

# CHAPTER 5 THEORETICAL CONSTRUCT

*developing a new contextual network  
of theoretical linkages*

## 5.1 THEORETICAL POSTULATION: REGENERATIVE THEORY

“Regenerative architecture is the practice of engaging the natural world as the medium for, and generator of architecture” (Littman, 2009) It is a system of generating architecture with a focus on natural and living environmental systems, based on conservation and performance. This essentially sees the natural world as an equal partner.

Littman goes on to Re-define this architecture as “the art or practice of designing and constructing place, through the integration of site and building.” He argues that Site/place is an integral part of regenerative theory, an obvious yet important connection. His inflection is further explained as site and architecture including systems existing “as one system that co-evolves as one complex entity... producing more than it consumes.”

In this Re-definition Littman eludes to an architecture that is alive, in a way interacting with its context and users to become a constantly evolving system. This leads to the theoretical postulation of the concept of Active Regeneration. A regenerative architecture which interacts with site, context, systems and theory to produce an ongoing regeneration through relevant interaction with this architecture. This interaction and regeneration could be through water and systems, land and built form, heritage and space-making or even people and activation. The crux is a tangible regeneration of the site’s ecological, commercial and people based systems.

There are nine principles that make up a regenerative theory as displayed in figure 85 to the left. They are ecology, sustainability, community and heritage based which are all pertinent points for this intervention. However, due to the specific contextual site condition, that being a harmed mining landscape, certain principles need to be edited, specifically the principle of integration into landscape and concentration. The reasons being that the harmed landscape must be removed and

can only be acknowledged artificially in a very controlled manner and the fact that the site needs very specific programmatic responses to the issues presented.

The theoretical intention of this dissertation is thus to establish a contextual regenerative theory, which targets aspects dealing with landscape, ecology, the rich history of the site and the spatial and socio-economic concerns resulting from that heritage, thus incrementally re-identifying the mining belt through the concept of Active Regeneration.

The concept of Active regeneration will have three main focus groups that will act as conceptual drivers. These are the drivers of Heritage, Ecology and Socio-Economic Value. The interaction between these three lenses and where they overlap will inform this intervention. These three drivers will be iterated to find the most appropriate dialogue and architectural outcome which will not only form the first point of entry onto the new mining belt but also lay the groundwork for the future of this ecological, economic node. The nine principles already established fit into one of the three drivers, they are however mostly ecologically related and pragmatic rather than theoretical. The following theoretical discourse will establish a theoretical realm in which to place these pragmatic solutions by looking at targeted and relevant manifestos.

The Methodology follows a literature review;

- The Burra Charter, from which an appropriate historical and contextual study is explored. A process of documentation and exhibition is established which focuses on displaying the undocumented heritage of mining activities and its larger effect on Johannesburg, including narratives, mining equipment and social as well as ecological impact.
- Kenneth Frampton’s “10 Points on an architecture of regionalism,” which forms a guideline for developing architecture from the site. This will speak to an architecture that is true to the ecology and heritage of the site specifically in regards to topography, water, light and materiality.

