



APPENDIX A - CONTRIBUTION ARTICLE



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A

Architecture as Contextual Conservator.

- Wonderboom Nature Reserve, Pretoria.

Nature reserves in the City of Tshwane is under threat from ecological and historical significance decay due to the less defined nature of these landscapes. Architecture can be developed in the in-between of nature and urban to act as conservator for these nature reserves. Utilizing the natural resources of nature to produce products for the urban dweller within a space that continues the historical protective layers of the site. The space of interaction between nature and urban becomes the conservator, acting as active protector in terms of sustainable production, education and urban dweller interaction with the nature reserve and its continues history of protection.



Fig. 00. Above; Nunzio Paci painting (Designworld, 2015).

WONDERBOOM NATURE RESERVE as natural enclave in the north of the City of Tshwane hold multiple objects in need of some or other form of conservation. Historically the site was home to stone and iron age settlers, soldiers in one of the four built Anglo Boer war forts and many visitors to the age old Wonderboom tree (City of Tshwane 2015). Currently the site serves as one of Pretoria's multiple nature reserves, areas protected against urban development, the destruction of protected fauna and flora and as recreational facility for the urban dweller that seeks the natural environment escape. The introduction of nature conservation in South Africa, that only started late in the 1900's (Blom 2011:2) sparked nature reserve conservation research and funding from municipalities for this research by environmental organizations. This happened through admission fee control and municipal budget allocations as a result of extensive research done by the environmental organizations on nature reserves. In the current City

of Tshwane municipalities deteriorating economic circumstances and recent economic downgrade due to high debt and low growth (Moody's Investors Sector 2017:1) the allocations have decreased and are only sufficient for routine maintenance. Conservation of these reserves are at risk of disappearing and the historical and ecological significance with it. The lack of economic allocations for these areas to fund environmental research organizations in conservation strategies have caused these natural environments into enclaves that are neglected in terms of their environmental and historical significance to the surrounding city. Overgrown with invasive species, threatening the ecosystems and concealing the historical artifacts from public visitation. Wonderboom Nature Reserve as part of the collective of nature reserves in the City of Tshwane is in need of ecological and historical conservation. Conservation and architecture are not a new collaboration as architectural heritage conservation is an everyday matter of the architectural discipline. Thus, the historical

conservation of artifacts can be addressed through architectural intervention by use of conservation strategies in architecture. Ecological conservation on the other hand, and the idea that built form, space and technologies can contribute to the generation of capital for ecological conservation might be considered as a new collaboration. The conceptual combination of ecology and architecture are of new and have only been considered by few architects such as Ken Yeang as described in *Eco Architecture* the work of Ken Yeang by Sara Hart (2011). This article will explore the possibility of a positive contribution that Architecture can make towards the conservation of these urban natural protected areas in terms of their ecology and historical artifacts, focusing on the Wonderboom Nature Reserve and surrounds (see Fig 1).

An approach to contextual conservation. Urban protected areas are contextually situated in high density built up urban areas. They are natural areas that offer a break away in the form of an experience within nature, attract large numbers of people who live near them and are built on urban constituencies for nature conservation according to the International Union for Conservation of Nature (IUCN) (Trzyna2014: xi). The IUCN goes further to state that they are distinctive due to the number of ethnically and economically diverse people that they attract, their multi-influential governing structures and are subjected to urban scenarios that more remote protected areas never encounter (Trzyna 2014: xi). These areas with significant natural¹ features; have scientific-, cultural-, historical- and archeological interests in need of

long term protection for the maintenance of its biodiversity and in the context of South Africa's urban environment are classified as nature reserves (South Africa 2003, s 23). Conservation in the broader sense of understanding consists of the active protection and management of physical objects curated by man. Dictionary.com (2017) defines conservation as the "official supervision of rivers, forests, and other natural resources in order to preserve and protect them through prudent management." Context on the other hand refers to the circumstances that form the environment for the object in which it can be fully understood and related too. It refers to and explains the natural setting where the physical object finds itself. The notion of contextual conservation combines the physical context, its resources, setting

Fig. 01. Below; Research Focus Area (Author, 2017).

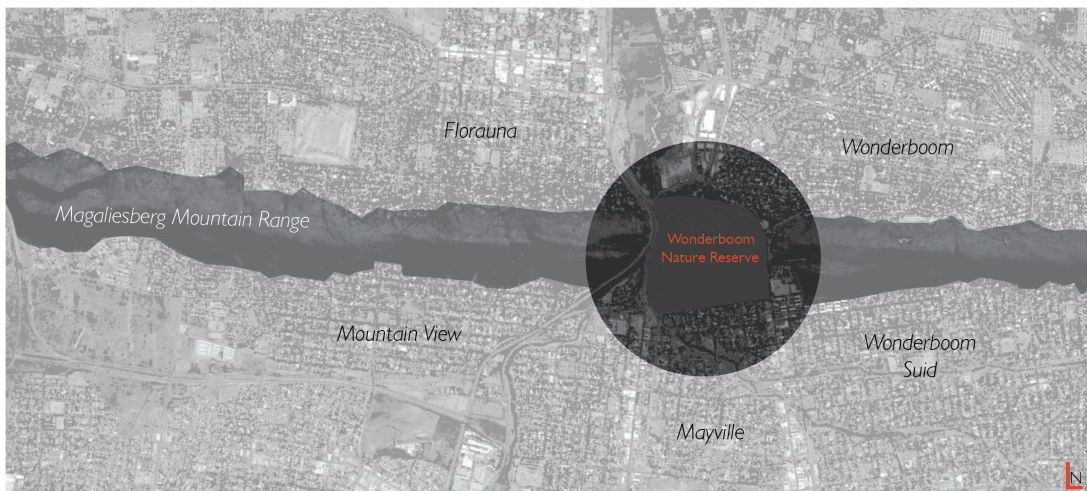




Fig. 02. Left; Nunzio Paci representation of man and the connection to nature (Designworld, 2015).

and influences as the natural, with the action of conservation in terms of management and preservation as the man-made influence. These two approaches conceptually meet within the in-between of nature and urban to contextually conserve the natural urban protected area, building on the relationship between man and nature and the partnership that exists between these two approaches within the discipline of art and architecture. Throughout his existence man has always been in partnership with nature. This partnership is represented in many forms of art, historically and contemporary. Nunzio Paci² personally represents this relationship best with his work on the connectedness that exists between man and nature (Designworld 2015) (Fig 2). He approaches his artwork with the notion that nature is so connected with man, that it forms the physical human (Paci 2017). The notion of contextual conservation that is conceptualized as a relationship between nature and man, builds on the Paci's idea of connectedness between man and nature to form architecture. Within the field of architecture, designers and builders have for many years looked to nature for inspiration.

The first depictions of nature as inspiration for art and architecture can be seen in Marc-Antoine Laugier's illustration of 'Essai sur l'Architecture'. Laugier explained: "such is the course of simple nature: by imitating the natural process, art was born" (cited in Hvattum, 2004:31). This imitation that is captured to form art, illustrates the first connection between man and nature. Many designers and architectural theorists throughout history have built on this notion of relationship between man and nature and how architecture as the built form, fits and forms part of the idea. More recently, two contemporary architectural theorists have published work on this notion. Norman Crowe and William Cronon are two architectural theoretical thinkers in this regard although viewing the relationship from two different approaches. Norman Crowe (1995) argues that the built environment is a form of nature and explains the "idea of the man-made" founded its routes in a historical relationship between man and nature. He states that nature is present in all man-made elements and even though we approach the built form from different angles, nature still presents

itself (Crowe 1995:3-27). He continues to state that the relationship between man and nature is historically bonded by the harmony that exists between them and that architecture should continue to build on and not disturb this harmony. William Cronon (1995) in *Uncommon Ground: Rethinking the Human Place in Nature* reassesses the environmentalist's agenda. He states in his writings that the idea to protect "pristine nature" is flawed. He argues that humans need not be removed from nature to protect it, as we are a part of it and the removal of humans won't keep nature intact. He continues to argue that humans have not yet learned to live responsibly in nature and that this is where the problem lies. "How can we take the positive values we associate with wilderness and bring them closer to home?" (Cronon 1995: 69-90) Both these theorists regard the relationship between man and nature as a continuous process and that without the interaction none can survive. Building on these theoretical approaches, the notion of contextual conservation holds its roots in the intervention of man in nature to ultimately conserve.

Contextual conservation focuses on the relationship between the two forces of man and nature and how they can aid, in harmony, each other to form an architecture that defines space for management and preservation. Urban protected areas as the focal point between nature and man within urban environments are the ideal location to implement and test this notion as they are confronted with problematic influences that other more rural natural protected areas are not confronted with.

