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# Foundations of the Nation: The Hillbrow and Brixton Towers as Figurations of National Identity in South Africa

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# FOUNDATIONS OF THE NATION: THE HILLBROW AND BRIXTON TOWERS AS FIGURATIONS OF NATIONAL IDENTITY IN SOUTH AFRICA

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ABSTRACT

In its accreditation of degrees, the Engineering Council of South Africa (ECSA) requires the inclusion, in any curriculum, of 10% of total credits of what are termed *complementary studies* that encompass reflections upon environmental impact, legal matters, cultural heritage and design philosophies as they pertain to the engineering profession. By stipulating this inclusion ECSA acknowledges that engineering can no longer be regarded as a neutral, apolitical endeavour. This paper responds to the latter position and sets out to offer a broadening of the current scope of scholarly dialogue between a logical science and the human community which it serves. In order to do so, the authors examine the case histories of the foundations of two important radio towers in Johannesburg, South Africa, constructed during the period 1959 to 1972. The paper describes the differing geotechnical profiles of the foundations of these structures but expands upon their physical characteristics by positing the existence of shifting ideological arguments inherent in the design processes and material conditions of the buildings. The study draws on key principles of nationalism to suggest a rich and layered signification for these impressive but nonetheless quotidian outcomes of civil engineering practice.

## INTRODUCTION

"Design has a moral obligation to itself and to those whom it serves". Ove Arup & Partners, in a company report on the construction of the JG Strijdom Tower (GNB 1972:1).

At the time of writing, the statutory body tasked with assessing the quality of tertiary qualifications in engineering in South Africa − the Engineering Council of South Africa (ECSA) − prescribes a curriculum requirement of 10% of what are termed *complementary studies* in undergraduate degree courses leading towards the Professional Engineer (Pr.Eng.) registration (Engineering Council of South Africa 2004). A subdivision within this requirement then seeks to differentiate between those courses that demonstrate an overt link to the practical outcomes of engineering and natural science courses in the curriculum – legal aspects of professional practice being one example – and those which arguably present a more covert relevance, such as the philosophy of design, heritage and language studies. Currently (2007) the Civil Engineering Science Degree at the University of Johannesburg addresses this imperative by offering modules that cover legal matters, heritage and environmental impact studies.

However, within the context of a discipline that finds itself in a complex and challenging postcolonial environment, this field can be usefully enlarged, as well as deepened. It is to this purpose that the authors compare the material conditions of two radio towers, not only within a geotechnical and civil engineering paradigm, but also within the arena of cultural studies, and in particular, nationalism. In so doing, the authors are able to address the role of the built environment in the shifting identity of an imagined South African community striving for nationhood. Roads, dams, bridges, office blocks and radio transmitters enable modern life in a demonstrably practical way; however, it can be argued that these products of scientific reasoning also covertly — but no less vigorously — act as rhetorical tools in a purpose-driven, ideological argument. An appreciation of how this condition may manifest itself is useful to the established profession, and critical to a future generation of civil engineers. Consequently, civil engineering is examined beyond the purely innovative nature of its projects: in particular, this paper regards physical aspects of built structures in South Africa as these potentially take on the dual role of quotidian function and nationalist rhetoric.

In some measure, the aim of this study is to test whether, in the first instance, a marriage of cultural studies and the more precise sciences is possible in a South African context and, secondly, to gauge whether the undertaking has perceived value for the educator as well as the engineering profession in a postcolonial environment. The paper also has relevance beyond the discipline of engineering. Ivor Chipkin (2007:1) points out that, despite the extraordinary growth of texts on nationalism and nations since the early 1980s, critical studies of African nationalism are not reflected in this literature. The present paper consequently contributes, in some small way, to the narrowing of this gap. Responding to the concerns set out above, the objectives of this paper are consequently to:

- provide a context for the Brixton and Hillbrow towers
- offer precedents of the interrogation of social, cultural and political meaning of civil engineering endeavours,
- describe the material conditions of the towers
- provide a framework for the analysis of civil engineering constructs as nationalist rhetoric
- consider the rhetorical import of these two towers, and
- formulate useful, if speculative, conclusions to the study.

## CONTEXT OF THE STUDY

In 1948, the *Herenigde Nationale Party* (Reunited National Party, later the National Party), under the leadership of DF Malan, was voted into power by a white South African electorate who responded to Malan's undertaking "to preserve white power in general — and Afrikaner power in particular" (Oakes 1994: 367).[1] This victory signalled an apparent closure to the more than 100 year struggle of an African *ethnie* to establish its independence from British colonial powers — a struggle that encountered its most humiliating setbacks during the South African War (1899-1902), after which the colonial state extended its rule in Southern Africa to establish British hegemony over the Afrikaner republics of the Transvaal and the Orange Free State.[2]

The territory known today as South Africa received a dominion status "tantamount to independence" (Young 1994:119) in 1910 when executive power was transferred to the white population in what was then called the Union of South Africa.[3] But the political order continued to demand allegiance to Britain: the national anthem remained British, stamps commemorating Union depicted King George V and coinage would bear the likeness of British monarchs until 1960 (Engelbrecht 1987:105). While consecutive governments in South Africa were dominated by English speakers who moulded their cultural and political values on British models, an indigenous nationalism was being constructed amongst the descendents of predominantly French, Dutch and German settlers with the Afrikaans language as its universalising glue. In 1948, this nationalist movement bore fruit and Malan formed the country's first exclusively Afrikaner government.