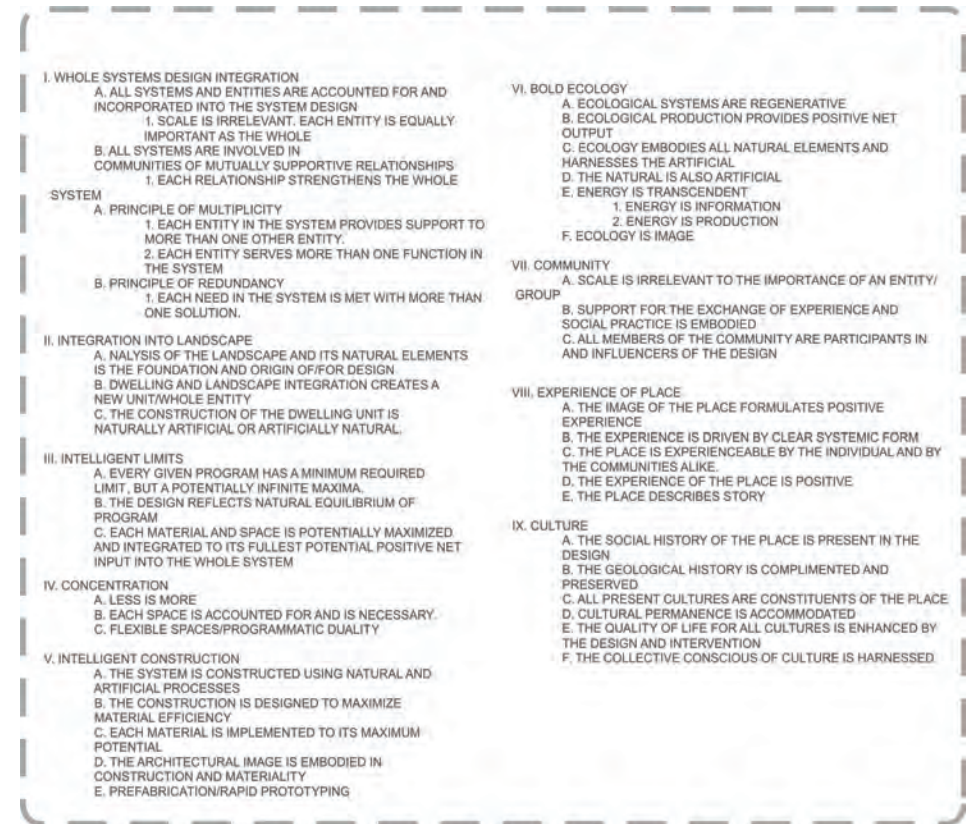


FIG 85 : The Nine Principles of Regenerative Architecture (Littman : 2009)

- Nabeel Hamdi's "The spacemakers' guide to big change," which explores Socio-Economic systems, from which appropriate activities can be extracted to activate space in a socially just and appropriate manner through targeted built interventions and public spaces.

It is hypothesized that synthesizing these three manifestos will form a regenerative theory and offer a conceptual approach to the formation of architecture which when contextually placed can effectively rehabilitate and reactivate the mining belt.

## 5.2 THEORETICAL CONTEXT

The Theoretical Context involves a succinct literature review relevant to the research proposal and a discourse which concludes and synthesizes the intentions relevant to the research proposal. This discourse will be in Grey for clarity.

### 5.2.1 HERITAGE REVIEW AND DISCOURSE

When evaluating the heritage value of the mining belt, documents such as the BURRA charter and the South African National Heritage Resources Act, are useful.

The South African National Heritage Resources Act, 1999 states that:

- 5(1) (a) Heritage resources have lasting value in their own right and provide evidence of the origins of South African society and as they are valuable, finite, non-renewable and irreplaceable. They must be carefully managed to ensure their survival.
- 5(1) (c) heritage resources have the capacity to promote reconciliation, understanding and respect and contribute to the development of a unifying South African identity.

5.5 Heritage resources contribute significantly to research, education and tourism and they must be developed and presented for these purposes.

Conclusion: These statements become important for

the South African population especially a younger generation to understand the influences that mining had on socio-spatial issues in Johannesburg, this resource should be readily available and accessible to the public as a quintessential part of heritage studies to contribute toward that aforementioned "South African" Identity.

The Burra Charter states that:

The Burra Charter is a ICOMOS developed document adopted by Australia to provide guidance in the conservation and management of places of cultural significance. This charter can be applied to any place of cultural significance including natural, indigenous, historic, spiritual, scientific, social and aesthetic places. This charter specifically references mining landscapes as relevant heritage sites. The significance of a place is in its use, meaning, setting, fabric, impact, nature and associations. This charter States that:

Its Purpose is to: conserve a connection to the community, landscape and to past lives and experiences; form a historical record, Identity and experience; tell us who and why we are and offer an important lens for a stronger, unified future and make sure places of cultural significance are conserved.

