the alteration, adaptation and adjustment of a building or space.

_observation:

Research through observation was conducted by means of gathering information of the study area. Information gathered allowed for the development of a framework to which the project responds to. The site and existing building was documented during numerous site visits, providing information for the re-drawing of the plans of the existing building and surrounding outbuildings, as original plans were not released from the Department of Public Works. Exploration and comprehension of the site contours were documented.

Information was obtained on security, traffic and pedestrian patterns, as were details of existing sun patterns, tree positions and material use.

_mapping:

As a member of the Heritage Congress Mapping Workshop, mapping was conducted on buildings in the City of Pretoria. Buildings were categorised based on the condition of the buildings and thus identifying places where improvement can be focused on. The Agrivaal was zoned as an abandoned building.

_precedent studies:

Information and understanding was gained by studying precedents on issues of environmental sensitivity and adaptive re-use of existing buildings. Other precedents focused on more detailed parts of design, such as water recycling, contrast between 'old' and 'new' architecture, heating and cooling etc.