

An architectural design dissertation by Jacob Kritzinger

A GAME OF DIMINISHING RETURNS

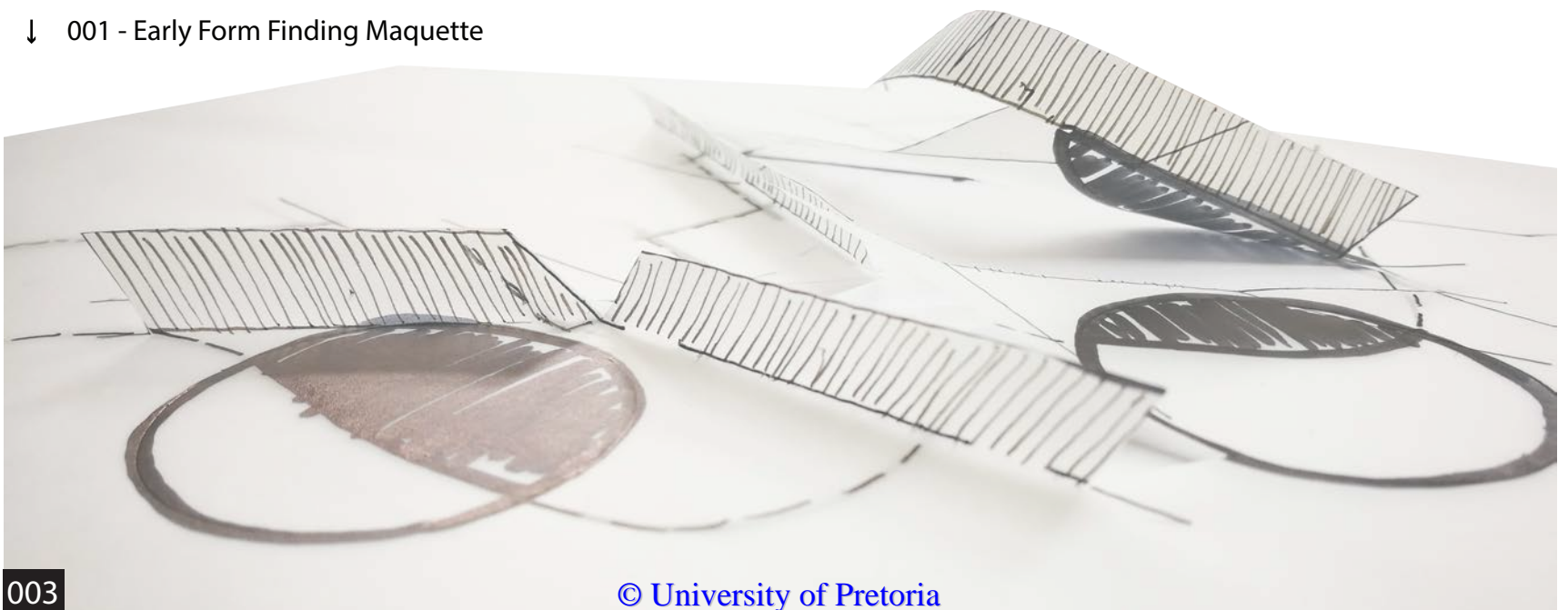
Generating identity through Architecture