The less-defined landscapes of the City of Tshwane

The City of Tshwane in the northern part of the Gauteng province contains multiple landscapes of different sorts. The city's array of landscapes includes parks – formal and other, gardens - legislature and botanical and reserves. City parks, such as Burgers Park and Springbok Park are considered as formal, generally designed landscapes that represent a certain period in the city's history and are commissioned by the city council. Parks such as Zita Park and Jan Cilliers Park are considered as other (not formal) that are more suburban of nature and are used by suburban residential inhabitants. These parks are also maintained by City Parks services but are not necessarily designed or commissioned, rather a result of suburban town planning. Public gardens on the other hand, relate to a larger group of people and are mostly commissioned by national or provincial structures. Within the City of Tshwane, the Union Buildings

Gardens are legislative of nature and a result of state office and the landscape associated with it. The city's botanical gardens hold interest for research and specific plant life of the areas. These gardens are more informal in relation to legislative gardens but holds more weight in terms of plant life and the study of plant species for the specific climate and in protected plant enclaves. The distinct nature and use of these landscapes define their functional nature. Nature reserves, also part of the diverse landscapes of the City of Tshwane, do not fall into one of the above categories. They are distinctive due to their variation of functions and scales. They also hold historical and ecological significance that are different to the above-mentioned landscapes and typically contain more natural growth and wilderness landscapes. Due to their wilderness³ condition, they are less defined than parks or gardens. Their less defined nature poses a threat as they are considered to be left to fend for themselves. This consideration is optimal in natural areas outside urban environments but due to the high amount of external influences by urban development on inner city natural landscapes, this option is not viable for urban nature reserves. According to the UN-Habitat World Cities report 2016, 54% of the global population resides in urban environments (UN-Habitat 2016:6). Cities in Africa showed the largest growth in the researched 10-years of UN-Habitat World Cities report. Cities within the Gauteng region of South Africa grew from the 1-5

million population bracket to the 5-10 million population bracket with the percentage residing in urban areas jumping from 40-60% to 60-80% (UN-Habitat 2016:8), proving that urban development influences on nature reserves are escalating. In recent years the City of Tshwane have made strides to keep the negative urban influences on natural areas at bay by installing fences around nature reserves and natural areas. The actions of the municipality, although little are appreciated but the intervention of fences holds more disadvantages than advantages for nature. These fences cause a lack of interaction between different natural realms that normally adapt to the urban condition to keep the present ecosystems in balance. The fence also prevents nature from gaining the needed resources, such as migrating predators and the advantages they bring from other natural enclaves. Due to this disconnectedness, the threat of self-decay becomes evident in nature reserves and they are burdened with destroyed ecosystem balances and an overload of invasive plant species. This imbalance in natural ecosystems, forces nature into self-conservation without the needed resources from other natural environment or aid from environmental organization management to rehabilitate. The effects are clear, as nature reserves no longer hold preserved vegetations. Dr. Dian Spear states that the biggest threat to nature is the way we live our lives and that nature which has human interaction is limited to

appropriate adaptation without human intervention. (Spear 2017). With the lack of intervention by environmental organizations to aid the ecosystems to adapt to urban influences, these natural enclaves are at risk of losing their indigenous vegetation they are known for and becoming self-destroyed lost landscapes.

Mr Ernst Wohltitz (2017), director of nature conservation at the City of Tshwane explains that nature reserves, according to the city's legislation, is supposed to have a buffer zone that prevents urban development to impact these areas, but with further investigation it was found that these do not exist or that the city considers any infrastructure, that is technically urban development to be a buffer zone. Nature reserves furthermore hold historical cultural artifacts that are sometimes protected by relevant structures within the city's or countries legislation. Where these artifacts are used for tourism and/or recreational functions to fund management and upkeep, the natural environment have proven to be in a better state. Unfortunately, due to the number of historically significant sites within the city, not all are protected by city organizations in this manner. Historically significant sites, such as Fort Klapperkop and Fort Schanskop have proven to be more interactive with the urban environment and the interaction have caused a better relationship between the two. Fort Wonderboom, within the WNR, has not seen this interactive spirit and the decay in relation to the other two mentioned can be seen within the

reserve.

This decay within WNR presents the opportunity to define this landscape by the resources on site and make this reserve also protected within current management structures, putting conservation into the hands of the reserve and not relying on municipal management to keep the reserve ecological and historical significance intact.

The context – Introduction to the Wonderboom Nature Reserve

The Wonderboom Nature Reserve (WNR) is situated to the north of Pretoria CBD and forms part of the Magaliesberg mountain range. The reserve occupies roughly 200ha of ridge and has many cultural ties with the history of the City (City of Tshwane 2015). The WNR is most recognized for its Wonderboom tree and the recreational spaces provided for urban dwellers of the Pretoria North residential areas. The WNR is mostly occupied over weekends for a traditional South African family braai or gathering. It is also home to one of the four Anglo-Boer war forts, the forgotten stone age shelter cave, protected ecosystems, a part of the Apies river and relicts of iron age shelters.

The Magaliesberg mountain range, considered to be among the oldest mountain formations known to man (Magaliesberg 2008), plays a significant role in the historical uses of the site. The mountain stretches approximately 120km from the Bronkhorstspuit Dam in the East to Rustenburg in the West. The mountain acts as destination for enthusiastic mountain climbers and a

large part of the mountain forms the backdrop of the Pretoria city centre. The WNR, as part of the mountain, is demarcated in the centre of the mountain range. Cut off by a Kloof formed by the Apies River in the west and a vehicular road to the east, the site is entered from the North, adjacent to a recently completed retail center. The Kloof to the west not only carries the Apies river in its basin but also a high traffic road and a passenger railway. Both infrastructural additions were based on historical routes running through the Kloof to the North of the city. At the cliffs of the Kloof, the forgotten stone age cave is hidden behind a man made, non-operational waterfall commemorating the 50th anniversary of South Africa becoming a union in 1910. It is speculated that the cave was once home to settlers of the stone age (Blom 2012:20-22). According to archaeological records, artifacts dated to 2 million years ago were found at the Wonderboom early stone age site (Van Vollenhoven 2008:13). This research site covers approximately 650 m² around the Wonderboom area (Blom 2012:20-22). According to Anton van Vollenhoven (2008:13) the natural context of the reserve would have been an ideal hunting and settling area for the early Stone Age civilizations. Tools found by prof. Revil Mason in 1955 proved this as he stated that the kind of tools discovered had many similarities to tools made at Sterkfontein about 1 million years before. Speculating that this part of the mountain was also used for manufacturing of stone age utensils (Carruthers 2000:214-216).

On the southern slope of the mountain lies another ancient archaeological finding. This is estimated to be have been built in the 1600's, and are Middle to Late Iron Age rock formations. Several of these line the top part of the Reserve. Carruthers explains that these formations and artifacts found in the area were from a cultural civilization that Van der Ryst & Meyer (1999: 96-98) explains as Late Iron Age, between 1000 and 1800 AD. Unlike the settlers from early Iron Age cultures, Middle to Late Iron Age settlers tended to settle on the top part of mountains. Carruthers explains this change in settling to a higher need for militaristic protection and better security (Carruthers 2000:224). Even though the stone formations could also have been from later Tshwane tribe cattle herds, the Late Iron Age artifacts found in the area make the possibility viable. The WNR also hosts one of the only four built Anglo-Boer war forts. The forts were commissioned and constructed during the second Anglo-Boer war by the Government of the ZAR as a direct response to the Jameson Raid and the documentation found on a British spy, Captain Robert White, during this time (Van Vollenhoven, 1998: 51). Even though the forts were never tested in battle the history of fortification of the capital as a response to possible threats forms a significant role in the militaristic history of South Africa. The rich history of shelter and protection present at the WNR makes this site significant in the relationship it has with the urban environment that surrounds it. The theme of nature as context and history as man in relationship with one another is evident on the site. Contradicting this relationship in the historical timeline is the lack of interaction between these two forces today. The reserve, rich in history and significance is deteriorating due to no continuous interaction.

The problem stated

The WNR is under threat from

ecological and historical significance decay. Interaction between nature and urban has deteriorated and the nature reserve is under threat from losing the significance gained over several years and being overrun by urban expansion. The problem of ecological and historical conservation in the context of the WNR presents the following issues:

On the urban scale:

- How can architecture facilitate more urban interaction with nature reserves and how does one approach the surrounding areas that are completely cut off by legislation and physical fences?

- What strategy can architects/urban designers follow to address these enclaves within an urban environment?
- How does the specific South African urban environment relate to these sites and what interaction is truly needed?

The architectural scale begs the issue on the way in which architecture preserves historical significance of site whilst not destroying the ecological significance:

- How does architecture facilitate a function that can prevent ecological decay and at the same time preserve the meaning of site?
- Will intervention of any contextual conservation be the answer to the protection of the site?

Furthermore, the specific issues of nature reserve, ecological decay and eco-system depletion comes to the fore:

- How can architecture address these issues?
- Can architecture structure a means of creating an awareness of nature reserves?

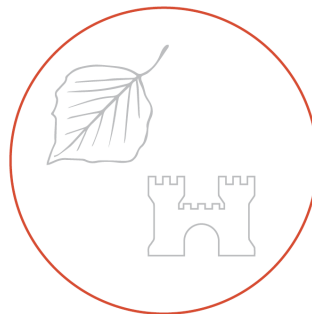


Fig. 03. Below; General Issue Diagram - Problem Statement (Author, 2017).

The Wonderboom Nature Reserve as site and resource

The WNR, as part of the less-defined landscapes of the City of Tshwane, holds many hidden resources that the everyday urban dweller does not interact with. This lack of interaction sparked interest and further investigation indicates an architectural intervention as a possible solution. An investigation into the reserve and the surrounding areas was conducted as starting point and to establish and document the problematic spatial influences that caused the site to present little interaction. From the analysis, an urban strategy was proposed to counter the interactive lack and present opportunities for architectural intervention. These interventions will be developed, tested and concluded as projects into a document to showcase viable solutions to the less-defined challenges of nature reserves.

An analysis of the site.

Investigation into the site and research focus area was conducted between January and March 2017. The process consisted of two students evaluating the site and conditions first hand from a series of visits. Visual and analytical site documentations were gathered and discussed in terms of spatial and problematic influences to present possible architectural solutions. The discussions highlighted the following problematic considerations:

- Firstly, the site was completely isolated. Three main roads to the North, East and West cut off all free flow pedestrian access to the site. A smaller residential boundary on the southern edge made pedestrian access viable but the reserve's fence prevented pedestrian penetration. Only one entrance of the three visible entrances was accessible on the Northern edge. This entrance was mainly for vehicular traffic and even the manned staff admission fee kiosk was built to the height of a vehicle window. The service entrance on the eastern fence was not accessible due to heavy traffic and placement of the entrance on the top of the hill. The third entrance in the quiet residential area on the southern edge was completely overgrown and rarely if ever used. No traces of a pedestrian entrance for the people on foot was found.
- The recreational activity spots were concentrated to one corner on the north-eastern edge of the site, with staff housing around the focus area of the Wonderboom tree. Signage of the history of the site was present around the tree and a good explanation of the site was obtained. A small hidden path through thick growth at the base of the hill, just behind the info signage, made a hike possible to the old fort and the cave. Little signage was visible along the route and no focus points for the multiple view points over the city

and northern suburbs were present.