Although the Afrikaner *ethnie* became synonymous with the iniquitous system of *apartheid* − a legalised "territorial separation of the races" (Davenport & Saunders 2000:391) − its actions following the 1948 victory should be interrogated in the light of a bitter struggle against British imperialism. An ongoing difficulty after the formation of Union was extreme poverty amongst Afrikaners that engendered feelings of shame and inferiority: thousands of Afrikaner children, for example, were classified as 'retarded' in the late 1920s. One reason for this dismal state of affairs was the Afrikaner's apparent inability to adapt to change and move successfully from a precarious rural existence into an urban arena that demanded complex technological skills and a sophisticated understanding of international economic forces. Once the tide had turned in the late 1940s, Afrikaners would celebrate their emancipation from oppression and hunger, but also strive to obliterate what might be regarded as shameful aspects of their history by a critical English-speaking world.

Thus, in 1949, the National Party victory was consolidated with the opening of the Voortrekker Monument (Fig. 1) outside Pretoria, the administrative capital of South Africa (Chance 2005).[4] A curious but imposing structure, the monument's purpose was to valorise the puritan culture and bravery of ancestors of the Afrikaner people as they rejected British governance and moved into the interior of Africa in the 1830s. This history is depicted in marble friezes and needlepoint tapestries inside the monument that, whether intuitively or by design, evokes a womb. Its cavernous interior is lit up once a year at midday when a shaft of sunlight penetrates an aperture in the roof and shines directly onto an inscribed plinth secreted in a basement setting.[5] This metaphor for female impregnation is reiterated by a large bronze sculpture of a Voortrekker mother outside the entrance to the building.[6]

*Fig. 1 . The Voortrekker Monument (2007) (photograph Lizè Groenewald).*

Of note is that this early figuration of Afrikaner ideology looks back at the past; its language is one of shadow and introspection. Although its quasi-religious function links it to the spiritual realm, its visual engagement is with the earth. It is immoveable and fixed, conceived by intellectuals as an argument for the primordial status — "the naturalness, longevity and power" (Smith 2003:54) — of what was patently a brand-new 'nation' in 1949.

The years following the opening of the monument were heady days for the Nationalists. Initially regarded by English-speaking

[1] According to Davenport and Saunders (2000:22), the "Afrikaner people, an amalgam of nationalities, came gradually into being during the century after Hendrik Bibault described himself as an 'Africaander' in 1707". This study draws, for the most part, on Oakes (1994) and Davenport and Saunders (2000) for its overview of a South African history.

[2] An *ethnie* can be defined as "a named human community connected to a homeland, possessing common myths of ancestry, shared memories, one or more elements of shared culture, and a measure of solidarity, at least among the elites"(Smith 2003:13).

[3] South Africa would only gain full independence from Britain in 1961 when it left the Commonwealth and became the Republic of South Africa.

[4] A *voortrekker*, broadly speaking, is a 'pioneer'.

[5] Visitors to Ireland will find a 5000-year-old passage tomb at Newgrange that parallels the Voortrekker Monument. The aperture that allows the penetration of sunlight at Newgrange — at the Winter solstice, a mere three days after the event in Pretoria — into the inner chamber was only discovered in the 1960s (Walfare & Fairley 1980).

[6] See Van der Watt's (1996) discussion of the gendered construction of Afrikaner identity as evinced in the monument tapestries.

South Africans as an oddity to be endured only until the next election, the Nationalist Party unexpectedly repeated its success at the polls in 1953, and again in 1958. Every effort was made to reverse the indignities of the past: it was, states Oakes (1994:375) "a remarkably creative period for the high disciples of Afrikaner nationalism". It was also the decade in which the most draconian laws of *apartheid* were legislated. Despite the residual impact of the worldwide economic crisis in the 1930s and the challenge of transforming a peasant society into an industrial power, the South African economy was growing at more than four percent a year. In 1958 the erstwhile academic HF Verwoerd became Prime Minister. In contrast to his predecessors' heavy-handed rule, Verwoerd's rational reassurances that all groups could peacefully co-exist in Southern Africa as separate 'nations' (Oakes 1994:423) engendered renewed optimism amongst white South Africans: the sky, it seemed, was the limit and it was within this ebullient atmosphere that the Albert Hertzog Tower (later referred to as the Brixton Tower) was conceived.