This safeguarding should not be at risk in a vulnerable site and there must be respect for the existing fabric, meaning, use and cultural association. Conservation should make use of all the knowledge skills and disciplines which can contribute to the study and care of a place. It should take into consideration all aspects of cultural and natural significance without unwarranted emphasis on any one value at the expense of others. Conservation requires the retention of setting, visual and sensory. The spirit of the place and cultural relationships also contribute to this.

Any adaptation should be appropriate and sensitive. The "contents" should be retained at that place and their removal is only acceptable for treatment, cultural reasons, health and safety, or to protect a place. Where circumstances permit, these contents

should be returned or sensitively appropriated.

All cultural lenses should be respected and recognized while allowing for open access especially to those directly associated with the cultural site.

Policy development is the key to successfully preserving cultural significance however this policy must be contextually based to the specific circumstantial needs of the place.

Burra Charter Process

- Understand Significance
- Develop Policy
- Manage in accordance with policy

The conservation process involves the retention, reintroduction, adaptation and interpretation of use, association, meaning, fabric, contents and place. Change may be necessary and permissible when cultural significance is retained through appropriate interpretation. Removed significant fabric should be reinstalled where circumstances permit. Adaptation should have minimal impact on cultural significance. New work is acceptable where it respects the cultural significance without detracting from the interpretation and appreciation of the place and new uses may be reintroduced.

Significant associations between people and place must be respected and retained, with opportunity for interpretation, celebration and commemoration to be investigated and exhibited. Meaning and spirit of place should be respected and celebrated. Interpretation should enhance engagement and understanding.

Conservation practice involves initial oral, documentary, physical and other studies to be carried out in order to understand the heritage value. Supporting written statements and policies should be prepared and incorporated. People associated with the place should be interacting, contributing and participating in the space. Processes and policies should be reviewed and appropriately altered periodically. Existing fabric, meaning, association and use should be documented and recorded. Disturbance of the existing fabric



FIG 86 : Critical regionalism in action in the Water Temple in Awaki Island, Tadao Ando (Martin, 2013)



FIG 87 : Critical regionalism in action in the Benesse House in Naoshima, Japan (Martin, 2013)

should be suitably justified and contribute positively to the space without affecting the cultural significance. Management and responsibility must be mapped out with a clear direction. Records should be kept and the place should function as a resource on the whole.

Conclusion: This Charter display the importance of documenting and exhibiting heritage as well as the multitude of ways in which it can be celebrated. The historical contextual investigation established what themes need to be celebrated and acknowledged as well as what negative aspects need to be counter-acted.

The mining belt is a string of associated sites which has meaning placed upon it through its deep rooted heritage as the foundation of Johannesburg. There is a iconic affiliation with the toxic waste mounds of Johannesburg which are recognizable landscape features, however for the cultural significance to be preserved and the land made habitable, it cannot merely be reconstructed, due to the land's toxicity but must be adapted with the cultural significance interpreted. It is a unique case where the physical heritage preservation is at odds with environmental standards. As a result, the goal is to develop an architecture that resists a universal lack of place and meaning and rather holds a strong and respectful language in the mining belt. This allows for a reformation of the land into a non-toxic but culturally significant form to isolate an architecture of regionalism, perfectly articulated by Kenneth Frampton.

### 5.2.2 ECOLOGICAL REVIEW AND DISCOURSE

Ecology is the study of how one living organism interacts with other living organisms. It focuses on connections and interactions between different systems. In architecture this could relate to a number of things such as the Site and building and the occupants and light or water. These interactions are explored pragmatically in Framptons, "10 points on an architecture of regionalism: a provisional polemic" and in Framptons, "Towards a critical regionalism: 6 points for an architecture of

resistance." These manifestos will be used as an environmental discourse.

Frampton originally famously postulated "6 points for an architecture of resistance" that would bring architecture toward a critical regionalism. In this manifesto he specifically aims to encourage modern architecture for its progressive attributes but argues it should be a space specific, context inspired response. The emphasis being places of site and resulting conditions. This can be translated to the creation of site specific, responsive, contemporary architecture devoid of ornamentation.