- Invasive plant species were visible along the route and tree suffocation by invasive species were present. Some parts along the route had paved rock paths alongside sheer cliffs that opened the tree canopy for city views. The southern ridges' plant growth was completely different from the north and traces of invasive plants were found here too. At the base of the southern edge, next to a water stream, a herd of Impala had made their home. This was not surprising as no designated pedestrian paths went down the mountain on the southern side.
- The fort is in ruin and vandals have taken the opportunity to scratch their names next to the names of soldiers of the Anglo-Boer war into the rock to remember the occasion of their hikes. The site is deserted and feels like a destroyed urban playground in the middle of nowhere. The history of place wants to shout out its existence, but the desertedness keeps it at bay. Just west of the fort a few informal dwellers have occupied the old cellphone tower shelter and made it their temporary home. The cellphone tower is no longer in use but the beacon on top of the hill still exists. Just to the north of the fort and cellphone tower, in the dense overgrown hill cover, the historical rock formations present themselves, forgotten and disguised in the greenery of the hill. A further hike down

the Northern hill presented the lonely path to the dysfunctional waterfall. At the edge of the fall, access to the cave is now prevented by a palisade fence.

- Around the main entrance on Lavender Street, another problem became evident as no form of drinking water provision was present. After a hike, a single tap in the middle of the grass field was considered as the only form of rehydration. The sense of isolation on the site became more evident and a good understanding of lack of interaction was gathered. It became evident that this lack of interaction was the main problem that the site faced. After some discussion of the experience by the author, it was concluded that, on an urban scale, the site needed an approach that related to the main objective of interaction. Within the main objective of urban interaction, an urban strategic vision was formulated that considers access, edge, connections and facilities as the main categories to address.

Urban strategic vision

The urban strategic vision is developed from an understanding and deliberation of the analytical investigations done. The vision addresses the less-defined landscape challenges and sets out a hypothesis that can be implemented and tested by means of a general strategic vision approach. The urban strategic vision hypothesis states that architecture is proposed

as a frame of reference in the landscape to create and improve awareness of urban wilderness areas to ultimately conserve and emphasize the uniqueness of these places. The implementation and test strategy for the hypothesis considers a general, simplistic approach of balance of development and protection between urban and wilderness that is prolonged to detail by four sub-categories; Access, Edge, Connections and Facilities (fig 4a). Access, the first strategy sub-category considers the main approaches to and from the site and how these routes need to be developed for optimal site awareness. Ted Trzyna (2014) co-founder of the IUCN urban specialist group and president of the InterEnvironment Institute at the University in California states that access is a global problematic issue

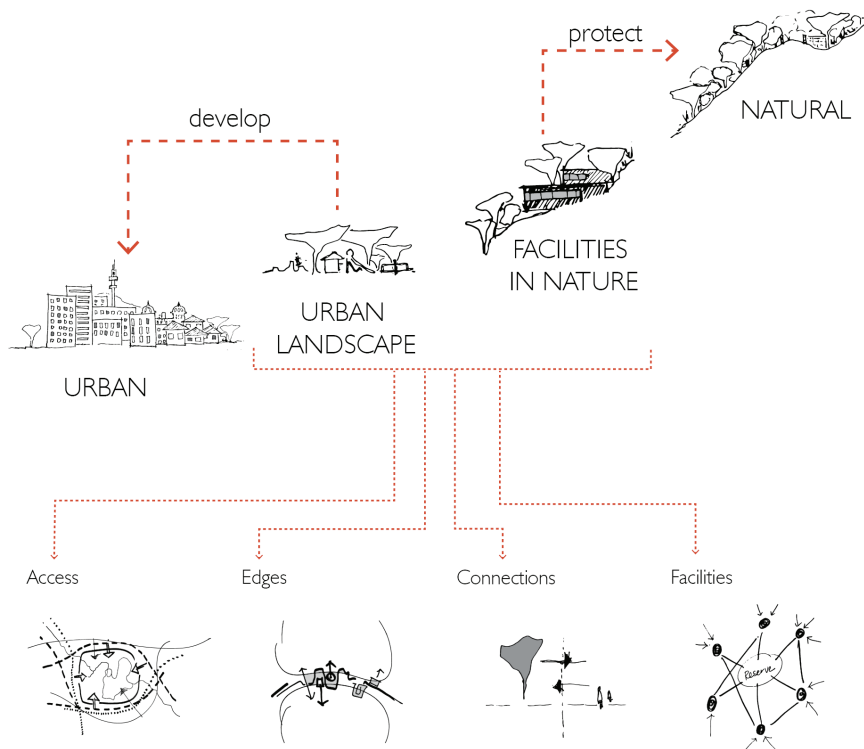
to address when it comes to Urban Protected Areas. He goes further to say that direct public transport needs encouraging and the supply of well-mapped routes that makes provision for bicycles and pedestrians also needs attention. The access sub-category, as focus subject, initiated from problematic questions raised in the analytical investigation discussion. How do architects improve the existing circulation paths and extend existing access routes to draw more feet into the reserve? In the discussions, more feet into the reserve was an efficient architectural approach to address awareness and enhance interaction between nature and urban. The proposed implementation to address the approach of more feet was set out as a principal implementation strategy to achieve smaller focus aims. The following principles regarding access

are proposed within the urban strategic vision:

- Focus on alternative modes of transport for example bus, train, cyclists and mainly pedestrians.
- Slow down routes surrounding the site to facilitate interaction with and visibility of activities along route.
- Increase access points
- physical access points, but also visual access for awareness.
- Use architecture as way-finding tool to draw attention as beacons for pedestrians/ cyclist in the landscape.

Secondly the urban strategic vision studies the edge conditions. What would the best edge condition for the site be and what must be done to achieve these edge conditions? The analytical investigation discussion suggested that the edges of the nature reserve needed to be addressed as they have become physical barriers keeping interaction to the

Fig. 04a. Below; Urban Strategic Vision Approach (Author, 2017).



site to a single point. The edges of the reserve were also considered as a favorable area to intervene between nature and urban as it is situated directly between the two environments. The urban strategic vision sets out the following principles to be implemented to achieve the goals set out:

- OVERALL: Improve visual access and awareness of the site.
- Define boundaries/buffer zones and celebrate entrances on high traffic routes.
- 'Lend' natural environments to residential/quiet areas by recessing boundaries into the reserve and facilitating visual access to nature.
- Programs on the site's edges should serve both natural area and urban area and consist of diversified programs.

Thirdly the strategy considers the connections between nature and urban. This subject as sub-category was developed as a result of the edge conditions approach and focuses on the extended relationship between nature and urban. It questions how the urban strategic vision can improve these connections to define the landscape and create points of interaction between nature and urban. "Our connection with the environment is our first level of experience, and one

of the most important (Shankar 2011)."

The urban strategic vision approaches connections with the following principles:

- Bring people to nature and nature to people.
- Rehabilitate urban green areas as recreational facilities that increase the value of surrounding neighborhoods.
- Create a network of green spaces that facilitate movement.
- Create new roads to increase passive surveillance of these green areas.
- Adapt building / site interfaces towards the natural areas to increasing passive surveillance.

Lastly the urban strategic vision sets out possible facility considerations to guide future interventions in their program. These facility considerations are to ultimately complete the strategic vision and prove the hypothesis in its objective to become a frame of reference and protect the landscape. The sub-category facilities, become the bridge between the urban strategic vision and the future possibilities for intervention on the site. It considers questions relating to where and what functional form architecture can start to have to achieve the objective frame of reference in the landscape. Although this sub-category does not physically

Fig. 04b. Below; Ideal Space Flow Diagram (Author, 2017).

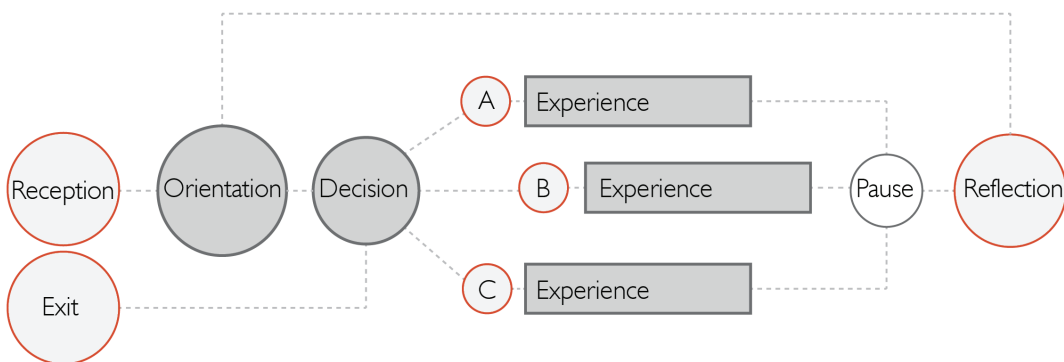
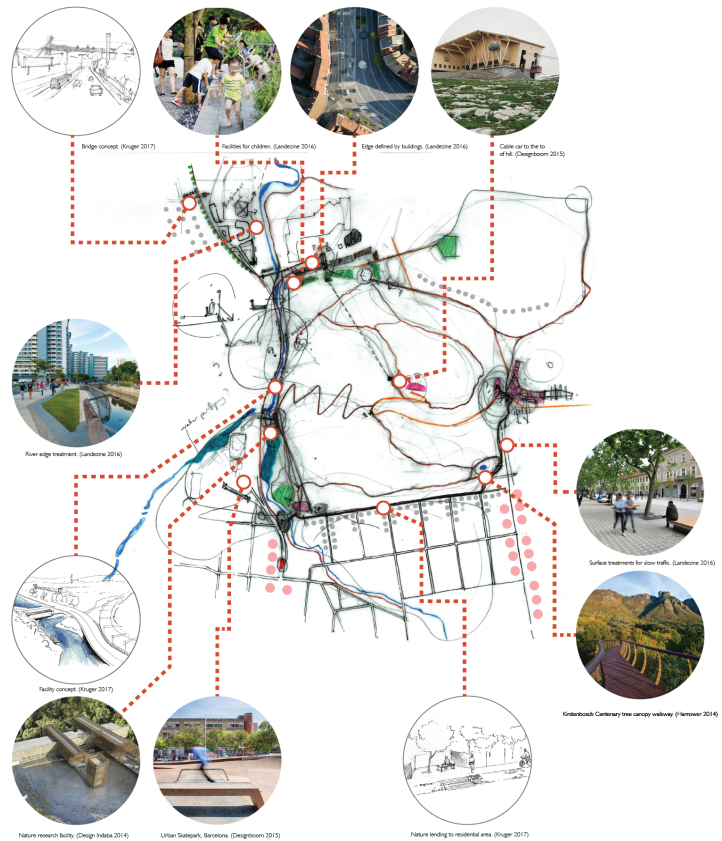


Fig. 05. Right; Conceptual Urban Strategic Vision Implementation (Author, 2017).



spell out the programs, it generally states the starting point that programs need to address. The following principles are proposed under the facilities sub-category:

- Introduce innovative programs that make the site a daily destination [work] as well as weekend destination [recreational] and provide for a variety of users.
- Promote urban natural spaces for what they are worth – easily accessible, important recreational natural space for urban inhabitants (including lower class)
- Facilities and programs should be mixed-use, attracting a variety of stakeholders and users to the site.