Then, in March 1960, police opened fire on a peaceful anti-*apartheid* gathering in Sharpeville, killing 69 people. The immediate effect was the flight of investment capital from the country. While this economic setback was reversed and South Africa became one of the world's major economic success stories of the 1960s, the optimistic mood of the 1950s retreated. Notable was the 1200 percent increase in the defence budget in 1960-1973, and the promotion of local arms manufacturing. In 1966, Verwoerd was assassinated and succeeded by BJ Vorster under whose leadership the Terrorism Act (1967) and Prohibition of Political Interference Act (1971) were passed. Now a major player on the world stage, the Afrikaner had shed the image of backward peasant, but found it increasingly difficult to defend this hard-won sophistication. The JG Strijdom Tower (commonly referred to as the Hillbrow tower) was thus the product of an affluent, ambitious community but one that was also progressively shaped by fear — a decided shift from the idealism of the community that erected the Voortrekker Monument that, in 1949, celebrated the hardships but also the spiritual certainties of a simple, rural life.

It is the premise of this paper that the towers selected for discussion, although devoid of marble friezes and bronze statues, speak as persuasively of the cultures that commissioned them as the overt and official artefacts constructed specifically for this purpose. In order to pursue this argument, the notion of the built environment as purveyor of ideology is briefly considered.

## THE BUILT ENVIRONMENT AS IDEOLOGY

Lawrence Vale (1992:1999) takes a particular interest in the deliberate ideological programme of national monuments and other examples of buildings where political leaders have tasked architects, urban designers and engineers to give form to the national government. Vale, who conducts his research from the Massachusetts Institute of Technology's Department of Urban Studies and Planning, focuses upon the "capitol complex" in his seminal text *Architecture, power and national identity* (1992). In examining such diverse structures as the Presidential Palace in Islamabad and the Union Buildings in Pretoria, it is noteworthy that Vale problematises the visual impact, that is, the aesthetics, of these constructs but also examines the technical specifications of their floor plans — the *invisible* arguments of nation that take place, so to speak, underfoot.

While referring to Vale's text as "illuminating", Abidin Kusno (2000:15), Indonesian architect and academic, argues that Vale overlooks the "discursive constructions" of postcolonial societies *beyond* the overt symbolism of the capital. Kusno sets out to examine the infrastructures "of 'everyday' urban life: buildings, settlements, highways", and demonstrates the relationships between state and civil society beyond those represented officially. It is of interest that Kusno (2000:11) prefaces his study with the observation that architecture, as a discipline in Indonesia, finds it "difficult to acknowledge, let alone engage critically with, its relationship to power". He ascribes this reluctance to confront political symbolism largely to the "*logic* of the discipline" itself, but also to the legacy of a violent history that engraved upon the public's imagination the notion that anything political is "suspicious, distrustful, dirty".

South Africa shares with Indonesia a legacy of subjugation; concomitantly, relatively few local studies have problematised South African structures. Walter Peters (2004:545-546) points out that while it did not perpetrate gross human rights violations, "the [architectural] profession has obviously not understood its role in the ignoble past". Peters offers examples of the "collusion" with *apartheid* authorities in the erection of airport buildings where, with skill and ingenuity, architects engineered solutions for segregated circulation in the boarding and disembarking of aircraft. Here Peters (2004:538) deliberately chooses projects without an "iconographic base" and focuses on "the implementation of 'separateness' [as it] is encoded in the plans" of the buildings.

But, if critical analyses of South African structures within an architectural paradigm are thin on the ground, the authors found no readily available studies, in South Africa, of architecture's necessary partner, civil engineering, as a rhetorical form. The latter does, however, enjoy a vicarious existence. Pyrs Gruffudd (1995:226) — a geographer — describes "a defining moment" in Welsh nationalist history when the construction of an airport on the Llŷn Peninsula led to arson attacks and a sensational trial in 1936. Subsequently, an argument arose for the construction of a North-South road "that would bring the urban population [of Wales] into contact with their lost heritage, thus reintegrating them into nationhood" (Gruffudd 1995:234-235). Although the scheme had its detractors that questioned whether national consciousness could be "manufactured" through building roads, many believed this to be not only possible but critical. Gruffudd (1990) extended an early challenge to the purported 'civility' of civil engineering by highlighting the controversy of Welsh hydro-electrical schemes; parallel studies (e.g. Cosgrove & Petts 1990) underline not only the "profound change in attitudes … to engineering projects" (Roberts 2006:122) in Wales but the "very significant political issue" of water worldwide. Owen Roberts (2006:132) — a historian who builds upon the work of Gruffudd — posits that an examination of engineering as a process can reveal much "about people's ideas concerning 'modernity', [and] the changing nature of nationalism and national identity".