Frampton uses an ironically relevant quote from "history and truth" which states, "In order to get on to the road toward modernization, is it necessary to jettison the old cultural past which has been the *raison d'être* of a nation? ... Whence the paradox: on the other hand, it has a root itself in the soil of its past, forge a national spirit." (Ricoeur, 1965) This is directly related to the issue the mining belt faces in that its cultural value lies within the toxic waste mounds, which in essence are the inhibitors to development.

Framptom refers to examples like Tadao Ando, who's architecture employs strong geometric form in harmony with the landscape, using light and in some cases water to highlight an experiential quality of the building. Frampton then refers to the "serpentine" transit networks that enable modern city high-rises which in turn has enabled globalization, the agglomeration of building form to a universal standard aesthetic. He suggests a mediative in-between whereby globalization is combined with elements that are a product of the peculiarities of a specific place thus being influenced by, heritage, context, topography or light. Although architecture defined by boundaries must not be disconnected, from the extended context, by them. Thus spatial articulation is important in defining the characteristics of place. He outlines the importance of "place-form" being a balanced product of the natural qualities of the landscape and the cultural legacy that is critical to a place's identity. This concept is in opposition of placeless design. In conclusion of his 6 points Frampton talks about the

importance of a haptic experience of the building in both creating and evoking memory. (Frampton, 1983)

Frampton later in his career discusses this view of critical Regionalism in, "10 points on an architecture of regionalism: a provisional polemic. This "Speculative manifesto" suggests that:

- 1)Critical Regionalism is not a "vernacular fetishism" but rather a "recuperative, self-conscience, critical endeavor." (Frampton k, 1987, 378)
- 2)It pays attention to how the built form specifically interacts with the ground/site.
- 3)Regionalism is defined by climate and locality but furthermore a school of thought in educational and cultural value, that which is of meaning. It should also be defined by committed clients and or stakeholder/s.
- 4)The experiential quality of a building should build a true and unique genius loci that is separated from scenography.
- 5)Urban realms are becoming universal, a privatized domain with a loss of place and closeness however, as Heidegger suggests it should be a "phenomenologically bounded clearing or domain" (Frampton k, 1987, 382)
- 6)Topography is quintessentially site-specific, a concrete appearance of the site itself. This is often in opposition to typology which is formalistic. The conversation between these two creates a resultant place-form which is a keen dialogue between ecology, symbolism and the new intervention.
- 7)Architecture's roots lie in the expressiveness of the true built form, that is the conversation between tectonic and stereotomic elements, the celebration of "frame and joint in the genesis of construction." (Frampton k, 1987, 383)
- 8)Architecture has a symbiotic relationship with nature and thus should respond appropriately to not only topography but climate and light. Artificially created environments counteract the rootedness of a design and leaves an occupant feeling placeless. Even in sensitive spaces like museums, careful placement can still allow for natural interaction with ventilation and light while still protecting the art.
- 9)The building is a composition of hierarchical spatial episodes that are experienced first by

the sensory bias of sight but complemented by other senses such as the tactile, air movement, temperature, acoustics, materiality and feel. 10)This is quintessentially a manner of experience, for the body, of an environment, framed in place both physical and metaphysical.

Conclusion: Critical regionalism is explored in a specific way to outline the ecological informants of contextual elements like water and topography, and to a lesser extent light. The site is a harmed landscape with water and topography needing to be treated. The topography of the site will have to be completely removed however it can be echoed by the buildings form. Thus building is inspired by or rather becomes topography creating a connection with the peculiarity of this site. Water treatment is an important contextual informant and can contribute to a haptic or phenomenological experience of the site. The toxic AMD has to be treated and the active regeneration of the water can be a visual process and even become interactive after treatment through systems like evaporative cooling and spray systems. Water can also be displayed in poetic senses using structure to create a relationship with it, without the toxic water actually touching users, such is popular in Tadao Ando's work where concrete structures are submerged in water to allow a user to experience the water in a phenomenological and indirect nature.