Architecture as a regenerative agent of man and nature



CHAPTER 00
PREFACE

↓ 001 - Early Form Finding Maquette



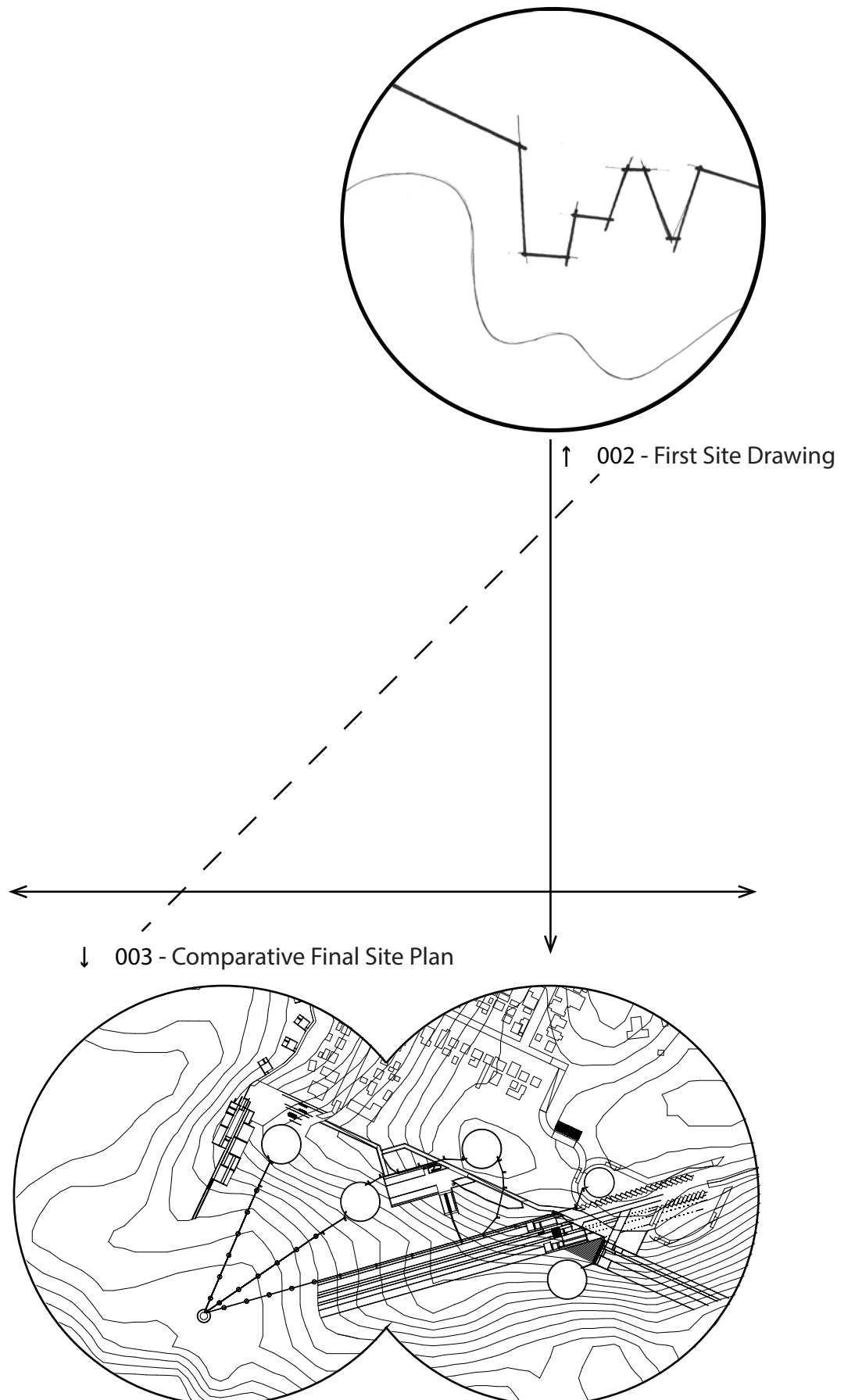
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Date:	November 2017
Course Coordinator:	Dr. Arthur Barker
Study Leader:	Abrie Crafford
Programme: Site description:	Remedial Systems Research Laboratory The Refilwe Community, located alongside Slime Dam no.7 of the Petra Diamond Mine (Cullinan)
Site Location: Address: Co-ordinates:	Roads end, 24th Street, Refilwe, Gauteng, South Africa. Colin Road, Cullinan, Gauteng / R515, Gauteng 25°38'23.83'S 28°31'46.80'E
Research Field:	Environmental Potential
Client(s)	The Refilwe Community, the Chamber of Mines of South Africa & Petra Diamond
Keywords:	Phytoremediation, Bioremediation, Rehabilitation, Laboratory, Scientific Research, Temporary Architecture, Community Identity, Agriculture
Architectural Theoretical Premise:	Remedial and regenerative environmental theory is incorporated into architectural theory to resolve community and environmentally based problems, relating to mine sites.
Architectural Approach:	The investigation of architecturally based methods of environmental rehabilitation, of mine specific sites, and societal rehabilitation through formation of community identity.

TO MY FAMILY

Thank you for your love, support and invaluable input.

TO ABRE CRAFFORD & DR. ARTHUR BARKER

.....
Thank you for your guidance, expertise and motivation.




 ABSTRACT

 Site: Refilwe, Collin Road, Cullinan, Gauteng, South Africa
 25° 38' 23.83" S 28° 31' 46.80" E

Mining related activities are more expansive than ever before, with population growth data showing an exponential increase. These societies form part of the world consumer market in which people are constantly buying products with a short life-expectancy, such as consumer electronic devices. More often than not, these mining activities occur in developing countries or rural areas. A repercussion of mines located long distances from active communities is the formation of new communities based solely on the monetary system of a mine. Various precedents show the societal damage caused by the inevitable closure of mines. This eventuality is not the only societal concern associated with mining communities; communities with few social binding factors. These spaces are often made up of individuals from geographically and culturally disparate spaces who are brought together solely in their united search for monetary stability. This often leaves these communities rife with xenophobic tendencies and unsustainably weak community identities. Can a system be created in which community identity can act as a social catalyst preventing the disintegration of communities abandoned by mines? The close-out plans, drawn up by mines, leaves a lot to be desired. Based on outdated environmental data and environmental laws, these closure plans offer very little environmental protection or land rehabilitation options, and nearly no protection of any kind for communities involved in mining activities. There lies irreversible societal and environmental damage in our near future, not only for South Africa, but worldwide, if we do not start offering up innovative ideas and possible solutions for these mining communities.