The fact that these studies emanate from disciplines other than civil engineering arguably results from the condition that roads,

*Fig. 2 . The Sentech Tower (2007), completed in 1961, formerly known as the Albert Hertzog Tower and Brixton Tower consecutively (photograph Lizè Groenewald).*

dams and pipelines claim ideological invisibility as a result of the *logic* of their existence. It is in the spirit of Kusno's (2000:16) undertaking — to make the "past usefully speak of the present" by scrutinising the 'everyday' — that this paper looks beyond what may be termed the *promiscuous readiness to be read* of monuments and other official structures such as the New Constitutional Court in Johannesburg that have been examined with regard to their role as signifiers of nation.[7] In contrast to the latter, the transmitter towers in Brixton and Hillbrow (Figs. 2 & 3) enable an indispensable technology required by the modern nation, namely telecommunications. The towers were, and still are, first and foremost *functional*, as is made clear by the consulting engineers (Zunz *et al* 1965:151), who state: "The shapes and dimensions [of the Brixton tower] were chosen to meet the aerial specifications, to minimise wind loads, to ensure stability and to suit the construction method". Likewise, the tower in Hillbrow is described by its designers as being "an honest statement of its [*sic*] need and technical rationalization" (GNB 1972:1). Within this overwhelmingly rational paradigm, it is appropriate to situate a discussion of the towers within the field of civil engineering and not architecture — indeed, no mention is made of the contribution of architects, *per se*, during either project. Consequently, the geotechnical profile of these buildings and their conditions of construction are outlined in the following sections.

## GEOLOGICAL SETTINGS OF THE TOWERS

Both towers are founded in strata at the base of the Witwatersrand Supergroup, the stratigraphic sequence which lies above the basement granite and is thus amongst the oldest rocks encountered on this planet.[8] It consists of a thick sequence of shales, conglomerates and quartzites with two lava flows and a banded ironstone horizon in a total thickness of some 7150m.[9] The lower part of the supergroup is the West Rand Group (4350m thick) which is largely argillaceous and consists of the Hospital Hill Subgroup at the base, overlain by the Government and Jeppestown Subgroups. Above the West Rand Group is found the Central Rand Group, largely arenaceous, which contains the auriferous reefs for which the supergroup is famous. The lower part of this group is the Johannesburg Subgroup, which contains the Main Reef (bounded by the Langlaagte Quartzite, named after the farm on which the first discovery of gold was made), and this subgroup is overlain by the Turffontein Subgroup.

Returning to the Hospital Hill Subgroup, the lowest formation, uncomformably contacting the basement granite, is the Orange Grove Quartzite (200m thick), overlain by the Parktown Shales (700m thick) and capped by the Brixton Quartzite (700m thick). These strata form a well-defined topography of two parallel ridges bordering a valley and are named eponymously for the Johannesburg suburbs through which they pass. The Brixton ridge is probably the hardest and most massive of these strata, and for this reason stands throughout most of its length as the highest outcrop crossing the area of Greater Johannesburg. Where it terminates at a major fault in Bedfordview it forms the highest natural point in the area – 1816m above sea level. Between these two quartzite ridges lies a valley of softer, more erodible shales (commonly referred to as Red Shales due to their high concentration of iron salts) and these shales are generally competent, showing little weathering to any great depth. They are, however, prone to termite infestation with associated weakening of the soil. The contact between the base of the Brixton Quartzite and the top of the Parktown shales is conformable and dips southwards at about 45º.

*Fig.3 .The Telkom Joburg Tower (2007), completed in 1971 and formerly known as the JG Strijdom Tower but informally called the 'Hillbrow' tower until 2005 (photograph Lizè Groenewald).*

The Sentech Tower (formerly the Albert Hertzog Tower) in Brixton (Fig.2) stands upon the upper exposure of the Brixton Quartzite on the Brixton Ridge at an altitude of 1787m, and is probably some 30m in stratum thickness above the contact of the quartzite with the underlying shales. The Telkom Joburg

[7] For an analysis of nationalism, identity, and the rhetoric of community in the decorative programme of the New Constitutional Court, see Frederico Freschi, forthcoming.

[8] The geology of this region, due to its significant mineralization, has been exhaustively described in many publications. Brink (1978) is arguably the most relevant, dealing as it does with the engineering geological properties of the rocks and soils encountered here.

[9] All strata thicknesses quoted are averages.

Tower (formerly the JG Strijdom Tower) (Fig.3) is situated 5km away in Hillbrow, some 37m lower at 1750m altitude on the northern flank of the ridge, where it is removed from the quartzite and located on the upper layers of the Parktown Shales.

The following section provides an overview of the design and construction of the two towers.

## DESIGN OF THE TOWERS

### The Albert Hertzog / Brixton / Sentech Tower

In late 1959, a planning committee of the South African Broadcasting Corporation (SABC) decided to adopt the technique of frequency-modulated (FM) broadcasting in the very high frequency band. To this purpose, in December 1960, the Minister responsible, Albert Hertzog, announced the Government's intention to fund 125 transmitting stations with nearly 500 transmitters countrywide. The British firm, Ove Arup and Partners that had established a Johannesburg office in 1957, were appointed as consulting engineers on this project. The tower on the Brixton Ridge was to be one of the key stations in this proposed network of transmitters.