The principles as set out under the four sub-categories are practical implementation considerations. With further debate on the urban strategic vision it was found that the vision needs to address an additional side to the practical/physical. The sub-conscious or emotional understanding of space was proposed as additional consideration which was based on the idea of an ideal space flow, a unique way in which to address an urban vision regarding the sub-conscious and the understanding of the human decision-making process.

A second layer was developed and added to the urban strategic vision. This layer can be described as the ideal space flow diagram (fig 4b). The concept of ideal space flow is formed from the idea that architecture can be developed from understanding the experience gained through space. "Architecture has meaning, and matters

to us only when it is experienced, when all other senses are simultaneously engaged in its inhibition, and when it provides the setting in which the acts and rituals of daily life take place (McCarter & Pallasmaa 2012:5)." The urban strategic vision takes this approach to architecture and develops a model as diagrammatic representation of the ideal experience space flow for the context.

The model is developed as the ideal, how the architect intends the user to utilize the space. Predicting the path, the user will take and the spaces needed along that path. Understanding how the user will enter, make a decision and then experience the space of the function provided. After the user has been subjected to the experience or have experienced the space, the user

is paused and placed into a space to reflect on the experience gained. This mentally builds an image in the mind that is remembered for a longer period. The objective of the reflection space is to keep the memory of place for longer periods in the user's mind building a greater interest in place. The user is then placed back into the decision space to choose if he wants to encounter another experience or exit the space. The model for WNR is developed with no specific function in mind but rather on the idea that all programs have an experienceable element. This model aids in the objective of creating more interaction with the site and memory of place. The ideal space flow model as proposed under the urban strategic vision for the WNR area is believed to

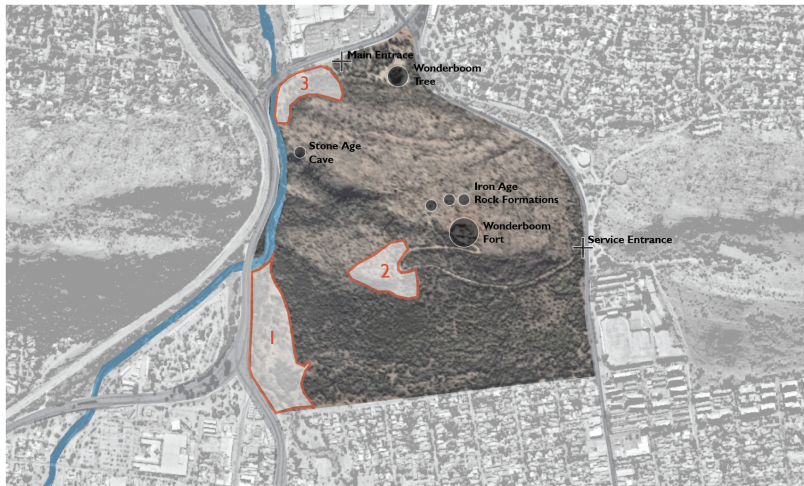


Fig. 06. Above; Proposed intervention sites (Author, 2017).

be the first step in creating an architectural response that considers the notion of ideal space flow under an urban vision. Considering the practical principles and the second layer of sub-consciousness, a conceptual urban framework (fig 5) was developed to showcase possible precedents and the points at which they can be implemented to achieve the main objective of interaction. The urban strategic vision sets the scene for the investigation of the notion of architecture as contextual conservator.

Proposed interventions

Considering the urban strategic vision and the precedent proposals at the possible points for intervention as displayed in the conceptual urban strategic vision (fig 5), six possible sites were identified as strategic points to intervene with a proposed function to achieve interaction. Three of the six sites presented the opportunity for the investigation of architecture as contextual conservator (see fig 6).

The first possibility was a research institute on the south-western edge with

an alternative entrance on the southern edge, from the residential suburb. After site specific analysis of the site, it was not viable due to the current endangered ecosystem treat that was discovered.

The second identified site is situated just below the mountain peak, on the southern slope. This site has spectacular views to the south framing the city skyline. An additional entrance from the service road to the site was proposed with the function of a nature reserve distillery utilizing marula fruit from the north. The site and function were rejected due to the difficulty to develop a distillery that needed a constant interaction with the road network for access and service purposes.

The third identified site is situated at the foot of the mountain on the northern edge next to the existing entrance on Lavender Road. On this site, the vegetation is disturbed by recreational activities that currently happen in this area. The site holds multiple opportunities to interact with the surrounding urban environment and build connections to nature. The site falls 3° to the West

making this part of the reserve the most feasible to construct a large program as the area to slope ratio is low. The proposed program for this site was recreation focused and required to relate to the existing Wonderboom tree to the east and the Apies river to the west. From the three identified sites within the six-conceptual urban vision implementation proposals, the third option showed the most potential to test the notion of architecture as conservator.

The Theoretical Approach

The proposed intervention to test architecture as conservator considers two theories and one research study approach as bases to structure an architecture in function and form. These theories are used to structure the detail function⁴ and the architectural language⁵ of the design. Form and function are two of the three fundamental foundations that all architecture is built on. Technology is the third and will be investigated at a later stage in the project. Theory towards function, considers the general notion of ecosystem services theory. This idea looks at the existing ecosystem and the resources it provides to the context in which it functions. Theory towards function also considers the initiative study approach done by "the economics of ecosystems and biodiversity (TEEB 2010)" to strengthen the functional consideration. Theory towards form uses the architectural theorist and architect, Herman Hertzberger, 1973 theory of Homework for more hospitable form (Hertzberger 1973), as published in Forum 24:3 (1973) to write an architectural language that relates to the exiting layers on site. These two approaches are then

combined to form the architecture that contextually conserves.

Theory towards function

Theory towards function focusses on the functional aspects of the proposed intervention project, and the process to formulate a detail program that informs the design and achieve the project objectives. For the proposed project, the main functional objective is to conserve the ecological significance of the site. To address this objective by means of architecture, the first theoretical part considers ecosystem services theory to structure a program that informs the use of space.

The notion of Ecosystem Services is not new as traces of this idea can be found from the late 19th century in policy adjustments done by the American government (Thompson 2011: 2). The focus on the socio-economic benefits only took off with the gaining interest that was sparked in 2000 with the Millennial Ecosystem Assessment call by the then secretary general of the UN, Kofi Annan (Millennium Ecosystem Assessment 2005: ii). The Millennium Ecosystem Assessment (MEA) was initiated in 2001 with the objective to "assess the consequences of ecosystem change for human well-being and to establish the scientific basis for actions needed to enhance the conservation and sustainable use of ecosystems and their contributions to human well-being (MEA 2005: ii)".

The findings in the first part indicate that humans have altered ecosystems in the last 50 years more than any other comparable period and this was due to the rapid growth of demand in for food, fresh water, timber, fibre and fuel (MEA 2005:2). The report stated further that action needed to be taken to counter the effects of rapid resource demand on ecosystems being it in policy change or active adaptive management. Part of the study tested possible scenarios to show the estimated effect that certain influences would have on ecosystems and their provisioning of services by the year 2050. The scenarios were used to address certain report related questions, of which one was "What options exist to manage ecosystems sustainably? (MA 2005:92)" The question was answered by proposing interventions and investments in "environmentally sound technology, active adaptive management, [and] proactive actions to address environmental problems before their full

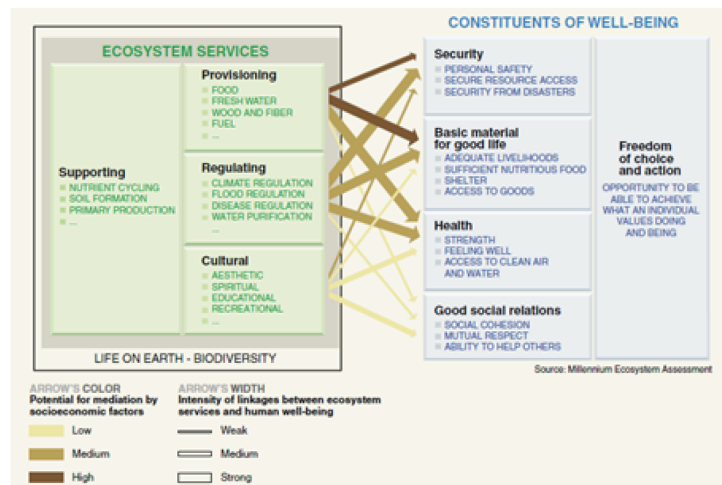
consequences are experienced... (MEA 2005:92)"

The project's functional consideration builds on the found disruption in ecosystems services and the proposed interventions made by the MEA to address these disruptions for sustainable ecosystem development. The functional shaping starts off by identifying elements in the WNR and the Magaliesberg mountain context's ecosystem that can become urban resource needs, that in future might influence ecosystem depletion. The resources are divided into the four categories of ecosystem services to identify possible intervention points and contributions that ecosystem services can make towards human wellbeing on a socioeconomic level (fig 7). The focus falls on the ecosystem provisioning services category as the natural environment holds the most potential in terms of architectural intervention and the relationship with the urban.