The next connection ties into the Heritage lense of which Critical Regionalism is directly connected to. The heritage forms a cultural legacy and identity which is also a haptic and visual journey expressed through a heritage landscape through physical mining tools and systems being exhibited. The heritage factor also ties into the materiality, form and construction of the "place-form" which will directly speak to the tectonic, exposed structural steel nature of mining landscapes.

This process presents a strong theme of tension between heritage and ecology. This is due to the fact that the Heritage response requires an imposing, invasive tectonic place-form and the Ecological response requires a sensitive, stereotomic response. The theme of tension will thus directly influence the overall experiential quality of the design as it

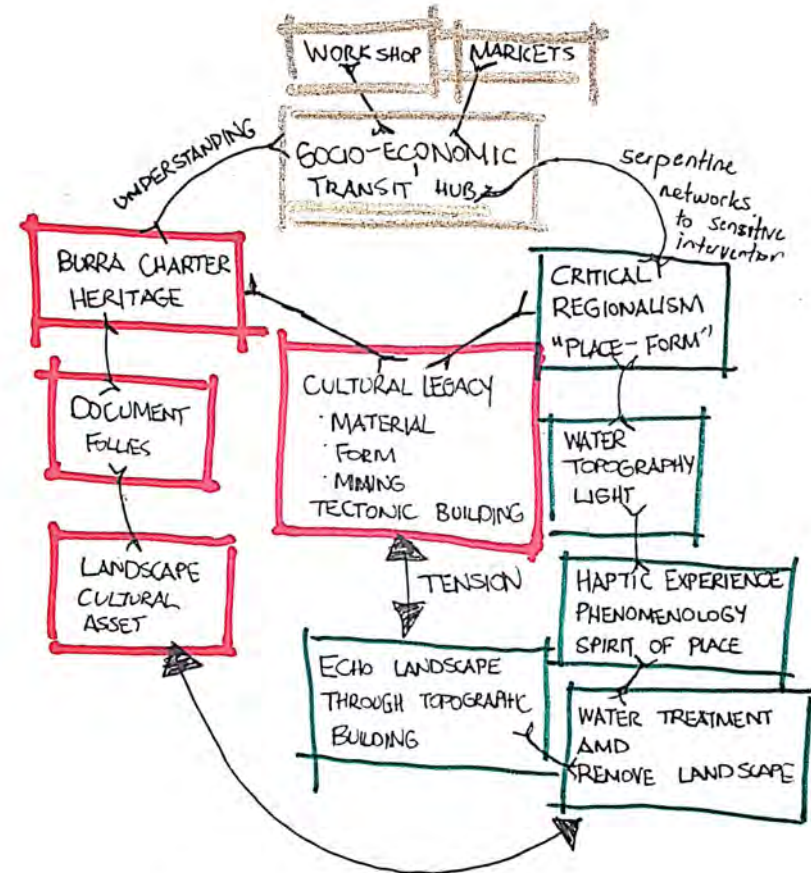


FIG 88 : Theoretical Networks and linkages, crossovers and tensions (Author, 2013)

### 5.2.3 SOCIO-ECONOMIC REVIEW AND DISCOURSE

transitions from tectonic to stereotomic.

“To do something BIG- to think globally and act globally - one starts with something small and one starts where it counts.” -Nabeel Hamdi, 2015

The act of community building is paramount in an area undergoing rehabilitation, especially one as fragmented as the mining belt. This focus on the socio-economic value is specifically programmatic, helping the community and rooting itself by recognizing a local or contextual need. This intervention looks at counteracting the negative socio-economic effects of the mining belt has had which was explored in the contextual study. This mainly refers to the fragmentation of the city, spatial disparity and skills issues. The lack of adequate skills amongst an underprivileged black community is prevalent in the unemployment rate of Johannesburg which is currently sitting at 25%(Statistics SA, 2017). This is a long lasting legacy initially started by the mining sector as discussed in chapter 2. In order to address this in an effective manner Nabeel Hamdi's, “Spacemakers” guide to Big change” will be consulted. This is a handbook that deals with Participatory planning and spatial agency.