Since broadcasts were scheduled to start twelve months after the minister's announcement, it was, according to Zunz *et al* (1965:153), "necessary to sacrifice certain desirable refinements of design and construction in order to finish on time". Exactly what the nature of these hoped-for 'refinements' may have been is not revealed; the most indispensable (and, in its original conception, the only necessary) characteristics of the future tower were extraordinary height and speed of construction. Consequently, the first condition to be established at the proposed site was that an economic foundation was possible "virtually at the surface" (Zunz *et al* 1965:153) and tender documents were prepared for a tower in structural steelwork with rock anchors through the Brixton Quartzite and into the Parktown shale.[10] However, in response to a number of requests from contractors, two of the five tenders eventually submitted were for towers in reinforced concrete. Finally, for reasons of an apparent economic nature, the proposal to construct in reinforced concrete was adopted in preference to steel latticework, and the contract let in January 1961.

The tapered shape of the Brixton tower, suggested by an early sketch in the Arup archives (Fig.4), was the outcome of an ingenious construction rationale by the contractor: the formwork was designed to be used over and over again, in successive lifts, as the concrete was poured. Due to the continuous variation in diameter the process was not slip-forming in its classic sense at that time. The shape that emerged can best be defined as "the surface of revolution of an exponential curve about the vertical axis" (see Zunz *et al* 1965: 155). Originally, only a service staircase was planned to provide access to the top of the tower but in 1961 the Board of Governors of the SABC announced that the tower, now being erected in concrete, was to incorporate a viewing platform, high speed lift, and "concomitant facilities".

As the preliminary sketch (Fig.4) reveals, the overarching concern of the consulting engineers was windload (Zunz *et al* 1965:156). Although earth tremors were taken into account, the engineers' biggest challenge was to secure the tower against forces from above. Much of the planning in this regard was based upon conjecture (Zunz *et al* 1965:157) since few precedents of high towers presented themselves in 1965: methods of estimating maximum wind-speed had therefore not received "very much attention". Notwithstanding some considerable uncertainty in the matter, the potentially disruptive forces of the wind determined the reducing taper as a distinctive profile, since "such shapes attract relatively moderate wind loads while retaining adequate strength and stiffness" (Zunz *et al* 1965: 159).

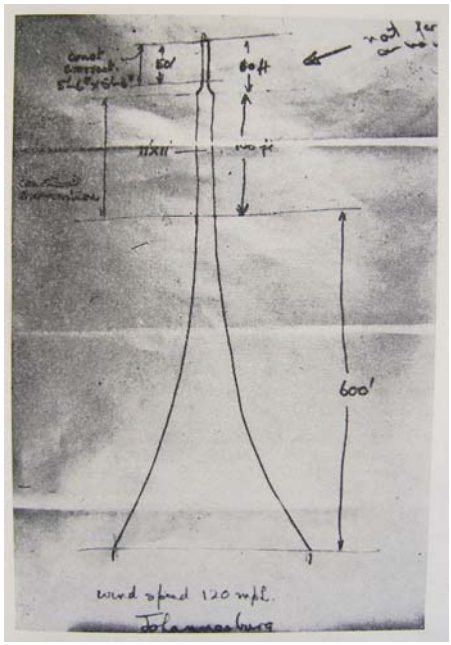


*Fig. 4. Copy of the rough 'diagram' for the Hertzog Tower* (*Zunz et al 1965:153). The notion of a soaring projectile, while more subtle in the final structure, is acutely evident in this preliminary sketch. .(Reproduced with the permission of the South African Institution of Civil Engineering)*

However, not only the wind-speed required guesswork: since there was no certainty about the addition of the "observation turret" until the tower was nearly 60m high, its eventual inclusion demanded contingency planning. By chance the disparate parts "happened to match each other" and in "a curious way … each part seemed to fit quite admirably into its place in the whole" (Zunz *et al* 1965:160). Then, at a height of 83m, a "kink" appeared in the shaft. The centroid of the section, when measured, was 150mm off centre.[11] After a brief interruption of work, the structural strength of the tower was restored by internally adding stiff horizontal diaphragms; the external visual symmetry was rescued by smoothing over the unsightly hollows with Gunite (sprayed concrete or shotcrete), which was already available on site for electrical screening.

[10] Zunz *et al* (1965:153) refer to 'Jeppestown' shale; this must be regarded as an error as the shales of the Jeppestown Subgroup lie 2250m vertically *above* the Brixton quartzite and outcrop well to the south of the graben that transects the city of Johannesburg.

[11] The most likely cause of the misalignment was shifting of the formwork when it was being filled; additional precautions were introduced to brace the latter and no further serious divergences occurred.