This identified category's resources are sustainably harvested and placed into an alternative, manmade adaptive and continuously managed ecosystem to produce products that reduces the depletion of ecosystem services and start to achieve the objectives as set out by the project.

The functional formulation goes further, by expanding the theoretical input by means of the consideration of an approach implementation as explained in a study called The economics of ecosystems and biodiversity (TEEB 2010). The Economics of Ecosystems and Biodiversity (TEEB)

Fig. 07. Above; Relationship between Ecosystem Services and the constituencies of well-being (MA 2005:2).



study approach considers the natural environment's ecosystem services as sectors to generate economic value. The study's approach showed that the benefits of ecosystems services as economical funder is just as big as other economic sectors of the same nature. TEEB study considers a three-step process to showcase the capital ecosystem services will be able to generate (TEEB 2010:11-12). This process firstly captures the value of the ecosystem service, demonstrates it in terms of investment potential to ultimately recognize and show the value of ecosystem service. By using these three steps, the project sets out to determine the amount of capital that will be able to be generated by considering WNR ecosystem service as resource. Aiding the functional consideration in terms of demonstrating the gains that this program, in considering ecosystem services, will be able to contribute to the notion of architecture as contextual conservator. The projects functional consideration will be a facility that sustainably harvests the natural resources of the WNR and the Magaliesberg

mountain's ecosystem services to create an alternative, adaptive, continuously managed ecosystem facility to produce products that can be sold for economic gains (see fig 8). These gains can then be utilised by the nature reserve and nature organizations to fund ecological research and management to keep these enclaves in balance.

Theory towards form

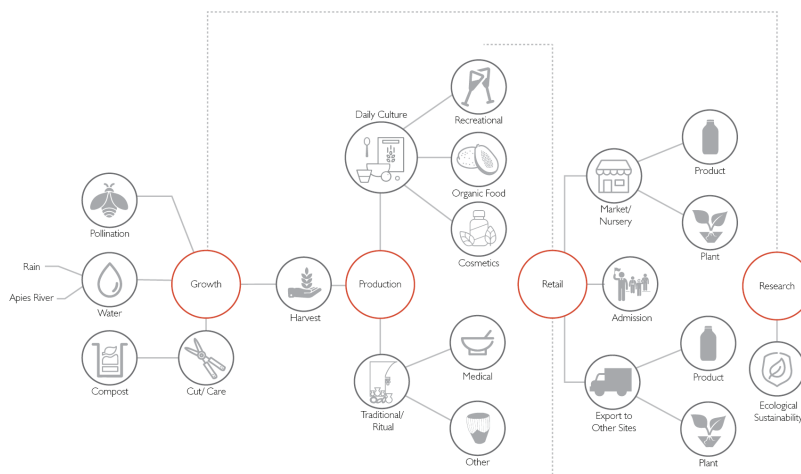
Theory towards form sets out to address the formulation of the architectural language for the conservation facility. Its objective is to create an architectural language that retains the historical significance of the site by capturing it in a new form to manifest the historical importance of the site in the visitor's mind. To address this objective, the project considers the architectural theorist, Herman Hertzberger's theory of "Homework for more hospitable form" as published in a special edition of Forum (Amsterdam) in 1973 (Mallgrave & Contandriopoulos 2008:440-442). Hertzberger argues that modern forms in architecture evokes animosity and a sense of alienation. He

reacts to propose the notion of Hospitable Form. With this notion, he calls for forms with a richer capacity to absorb, carry and convey meanings, forms that people can take possession of through mental associations, archetypal forms with respect to human imagination (Mallgrave et al. 2008:440). The notion of Hospitable Form is built on the identification of the museum of images.

The museum of images as stated by Hertzberger is a collection of images that all human minds hold after an encounter with the specific space. They are different from person to person but hold a collective thread. Hertzberger states that if designers relate to the collection of images as addition to the usual considerations they can create spaces that are not unfamiliar and distanced to the user. He further claims that the more distant the images from one another and separated over time, the more in-depth our collection of these images will become. "By referring each one back to its fundamentally unchangeable ingredients, we then try to discover what the images have in common, and find thus the "cross section of the collection", the unchangeable underlying element of all of the examples, which in its plurality can be an evocative form—starting-point (Mallgrave et al. 2008:441)." The idea of the cross section of the collection of images that relate the user to a place⁶ as form starting point comes across as a strong idea to aid the notion of contextual conservation (fig 9).

The project considers this theory in terms of the cross-section of the collection of images of the WNR. It sees the museum of images as the historical artifacts and physical images gained of

Fig. 08. Below; Program Consideration structure for Conservation Facility at WNR (Author, 2017).



these artifacts on site. These images are then analyzed to form a cross-section of the collection. This cross-section is themed and used as the form stating point to inform the design on a psychological level. Through the analytical and historical investigation of the WNR's images⁷, it was found that the site holds a strong protective cross-section collection. This collection spans over hundreds of years from the stone age to the current canopy of the Wonderboom tree. The protection theme was used as starting point to analyze the images and create an architectural language that portrays a sense of protection. This architectural language informs the design's form and aids in creating a conservation facility. It is proposed that if this theoretical approach is implemented that users that visit the site will be reminded of the history of the site and the connection between nature and urban. It is intended that the architectural form will remind the user of the new protective layer the site is taking into the future, one of conservation and protection of nature rather than more protection of the urban as was the case until now.

Looking elsewhere

After a well-established idea of the informants to develop the architecture, an understanding of possible functional and contextual precedent studies was achieved. The investigation focused on examples, local and international, that relate to the functional and contextual typological requirements and to grasp an idea of possible implementation of the argument onto site. These specific typologies mentioned are only a few of a larger number of projects that were investigated to formulate this general explanation of the functional and contextual typologies as explained. The basis for identifying functional typological precedents related to the similarities in the program's proposed detail. They only consider one or two of the programs that are presented for the project but hold key considerations to inform the development of the argument into architecture. The first precedent investigated is situated in Cape Town's well-known V&A Waterfront and holds ties to functionality. Watershed, designed by Wolff Architects takes the retail typology into a different direction. Developing a retail market that caters for many smaller retailers in reaction to the V&A Waterfront mall. The architecture



Fig. 09. Above; Conceptual implementation of theory to form for WNR (Author, 2017).

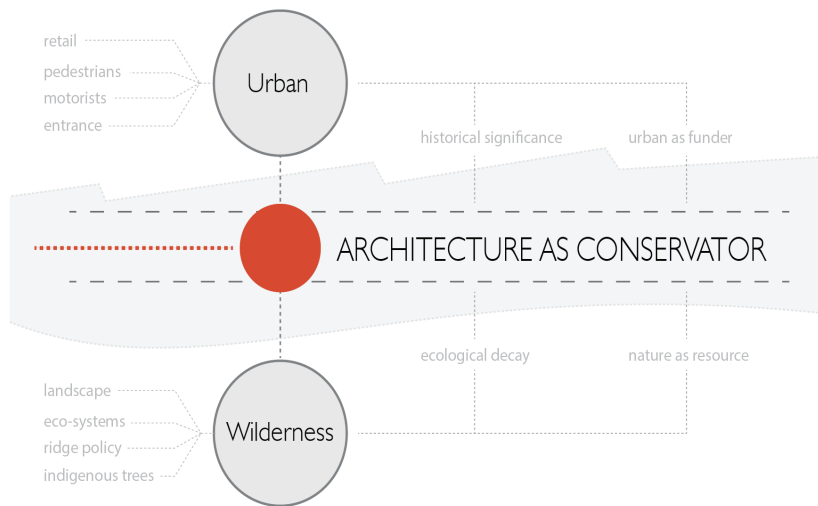


Fig. 09. Above; Conceptual Approach to argument (Author, 2017).

reacts to the ever-changing retail space model and develops the design into a multi-functional retail model that not only sells clothing, accessories or food on small scale, but also workspace. This retail typology, as developed at Watershed co-exists in an environment that is dominated by a large scale commercial retail environment. The precedent is relevant in terms of the surrounding site influences at Wonderboom Nature Reserve that is also dominated by a commercial retail environment and the consideration of this precedents retail typology will be beneficial to the project. Another precedent is similarity in program is the Wasit Natural Reserve Visitor Centre by X Architects in Sharjah, UAE. The visitor center was completed in 2016 and showcases a way to present nature reserves to the public without harming the sensitive environment. This precedent considers the

idea that nature reserves can be utilised for educational purposes in educating the public while they experience nature in the reserve from behind glass walls. The precedent fails in the interaction between nature and the visitor due to the glass walls but succeeds in presenting the importance of nature to the visiting public. The Royal Academy for Nature Conservation by Khammash Architects in Jordan frames and captures the natural context it sits in very well. The building was completed in 2013 and directly reacts to the natural environment that surrounds it. Built on the edge of an old quarry, the architecture reacts in form and material. The architecture considers the edge of the quarry as the guiding factor in plan and the materiality of the quarry as the informant in section. Other precedents investigated were: MARIOerMURO, a first place winning proposal for a park in Rome, Italy and B.R.E.A.K., a third-

place proposal for Turkey's Bandirma Park, both by TA.R.I Architects. These precedents consider the relationship between urban and nature in terms of architectural intervention; the MARIOerMURO proposal re-evaluates the wall and propose architecture as the division between the urban city and the inner park creating a calm environment for city residents to break away. The third-place proposal, B.R.E.A.K links the history of the site with a new programmatic consideration.