This dissertation will investigate architecturally based solutions for community stability, and environmental stability, through the formation of a strong communal identity which will be based on environmental rehabilitation as the catalyst for stability. The proposed site exists as a no-man's-land between the Refilwe Community and Cullinan diamond mines' largest slime dam. The constant expansion of the Refilwe community has pushed property development to the absolute limit, in terms of proximity to the slime dam. This community currently borders on this slime dam, hazardous to the humans and animals that live there. The history of Refilwe exemplifies pre-Apartheid and Apartheid laws of segregation; a political system which still affects the identity of the residents and the community as a whole today. Recent community-directed architectural failures leads this dissertation to reconsider how architecture can rehabilitate or assist a community. As a point of departure, this dissertation examines utilizing existing potential within a damaged space and analyses the significant community requirements at hand. The architectural response will primarily be based on information collected from various sources, including but not limited to: sites studies, environmental analyses, precedents and historical information. The programme was developed to utilize architecture as a response method for remediation of both man and nature.

Myn gebaseerde aktiwiteite het 'n hoër produksie en verwagting as ooit tevore met die bevolking se eksponensiële toename. Hierdie gemeenskappe vorm deel van die wêreld se gebruikersmark. Die publiek koop aanhoudend produkte wat binne 'n paar jaar op die vullishoop beland, byvoorbeeld elektroniese objekte. Die meerderheid myne word gevind in onontwikkelde lande of in 'n plattelandse omgewing. Die nadeel van myne wat ver van stedelike gebiede is, is dat die nuwe gemeenskappe alleenlik gevorm word om die stigting van die myn. Dit is bewys dat die onvermydelike staking van produksie van myne veroorsaak sosiale verwoesting in sulke gemeenskappe. Dit is nie die enigste probleem nie. Hierdie gemeenskappe het geen sosiale groepseenheid nie en bestaan meestal van mense van verskillende agtergronde en plekke. Hulle is saamgegooi as gevolg van werksgeleentheid. Die gevolg daarvan is dat die gemeenskap se individuele identiteit swak is, en xenofobiese gevoelens ontstaan.

Die vraag is, kan 'n sisteem ontwerp word om 'n gemeenskaplike identiteit te help vorm? Wat sal help om die gemeenskap bymekaar te hou en te ontwikkel na die myn toemaak? Die finale plan vir die toemaak van 'n myn is gewoonlik nie bevredigend genoeg nie. Gebaseer op verouderde omgewingsinformatie en omgewingswette word te min beskermings opsies aangebied vir die rehabilitasie van die gebied. Onomkeerbare sosiale en omgewingsvernietiging sal in die toekoms volg, nie net vir Suid-Afrika nie, maar wêreldwyd, indien ons nie begin kyk na nuwe kreatiewe idees, en moontlike oplossings vir hierdie myn gemeenskappe nie.

Die verhandeling versoek en beoog 'n oplossing met argitektuur as basis en agtergrond, vir die gemeenskap en die omgewings stabiliteit, deur die vorming van 'n sterker gemeenskaps identiteit wat gebaseer word op omgewings rehabilitasie. Die voorgestelde terrein plan en ontwikkeling skep 'n buffer tussen die Refilwe gemeenskap en die Cullinan Diamant Myn se grootste slyk dam. Die aanhoudende populasie aanwas van die Refilwe gemeenskap het eindomsontwikkeling tot aan sy grense gestoot in terme van sy ligging tot die slyk dam. Huidiglik grens die gemeenskap aan die slyk dam wat 'n gesondheids risiko is vir mens en dier wat daar lewe. Die geskiedenis van Refilwe vertoonbeeld die tydperk van Apartheid en Apartheidswette van segregasie, 'n politiese sisteem wat tot vandag toe die identiteit van die inwoners en die gemeenskap negatief beïnvloed. Onlangse gemeenskapsgedrewe argitektuur mislukkings, lei hierdie verhandeling na die heroorweging van hoe argitektuur 'n gemeenskap kan rehabiliteer.

Ter afsluiting, ondersoek die verhandeling die moontlikheid om die huidige potensiaal te gebruik in 'n geaffekteerde ruimte en om die toepaslike gemeenskapbehoefte te analiseer. Die argiteksgedrewe antwoord sal primêr gebaseer wees op data versamel van verskeie oorde, insluitende maar nie beperk tot: terreinstudies, omgewings analises, feite en historiese inligting.

Die projek was ontwikkel om argitektuur te gebruik as 'n moontlike antwoord vir die herstel van mens en die natuur en om 'n nuwe simbiose te skep.



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