The completed tower had a mass of 6350 tonnes, a concrete height of 177.75m with a steel mast height of 55m (as built: considerable steelwork has been added to the mast since completion) giving a full height of 232.75m. The tower shape tapers from an outside diameter of 20.12m (wall thickness 0.56m) to 5.70m (wall thickness 0.266m) at the top of the shell. The shallow foundation − the excellent rock mass quality and stiffness obviated the need for structural concrete − consists of an anchored concrete ring with outside diameter 26m, radial width 6m and depth to rock of 2.5m. In terms of the vertical applied load, the tower exerts a bearing pressure of 287.37kPa on the quartzite.

Despite the somewhat haphazard nature of the project Arup were demonstrably proud of their achievement. An extensive report (Zunz *et al* 1965) was submitted for publication in a professional journal. The reader gains a sense of high adventure in this heroic effort to bring FM radio to the nation on 1 January, 1962 — a tortuous target that was, indeed, achieved. In contrast, the completion of the JG Strijdom Tower in 1971 was not celebrated in a scholarly publication, although Arup again acted as consulting engineers. A short typed summary of the project from their archives (GNB 1972) reveals a more cautious and considered attitude with regard to the engineering profession and its outputs. Drawing on this rather circumscribed source, then, the following can be pointed out:

The JG Strijdom / Hillbrow / Telkom Joburg Tower

Whereas the Hertzog Tower was commissioned by the SABC, the client in the case of Hillbrow was the Public Works Department, on behalf of the South African Post Office. The building of the tower was necessitated by the need for a microwave radio system that could transmit "thousands of trunk calls and teleprinter and data communications to and from all quarters of the country and abroad" (GNB 1972:1). Work commenced in January 1968 and at completion in 1971 the tower was the tallest built structure in Africa.[12] This height was essential to ensure that "the many skyscrapers" being erected in Johannesburg would not interfere with the microwave beams that require an unobstructed path of transmission between stations.

The completed tower had a mass of 18144 tonnes, a concrete height of 240m with a steel mast height of 29m (as built: some modifications have since been carried out) giving a full height of 269m. The tower has a constant external diameter of 13.7m with a wall thickness that tapers from 0.84m to 0.38m. Unlike the Hertzog Tower, however, the Strijdom Tower was conceived at the outset as having the function of a tourist attraction. Thus it contained six public floors — reached by high speed lifts — that were carpeted throughout; an imposing foyer was provided, a "unique" restaurant revolved silently once an hour providing 200 diners with panoramic views of the city, it boasted "the highest cocktail lounge in Johannesburg" and a functions venue decorated in Louis XVI style (Davie 2002:4). Public areas were air-conditioned and had recorded music "piped continuously to all floors". Within this context, Arup's claim of 'honesty' and 'technical rationalisation' may elicit scepticism. However, the external appearance of the tower belied its luxurious interior. Described by the consulting engineers as a "slender concrete pencil" (GNB 1972:1), the external design makes no concession to decorative aesthetics — not the tiniest curve relieves the stated "simplicity and boldness" of the design. The ostensible reason for this unforgiving austerity was that the tower was required as a foil to the "sea of cosmopolitan humanity" in the flatland that surrounded it.

In contrast to the shallow foundations of the Hertzog Tower, the geology of the Parktown shales demanded that the 'slender pencil' in Hillbrow be underpinned by a 13.72m outside diameter concrete ring with thickness 4.2m resting upon eight 3.2m diameter concrete piers sunk to a depth of 42m and under-reamed to a diameter of 5.5m at the base. In the case of the Strijdom Tower, a bearing pressure of 936.51kPa in the shale was indicated. While the Hertzog Tower was poured into formwork on site, and the shape thus organically determined as the process proceeded, the Strijdom Tower was assembled from large precast units, which were braced to the tower core (GNB 1972:3). As at Brixton, wind was a major concern in Hillbrow, but with the important difference that what may be described as the wild surmise of the former project was replaced during the latter project by the scientific certainty of solutions generated by computer programs, an aspect of the project highlighted by the Arup report.

Although an in-depth consideration of the role of *discourse* in the creation of the built environment (see Markus & Cameron 2002) is beyond the scope of the present study, the contrast between Arup's respective written responses to the projects is notable. The report on the Strijdom Tower saw fit to engage, on an moral and philosophical level, with the intrusion of the tower into "contradictory surroundings"; at no point had this been the case with the report on the Hertzog Tower. Whereas the latter, and its rationale, was accepted as a fixed entity for at least the next 100 years (Zunz *et al* 1965:156), the report on the former foregrounds the inevitability of technological and — more presciently — social change. If Arup's report on the Hertzog Tower evokes self-congratulatory optimism, their consideration of the Hillbrow project seven years later reflects ambivalence: solemn references to the moral obligation of design are at odds with more lively insertions of "quite the highest cocktail lounge". The report lacks the structure, virility and positivism of its counterpart and ends abruptly with a statement unrelated to the previous sentence, namely that, on a clear day, the visibility from the public floors is 80 kilometres. Was this wishful thinking (within the realisation that it was impossible) that the spectacular panorama of "the famous Witwatersrand goldfields" in 1972 could maybe go on … forever? In the main section of the paper the possible meanings of these towers for the construction of an 'imagined nation' are considered.