Conclusion

Architecture can be developed in the in-between space between nature and the urban to act as conservator for nature reserves. Utilising the natural resources⁸ of the site to produce products, retailing these products to urban dwellers for capital to fund environmental organizations to conserve nature reserves and natural balance. The architecture can further remind the visitor of the historical protective layers of the site that relate to the history of protection that is continued. The space of interaction between nature and the urban will become the site for intervention (see fig 10). Acting as active protector in terms of sustainable harvesting, production, education of conservation and in building a continuous interaction between urban and nature. Presenting the current protective theme in function and continuing the historical protective theme in form. The project addresses the physical, in function and phycological experience of form as two continuous informing agents in creating a synergy to test the notion of architecture as conservator. Combining the interaction between these two spheres conceptually

and relating them to the relationship between nature and urban. This consideration fills the current void between urban and nature giving new definition to the fence that exists between these two environments. In replacing the fence, the architecture will not only increase interactive activity between urban and nature but also aid the natural environment in conservation, protecting the ecosystems from over-exploitation and the ecology from decay. By combining the functional considerations that aid conservation in using ecosystems services an TEEB approach, and the architectural form informants from the adapted use of Hetzberger's theory to create form, it is deemed that the architecture will achieve its objective of contextual conservation. The intervention of man in nature can ultimately conserve, define and capture the elements that make nature reserves protectable and transform these forgotten, yet rich historical sites into places that keep our environments in balance. A balance that is not only important for the healthy continuous existence of nature but also for the existence of man, be it urban or not.

Endnotes

1. Biodiversity.
2. Contemporary Italian artist – Work viewable at <http://www.nunziopaci.it/>
3. Wild natural growth, not contained or maintained.
4. Program - Use of space.
5. Form.
6. Noun -1. a particular portion of space, whether of definite or indefinite extent. 2.space in general: time and place. (Dictionary.com 2017)
7. The Wonderboom fort, the stone age cave; the stone formations & the tree canopy as found in the WNR.
8. Natural capital of ecosystems/ provisional ecosystem services.

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APPENDIX B - CONTRIBUTION CONFERENCE

a contribution to architecture:



(Designworld 2015)

THE PROLIFIC PARTITION

- Architecture as Contextual Conservator

Prolific
[pruh-leej]
Adjective
2. producing in large quantities or with great frequency; highly productive:
"a prolific writer."

Partition
[pah-tish-uh n. per-]
Noun
1. a division into or distribution in portions or shares.

Dictionary.com. 2017. Definition: Prolific. <http://www.dictionary.com/browse/prolific> (Accessed 17.05.2017)
Dictionary.com. 2017. Definition: Partition. <http://www.dictionary.com/browse/partition> (Accessed 17.05.2017)

Armand Visagie
Contribution Conference
23.05.2017

INTRO

Research Focus - Locality



South Africa



Gauteng



City of Tshwane



Diverse landscapes of Pretoria.

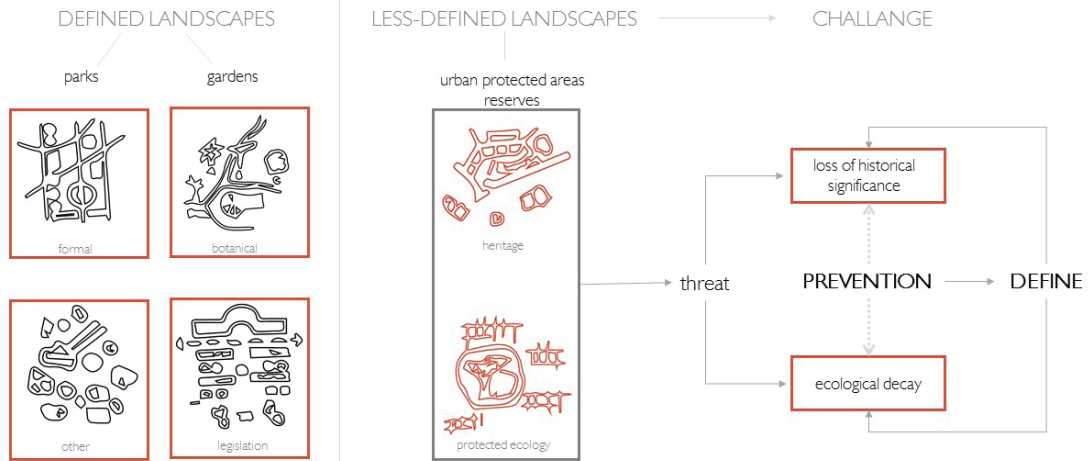


Focus – Wonderboom Nature Reserve

The Prolific Partition – Architecture as Contextual Conservator

INTRO

Urban Protected Areas - Challenge



The Prolific Partition – Architecture as Contextual Conservator

ISSUE

Problem Statement

Problem Statement

General Issue

Urban protected areas, and in particular nature reserves in the context of South African cities are at treat from **ecological decay**, **eco-system depletion** and the **loss of historical significance** due to the lack of interaction with the urban context.

One

Urban Issue

How does the Architecture facilitate more urban interaction with urban protected areas (*wilderness in the city*)? What strategy can Architects follow to address these enclaves within an urban environment?

Two

Architectural Issue

In what way does Architecture preserve the historical significance of site? (*in form*) How does Architecture facilitate a function that can prevent ecological decay?

Three

Nature Reserve Issue

Ecological decay and eco-system depletion, how can Architecture address this issue? Can Architecture structure a means of creating an awareness for urban protected areas (*Nature Reserves*)?

The Prolific Partition – Architecture as Contextual Conservator

CONTINUUM

Man and Nature - The Continuous Relationship

Nunzio Paci's

"My whole work deals with the relationship between man and Nature, in particular with animals and plants. (Nunzio 2017)"



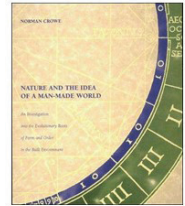
Cronon, W., 1991, ed. *Uncommon Ground: Rethinking the Human Place in Nature. The Trouble with Wilderness. New York: W.W. Norton & Co.*
Cronon, W., 1991, *Nature and the Idea of the Man-made World. The MIT Press, Cambridge, Massachusetts.*
Designrtd, 2015, Nunzio Paci's anatomical art explores the relationship between man and nature. <http://designrtd.com/nunzio-paci-art-anatomical-art/>. (Accessed 21/05/2017)
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Man and Nature - The Architectural Relationship Interest

Naman Crowe – *Nature and the idea of a man made world. (1995)*

Crowe argues that the built environment is a form of nature and explains the idea of the man-made that holds its routes in a historical relationship between man and nature.

"...the ancient idea that we are responsible for maintaining a harmony between ourselves, what we make, and nature. (Crowe 1995)"



William Cronon— *Uncommon Ground: Rethinking the Human Place in Nature. (1995)*

Cronon reassesses the environmentalists agenda. He states in his writings that the idea to protect pristine nature (wilderness) is flawed. He argues that humans need not be removed from nature to protect it, as we are a part of it and the removal of humans won't keep nature intact. He continues to argue that humans have not yet learned to live responsibly in nature and that this is where the problem lies.

"How can we take the positive values we associate with wilderness and bring them closer to home? (Cronon 1995, 69-90)"

The Prolific Partition – Architecture as Contextual Conservator

CONTINUUM

South African Continuum of Architecture.

South African Architectural Context – as per Prof. Athur Barker in FutureSpaces (2016).

IDENTITY
ETHICS

How do we act ethically through our responses to the profession, the client, the public, the environment and economics? (Barker 2016)

LEGACY
SECURITY
MEMORY

How are we dealing with our built and spatial heritage and how do we respond to architectural history? (Barker 2016)

University of Pretoria - Department of Architecture

GENERATIVE APPROACH – Architecture of influence, informants of context.

Environmental Potential

"The balance between human development needs and the environment's potential to serve or provide for these needs. Social consideration, environmental responsibility and economic equitability that results in regenerative design and development approaches, sustainable building methods, recycling and reuse of material, community benefits and environmental restoration. (Pienaar 2017)"



Heritage and Cultural Landscapes

"Diachronic and synchronic understanding and analysis of the ecology of the cultural environment with application in the design of the built environment. Solutions focus on appropriate building form and space referenced to the legal heritage frameworks and current best practice. Theory of the relationship between human and landscape and of heritage conservation. Recording, investigation, interpretation, representation and design response within the built environment regarding places, structures and artefacts of cultural significance and heritage value. (Pienaar 2017)"

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The Prolific Partition – Architecture as Contextual Conservator

CONTEXT

Investigation – Macro (Zone)

MACRO

- Ridges - Access Routes
- Ridges - Landmarks
- Significance – Time
- Built - Natural Areas
- Magaliesberg - High Density Urban
- Social Media Tracking

Investigation – Middle (Region)

MICRO

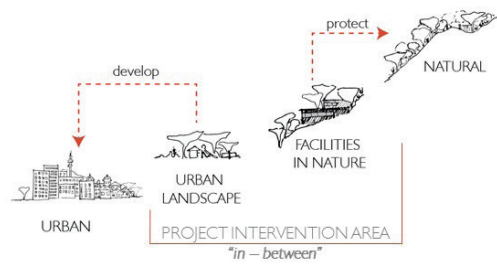
- Site - Access Routes
- Site – Landmarks
- Nature Reserves - Density Surrounding Site
- Nature Reserves - Greater Pretoria Region

The Prolific Partition – Architecture as Contextual Conservator

CONTEXT

Urban Framework

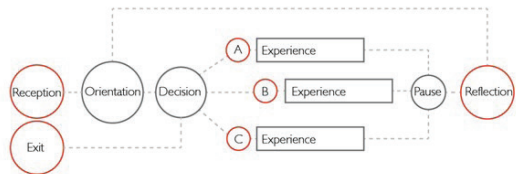
Approach



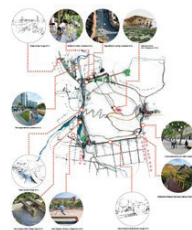
1st layer – UF Principles



2nd layer - Space Flow Analysis



Conceptual Urban Framework



- Proposed Facilities:
- Research
 - Educational
 - Recreational
 - Medical
- Prolific Partition
 Medical Meditation

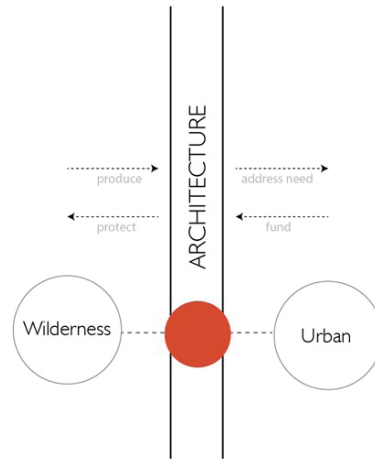
The Prolific Partition – Architecture as Contextual Conservator

ARGUMENT

Approach – Hypothesis

Architecture can be developed in the in-between of wilderness and urban to act as conservator for nature reserves.