Hamdi suggests that participatory practice is necessary because of its efficiency and equitability in building the social economy of place which is fundamental for community building. Participatory practice involves active engagement with end-users, identifying their needs & requirements resulting in more efficient and appropriate outcomes. It engages with informality and utilizes acupuncture to unleash more significant results.

This is placing responsibility with both authority and stakeholders. This is beneficial for bringing people together and identifying alternatives and unique contextual ideas. There is also a greater strength in the resulting schemes which develop as more emphasis is placed on what people actually need rather than an imposed top down standardized solution.

Practice, then, is about making the ordinary special and the special more widely accessible, tapping into spatial agency — expanding the boundaries of understanding and possibility with vision and common sense. “It is about building densely interconnected networks, crafting linkages between unlikely partners and organizations, and making plans without the usual preponderance of planning. It is about getting it right for now and at the same time being tactical and strategic about later.” (Hamdi N, 2004, xix)

This process is there to empowering people to mobilize interest, resources and partnerships while understanding community, place, interest, practice and culture. Understanding these aspects will help to identify who the role players are and then help identify the practical and strategic objectives. There is a conversation or creative sweet spot between, community action planning (bottom up planning), which involves locally based programmatic interventions with immediate outputs, and strategic action planning (top down) which involves policy orientated interventions on a large scale. this combined with the idea of forward planning with Backward reasoning creates a “one size fits all” approach to community interventions

Hamdi focuses on the key points of PEAS- Provide opportunities, Enable through programme, Adapt solution accordingly and create a Sustainable response. These principles are the crux of any resilient targeted intervention. To establish a targeted intervention or plan a cyclical process is outlined by Hamdi which involves Identifying:

#### 1) Problems or Opportunities

Put into contextual investigation this can be seen as The informal settlement housed at Boosens station which accommodates bot a problem that can be turning into an opportunity in the form of trolley pushers

#### 2) Goal and Priorities

To provide safe trolley routes and a deposit point where the trolley pushers gain useful and fair payment

#### 3) Options and Trade-offs

Payment can be in the form of night classes to

develop skills or even transit tickets

#### 4) Resources and Constraints

Developing a strengthened transit network in Johannesburg South provides a strong resource in which to include the Trolley Pushers, however due to the low economic activity this function will have to be governmentally run or funded unless private funding can be found

#### 5)Project Teams and Tasks

Stakeholders include government and the trolley pushers to interact with a skills development team

#### 6) Catalytic Projects/ Programs

The collected trash could be turned into art or functional furniture as part of the skills development workshop

#### 7) Strategic Plans

Due to the informality of the trolley pushers operating as independent informal workers, organization can become an issue which can be solved through the implementation of a mobile phone app that formalizes collection, working areas and drop off points.

#### 8)Evaluation

Although this allows for a more efficient network of informal trolley pushers, most do not have access to smart phones and data. Unless a service provider becomes part of a project team to sponsor this service it is unrealistic.

#### 9)Implementation

The first stage will be implemented through word on mouth by choosing and identifying key role players that want to empower themselves through the Night Classes offered after they are done working in the day.

#### 10)Analysis

This process will be conducted post-implementation in which the process will start its cycle again

#### 11) Policy Planning

This top down process takes a long time to go through and involves things like better protection and allowances for trolley pushers to use the roads in the form of bicycle lanes or something to a similar effect without being harassed by police or being a public nuisance.

“Practice is about opening doors, removing barriers to knowledge and learning, finding partners and new forms of partnership, building

networks, negotiating priorities, opening lines of communication and searching for patterns. it means designing structures — both spatial and organizational — and facilitating the emergence of others, balancing dualities that at first seem to cancel each other out — between freedom and order, stability and creativity, practical and strategic work, the needs of large organization and those of small ones, top and bottom, public and private.” (Hamdi N, 2004, 116)

### 5.3 THEORETICAL CONCLUSION

The combination of these three lenses takes the aforementioned nine principles of a Regenerative theory and focuses them into three succinct categories. These categories are supported by targeted literature reviews to inform an architectural product. These three focus areas produce a theoretical discourse for a more contextually driven Regenerative theory than previously developed. This theory deals directly with the main issues outlined in Chapter one that being the Cultural value and contrasting ecological hazard that the mining belt poses as well the latent socio-economic potential the land and it's resulting place-form could offer. Thus it is important to note, that due to the specificity of this regenerative theory, it cannot be duplicated anywhere but in the intended Urban area. What has been produced is a regenerative theory with a conceptual base of Active Regeneration that will have spatial, formal and programmatic implications in the generation of architecture.