## THE TOWERS AS NATIONAL RHETORIC

The notion that nations are not a *fact* but are *imagined* was famously suggested by Benedict Anderson (1993) in his seminal text "*Imagined communities: reflections on the origin and spread of nationalism"*, first published in 1983. Anderson contributes the idea of *print capitalism* as a primary cause of the emergence of nations, but also scrutinises archaeological sites as nationalist rhetoric. However, these latter structures

[12] It is currently surpassed by the chimneys of the Duvha Power Station in Witbank, South Africa (Tallest in Africa? 2007).

evince the *readiness to be read* of all monuments, and is thus sited outside the 'everyday'. Anderson's consideration of the national map as political rhetoric is arguably a more appropriate precedent for this study. In their deconstruction of myth and meaning of the 'innocent map' (Wood 1993: 107), Denis Wood and John Fels (1986) point out how maps argue for nationhood. This latter analysis can be condensed (see Groenewald 2006:9) to identify the six main rhetorical themes, or *loci*, of nationalism, namely

- division
- family
- nature
- perfectibility
- stasis and
- tourism.

The remainder of this paper sets out to systematically demonstrate that the two towers, purportedly designed to enable the efficient implementation of a scientific process, also conceivably signify — sometimes deliberately, but often innocently — contrasting aspects of these emotive aspects of nationalism.

Division

Although *unity* may readily come to mind when principles of nationalism are considered, *division* is perhaps the more essential condition of nations that by necessity — and sometimes by force — establish borders (a prime function of maps) and distinct cultural, social and political identities. This *separatist* aspect of nationalism betrays its indebtedness to utopian thought, a parallel condition that is largely unexplored (see Wegner 2002). While relevant to the present analysis, the utopian nature of the towers cannot be interrogated in any depth within the confines of the present paper; however, it is useful — at certain points — to bear this relationship in mind.

It is the premise of the authors that the Hertzog Tower, while unifying a community of listeners in 1962 on the one hand, also signified division. Firstly, the limits of the transmitter web established an invisible but intransigent border. Secondly, reception of FM signals was only possible with more costly equipment: the poor were thus excluded from the community of listeners (and by implication, the nation). [13] But the Hertzog Tower also signalled a more subtle division, namely that of the Afrikaner community from its past. Whereas the Voortrekker Monument valorised a rural and self-sufficient lifestyle characterised by hardship and, some might argue, backwardness, the tower in Brixton announced with spectacular showmanship that the Afrikaner had set these inward-looking and, for many, shameful qualities aside.

The urgency with which the Brixton project was undertaken reveals the Nationalist government's determination to enter the new decade as leaders of a modern nation with the concomitant associations of *progress* and *internationalism*. The decision to use concrete, although ostensibly a pragmatic one, was almost certainly fuelled by the ideological connotations of this material. President Sukarno repeatedly links concrete to monumentalism, modernism and international status when he calls for its use in the construction of the spectacular Friday Mosque in Jakarta. By specifying reinforced concrete, rather than traditional materials, Sukarno "constructed a temporal dialogue with the Indonesian past … produced a narrative of progress … and … marked the nation on the map of the great countries of the world" (Kusno 2000:1-2).

Notably (in the light of the Afrikaner's struggle against British oppression), the client invited a firm of British origin to act as consulting engineers. While this decision could, again, be defended from a rational point of view, it is likely that the client relished the notion of reversing the dynamics of a past relationship. The Hertzog Tower was erected in Johannesburg, traditionally an English-speaking city, where aircraft would overfly it on international flights (most likely *en route* to London). Indeed, the shape of the tower itself suggests flight. The tapering sides create a sense of welling up, of lifting heavenwards, away from the restrictions of the humbling African earth. This was a joyous, optimistic signifier of a newly invented and confident Afrikaans persona for whom all things were possible through rational thought. It is then entirely appropriate that the site chosen for this symbol of unfettered flight *out of Africa* required virtually no foundation.

But the glorious ascent was soon curtailed. Even as the brave "guniters" were smoothing over the "kink" in the Hertzog Tower, Harold Macmillan was making his famous speech in which he warned that the winds of African (as opposed to Afrikaans) nationalism were quickening: momentum was gathering for an international trade boycott of South Africa. Thus, in the late 1960s, the JG Strijdom Tower in Hillbrow was required to argue for a division of another kind: as the Arup report states, the "solution of simplicity and boldness … grew out of [the tower's] contradictory surroundings", namely "a sea of cosmopolitan humanity". The nautical metaphor, perhaps used lightly, is apt: the tower stood like an oversized lighthouse on a treacherous shoreline, warning visitors, but also attracting them like a beacon to the district's late-night eateries and clubs where the tenets of Afrikaner Christian Nationalism were tossed aside, often by the authorities themselves.