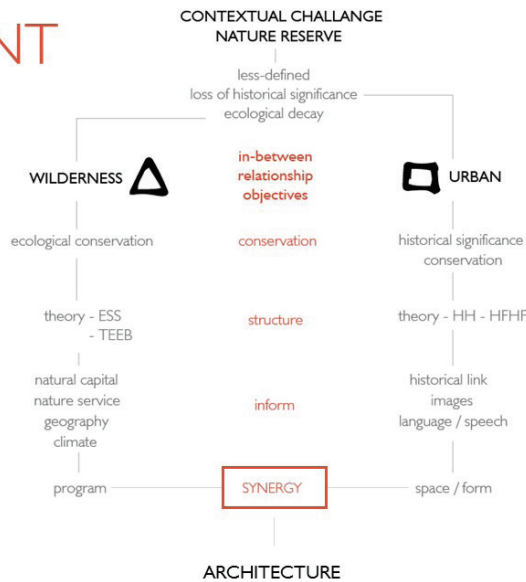
Utilizing the **natural resources** (natural capital of ecosystems/ provisional ecosystem services) of **wilderness** to produce products for the urban dweller within a space that continues the historical layers of the site. The **space of interaction between wilderness and urban** will become the **conservator**, acting as active protector in terms of sustainable production, education and urban dweller interaction with the continues history of site.



The Prolific Partition – Architecture as Contextual Conservator

ARGUMENT

Approach – Structure



The Prolific Partition – Architecture as Contextual Conservator

THEORY

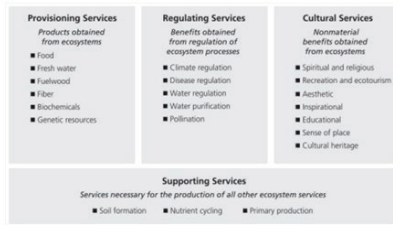
Ecological conservation



Theory of Ecosystem Services

By Definition:

"The benefits people obtain from ecosystems. These include provisioning services such as food and water; regulating services such as flood and disease control; cultural services such as spiritual, recreational, and cultural benefits; and supporting services such as nutrient cycling that maintain the conditions for life on Earth. (Greenfacts 2017)"



MEA categories of ecosystem services

Millennium Ecosystem Assessment (2005)

Valuing Nature: Economics, Ecosystem Services, and Decision-Making

by Dr. Stephen Polasky, University of Minnesota

1. Link actions to impacts on the provision of services by improving understanding of:

- the consequences of human actions on ecosystem.
- the ultimate impacts on the natural capital that sustains ecosystem services.

2. Value services to:

- improve understanding of the contribution of ecosystem services to human well-being.

3. Provide incentives to:

- incorporate an understanding of the value of ecosystem services into policy and management frameworks.
- provide incentives for the continued provision of valuable ecosystem services.

- From Theory of Ecosystem Services Seminar 2 (2011)

Greenfacts 2017. Ecosystem services Definition: <https://www.greenfacts.org/en/assessment-of-ecosystem-services/17/> (Accessed 21/05/2017)
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The Prolific Partition – Architecture as Contextual Conservator

THEORY

Ecological conservation



The Economics of Ecology and Biodiversity (TEEB)

"The Economics of Ecosystems and Biodiversity (TEEB) is a global initiative focused on "making nature's values visible". Its principal objective is to mainstream the values of biodiversity and ecosystem services into decision-making at all levels. It aims to achieve this goal by following a structured approach to valuation that helps decision-makers recognize the wide range of benefits provided by ecosystems and biodiversity, demonstrate their values in economic terms and, where appropriate, suggest how to capture those values in decision-making (TEEB [sa])"



TEEB (TEEB [sa])

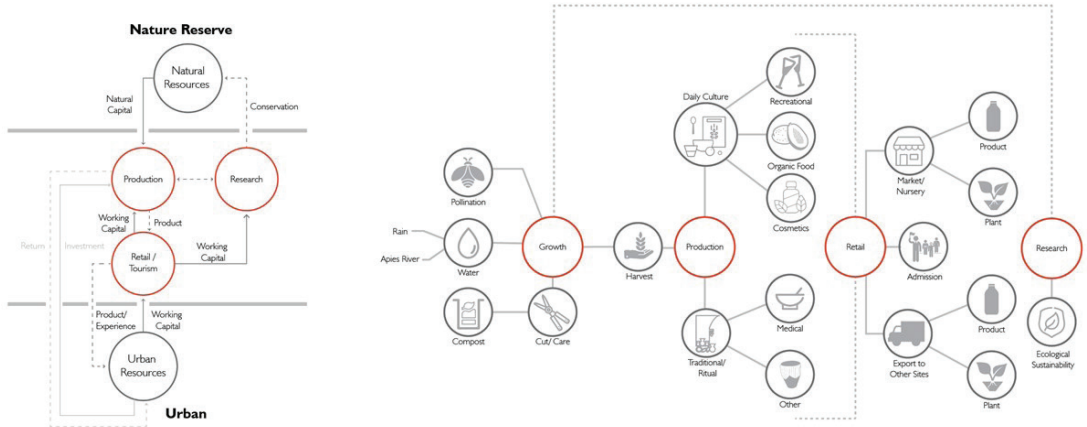


Greenfacts 2017. Ecosystem services Definition: <https://www.greenfacts.org/en/assessment-of-ecosystem-services/17/> (Accessed 21/05/2017)

The Prolific Partition – Architecture as Contextual Conservator

PROGRAM

Conservation Facility Function

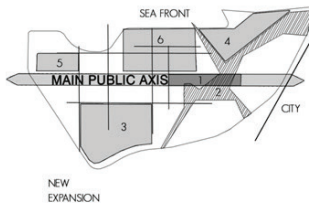
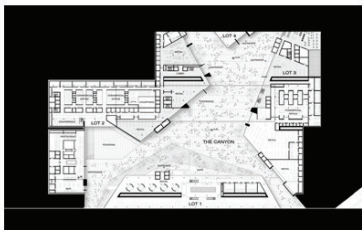


The Prolific Partition – Architecture as Contextual Conservator

PRECEDENT

Program

Project: Third-Place Proposal for Turkey's Bandirma Park [Bandirma Regeneration As Knowledge]
Architect: TARI Architects
Location: Bandira Park Turkey
Program: Educational / Park



ARCHITECTURE



LANDSCAPE SYSTEM
(OUR PROPOSAL)



ArchDaily | 2017, Third-Place Proposal for Turkey's Bandirma Park Bridges Public Spaces in an Urban Landscape
<http://www.archdaily.com/847583/third-place-proposal-for-turkey-s-bandirma-park-bridges-public-spaces-in-an-urban-landscape>
The Prolific Partition – Architecture as Contextual Conservator

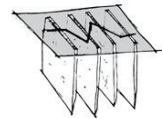
THEORY

Conserve Historical Significance
Homework for More Hospitable Form (1973)

by Herman Hertzberger in the Dutch journal Forum.

"9.4 We cannot make anything new, but **only reevaluate already existing images, in order to make them more suitable for our circumstances.** What we need to draw from on this is the great 'Musée Imaginaire' of images wherein the process of change of **signification** is displayed as an effort of human imagination, always finding a way to break through established order, so as to find a more **appropriate solution for his situation.**"

- Herman Hertzberger, from "homework for more hospitable form", in Forum 24:3 (1973), n.p. trans.



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THEORY - FORM

Conserve Historical Significance
Homework for More Hospitable Form (1973)

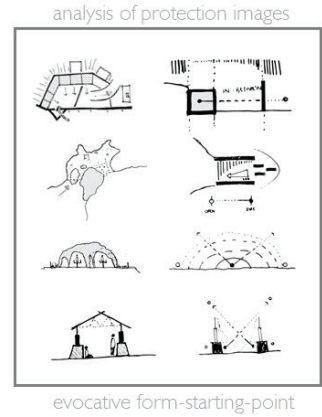
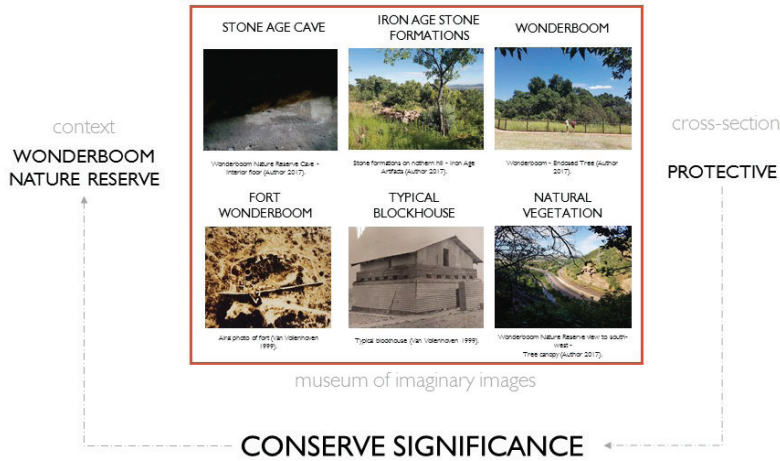
by Herman Hertzberger in the Dutch journal Forum.



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FORM

Conserve Historical Significance
Homework for More Hospitable Form (1973)
by Herman Hertzberger in the Dutch journal Forum.