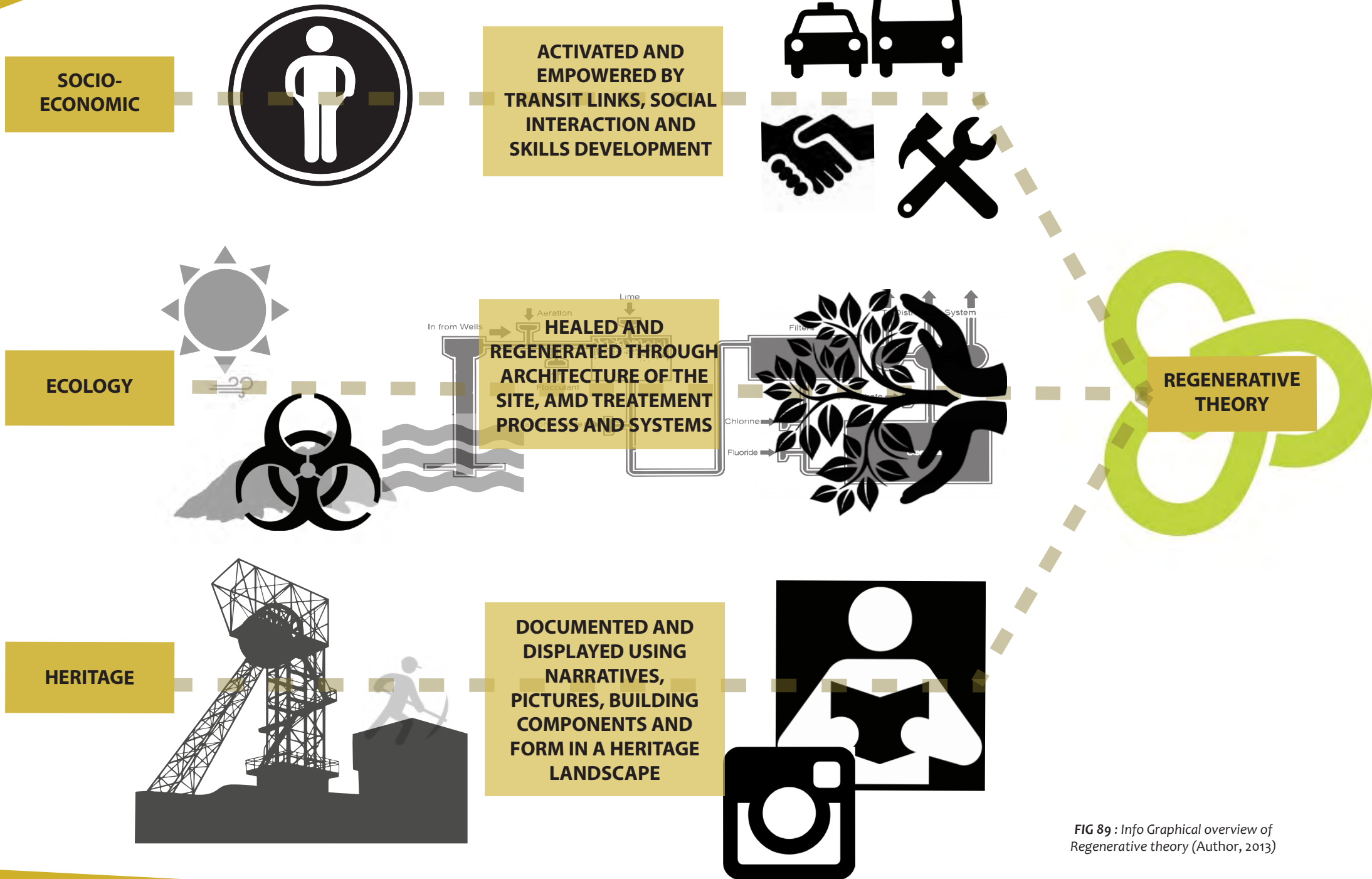


FIG 89 : Info Graphical overview of Regenerative theory (Author, 2013)