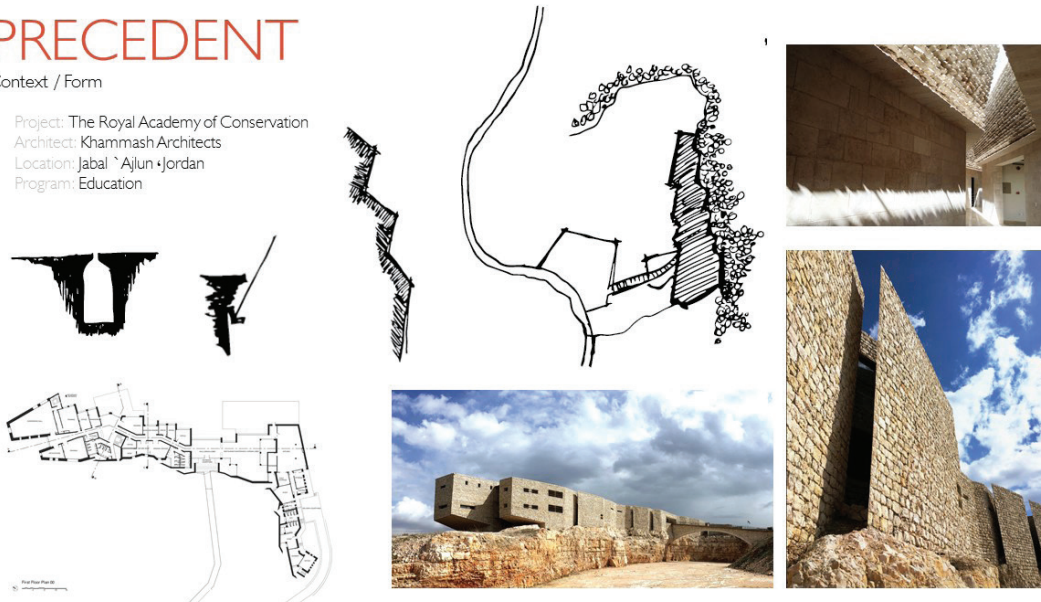


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PRECEDENT

Context / Form

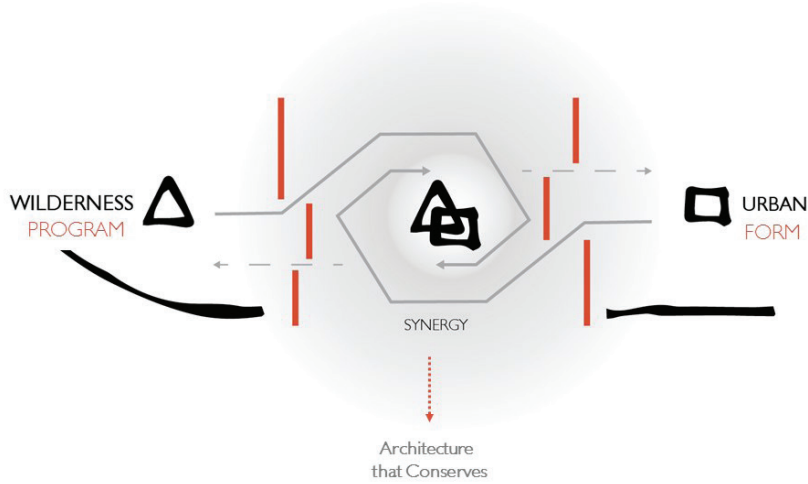
Project: The Royal Academy of Conservation
Architect: Khammash Architects
Location: Jabal Ajlun - Jordan
Program: Education



ArchDaily, 2016, Royal Academy for Nature Conservation / Khammash Architects. <http://www.archdaily.com/789314/royal-academy-for-nature-conservation/khammash-architects>
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PROGRAM - FORM

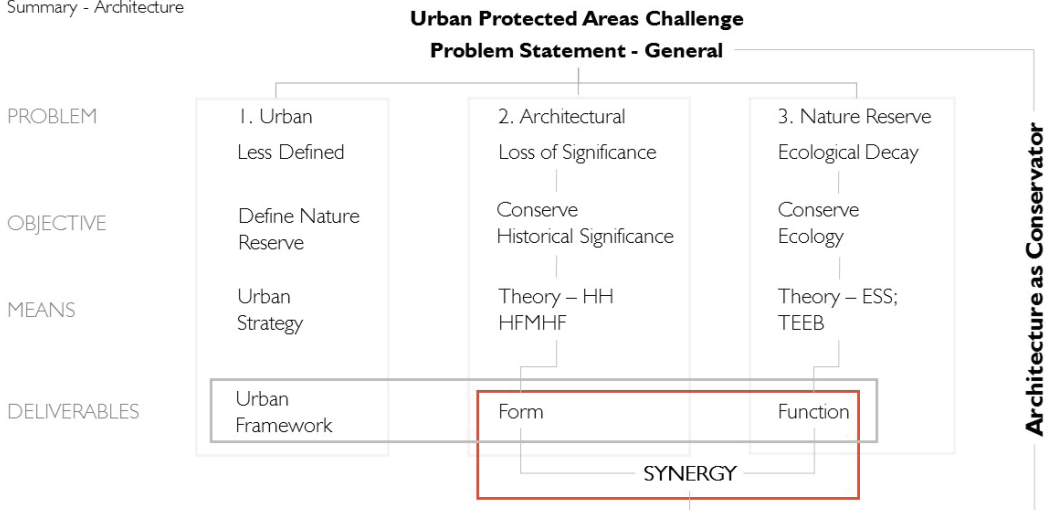
Synergy as Architecture



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CONTRIBUTION

Summary - Architecture



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CONTRIBUTION

Other - The South African Continuum

Economics and Architecture – Towards a Sustainable Economy

Alternative Domestic Products & Job Creation

GDP – Gross Domestic Product

"Definition: Gross domestic product is the best way to measure a country's economy. GDP is the total value of everything produced by all the people and companies in the country. It doesn't matter if they are citizens or foreign-owned companies. If they are located within the country's boundaries, the government counts their production as GDP. (Amadeo 2017)"

RSA GDP Growth Rate:

- 2012	2.2%
- 2013	2.2%
- 2014	1.5%
- 2015	1.3%

- 2016 - 4th quarter – 0.3%



(Google Public Data from World Bank 2017)

African Cultural Traditions and Architecture – African Need
Indigenous Plant Market

Sustainable supply of traditional medicine.

"In today's world, where re-examination has been given to cultural globalization, the relationship between architectures and specific regions is one of many specific issues. At this time, the study of architecture from the perspective of geography has significant meaning for treasuring regional characteristics and protecting the essence of ethnic culture."

– From the Abstract of Born of geographical environment, coloring for regional context: Concept and progress of geo-architecture by Fang Wang.

Amadeo, K. 2017. What is GDP? Definition of Gross Domestic Product. <https://www.thebalance.com/what-is-gdp-definition-of-gross-domestic-product-3374038> (Accessed 21/05/2017)

Fang, W. 2017. Born of geographical environment, coloring for regional context: Concept and progress of geo-architecture. *Journal of Geogr. Sci.* 27(5): 631-640

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CONCLUSION

Architecture as Contextual Conservator

The project sets out to aid in an strategic approach towards addressing specific issues that the urban context within South Africa are confronted with. By investigation, analysis, theoretical influence, approach structuring and precedent studies any spatial or urban issue can be addressed.

In the case of Wonderboom Nature Reserve the synergy as structured between function and form of contextual influence to address the contextual issues, such as conservation of urban protected areas must be tested. With the facilitation and capturing of contextual significance and appropriate structuring of function, Architecture can be developed to address specific contextual issues in urban environments (*wilderness or urban*).

Continues contextual conservation within rapid growing urban environments are of absolute importance and architecture should intervene with innovative and current solutions that can aid all environments and parties involved.



(Designworld 2015)

Designworld. 2015. Nuzio Poo's Anatomical Art Explores The Relationship Between Man And Nature. <http://designworld.com/nuzio-poo-anatomical-art/> (Accessed 21/05/2017)

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End.
Thank you.

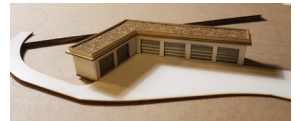
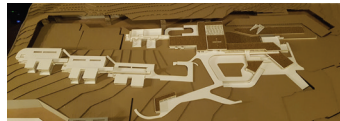
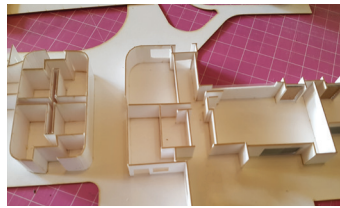
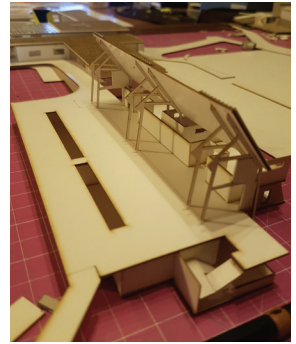
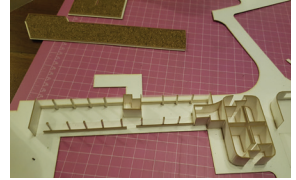
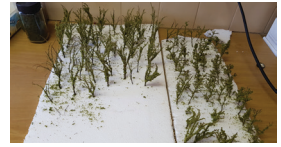
(Designworld 2015)

Designworld. 2015. Nuzzo Paoi's Anatomical Art Explores The Relationship Between Man And Nature. <http://designworld.com/nuzzo-paoi-anatomical-art/> (Accessed 21/05/2017)

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APPENDIX C - FINAL PRESENTATION









A Personal Note

The relevance of this intervention and research is questionable due to the nature of the current economic situation confronting the country. The sad reality is, that attention to these challenges are never tabled until it is too late. In completing this dissertation, I contribute to the hope and promises of preserving the natural and historical beauty of South African and especially that of the city of Tshwane's nature reserves. I call on all, student or professional, city dweller or sub-urban resides, male or female, black or white, all - to conserve the historical and natural elements that we are not confronted with daily. It is these elements that our future generations will thank us for.

I don't know why I did this, I just know it was the right thing to do.