**Fig 90 :** Collage depicting the chronological series of the 7 areas from top to bottom (1-7 respectively) (ShowMe.tm, 2017)

## 5.4 CULTURAL/ HERITAGE PRECEDENT

FREEDOM PARK, PRETORIA  
ARCHITECT: MASHABANE ROSE ASSOCIATES, GAPP ARCHITECTS AND URBAN DESIGNERS AND MMA ARCHITECTS  
BUILT: 2004

Freedom park is a heritage landscape that stands to evoke patriotism and honour South Africa's past in terms of freedom, humanity and purpose.

It is divided into distinct sections over the park's journey. There are 7 different areas with 7 distinct themes each unique to their respective content. This includes the Hapo Museum. The parks landscape and tectonic expression is in the form of acknowledging, respecting and documenting the past as well as celebrating and optimistic future.

The 7 areas are the:

1. Isivane area- which honours the spirits of those who died fighting for freedom and liberation
2. S'khumbuto- Which documents important conflicts in South African history
3. Wall of Names- 75000 Names of Freedom fighters
4. The Eternal Flame- for those who died without recognition for fighting for freedom
5. Reeds- 200 32m poles symbolizing national rebirth
6. Reconciliation Road- the road to reconciliation between the Voortrekker Monument and Freedom Park
7. Hapo Museum- documents physical and national heritage from 3.6 billion years ago until present day.

This display of heritage is calculated along an extended landscape rather than one museum and becomes a haptic experience of story-telling which is what the heritage landscape within the proposed precinct aims to achieve.



## 5.5 FORMAL PRECEDENTS

### 5.5.1 TECTONIC PRECEDENT WITWATERSTRAND MINING BELT, JOHANNESBURG

ARCHITECT: PROSPECTORS  
BUILT: 1886+

The Mining belt was a purely economically driven project and as a result the resulting “architectural” language is pragmatic and functional with large steel structures forming landmarks amidst low rise industrial timber, steel, concrete and brick structures. The steel members were purely functional to carry the appropriate loads across and support efficient mining.

This precedent/ tectonic exploration is directly related to the stereotomic precedent. This relation is through contrast and tension. The tension is that represented in the relationship between heritage (honouring the past cultural tectonic value of the mining belt) and ecology (having to create a sensitive intervention which respects the toxic to-be-removed landscape) The theme of tension and resulting mediation will result in the contextual “place-form.”



FIG 91 : Collage depicting the Mining Landscapes tectonic aesthetic and formal quality (Johnson D. 2017)





## 5.5.2 STEREOTOMIC PRECEDENT

IGUALADA CEMETERY,  
SPAIN

ARCHITECT: ENRIC MIRALLES

BUILT: 1994

Igualada Cemetery is a sensitive project that blends into the landscape and unfolds as the user journeys through the existential space. It was part of a replacement project of an older cemetery.

The play of light brings about a consciousness of the ground and sky. The use of natural material makes the architecture feel site inspired as if it had been an organic extension of the landscape. There are places for reflection and memories with conceptually poetic response that is intended to connect past, present and future. Nicknamed the "city of the dead" it is meant to evoke an experiential and spiritual journey through the site to bring users closer to passed-on loved ones.

The fluid progression of this earthwork combines the muted tones of stone and cement to form the landscape. This is complemented by cor-ten steel members that guide the entrance of the site through the windy path. There are wooden railroad ties embedded into the stone speaks to the context with addition of the gabion walls and natural aesthetic.



FIG 92 : Collage depicting Igualada cemetery site inspired architecture, topographic and stereotomic formal and aesthetic qualities and a critical regionalist response (Kroll. 2011)