Thus the tower's relationship with Hillbrow was, in itself, divided. The austere modernism of 'the pencil' repulsed the burgeoning *post*modern eclecticism of the tower's immediate environment. But the interior of the structure (boasting cocktail lounges, grill rooms and Louis XVI furnishings) revealed a perverse need to emulate, albeit in an official voice, the colourful cosmopolitanism that the exterior was designed to counter. This luxurious cocoon of 'internationalism' was deliberately constructed and then hermetically sealed off from the outside world. Public observation decks, 200 meters high, completely separated visitors from distressing events on the ground. In the face of a growing local and international onslaught, the Strijdom Tower was a cylindrical citadel showcasing what would be sacrificed were the 'nation' to capitulate to those who sought its demise.

This reluctance to relinquish cherished cultural values made the Hertzog Tower, in turn, a further and quite overt site of division in Afrikaner ranks when the decision was made, in 1975, to introduce television to South Africa. The Nationalist government had steadfastly resisted a broadcast medium that it believed would cause "serious social problems" (The Chiel

[13] Ironically, the SABC broadcast its "Bantu Services" on FM frequencies.

2007). When this position was reversed and the Hertzog Tower made the epicentre of potential social decay, Albert Hertzog, in a gesture that anticipated further schisms in Afrikaner politics, demanded that his name be disassociated from the main transmitter, which subsequently became known as the Brixton Tower. The fact that both towers had been named after powerful (and intransient) men in the first instance reveals these structures' engagement with another *locus* of nationalism, namely the patriarchal family.

Family

Arguments for nationalism regularly present the nation as one great universal family that overrides and replaces the individual group (Smith 2003:31), but nevertheless reinforce "popular attitudes to … home and fathers" (Smith 1991:78) and thereby entrench ideas of patriarchy. Kusno (2000:55-58) highlights the *maleness* of nationalist rhetoric both in the physical aspects of the Indonesian 'National Monument' and in the figures of speech used by President Sukarno to describe similar architectural projects in the transformation of Jakarta.[14] Within this context, the strident phallic symbolism of both the Hertzog and Strijdom towers hardly requires comment. Camille Paglia (1990:19) argues that the male metaphor is one of projection, "of linearity, focus, aim, directedness", arguably an apt refection of the imagined 'nation' in 1960s South Africa. When compared to the female narratives of the Voortrekker Monument, the towers announce a dramatic departure from an almost secretive metaphor of gestation as figuration of Afrikaner identity to a focussed masculine trope that would celebrate and enforce male decisiveness and action. However, the towers are not merely *male*: they are also quintessentially *western*. The soaring shafts are ready figurations of an Apollonian sky-cult, as "shrines of creative power spurning the earth" (Paglia 1990:72-73) where the "swerve upwards is the sublime conceptualism of western intellect … [a] colonnade of stony *things,* the hard, harsh blocks of western personality".[15] But, argues Paglia, the Apollonian is also "the line drawn against nature", which, in turn, is an intrinsic, if dichotomous, rhetorical theme in the argument for the nation.

Nature

Nationalisms, in their "quest for a return to roots … [and] … pristine origins" (Smith 2003:31), frequently draw on metaphors of 'nature' when parading a national agrarian idyll which, in turn, is conflated with a lost Golden Age. Writes Smith (1991:117): "Being 'rooted' in a particular 'soil' becomes the criteria for citizenship". In South Africa, reification of 'The Farm' as a utopian condition played a pivotal role in Afrikaner nationalism between 1920 and 1960 (Grundlingh 2006/09/29). If it is accepted that notions of *nature* have been identified with *woman* since prehistory (see Paglia 1990:7,9) the link between nations and narratives of 'nature' is inevitable, the womb-like visual text of the Voortrekker Monument being a case in point.

But, as Smith (2003:31, 47) points out, in practice nationalisms often relentlessly pursue policies of rapid industrialisation: nations are necessary phenomena of the modern, industrial epoch. Certainly, both towers at first appear to discard the Afrikaner nation's affinity with the African earth and a primordial, earthbound female nature. Paglia's (1990:21-23) comment that "the penis is like an eye or hand, an extension of self reaching outward" evokes the structure of the towers in which high-speed lifts hurled citizens, as so many projectiles, skywards into Paglia's 'shrines of creative power' − the observation decks − where visitors were offered a spectacular "panoramic view" (GNB 1972:2).

In considering the ideological import of scrutinising nature 'from on high' David Spurr (1993:15) shifts the emphasis from the surveyor to the surveyed: "One knows the importance of the commanding view … it offers aesthetic pleasure on one hand, information and authority on the other". Traditionally, utopian environments require surveillance to ensure that utopian ideals are adhered to (Ferns 1999:87). Doris Kadish (1987:20) similarly regards the panorama as indicative of the ideology of dominance, but also emphasises the separation of the spectator from the spectacle. Rarely is the land viewed by its possessor: on the contrary, "the act of viewing … is typically performed by a person who is in some way cut off or alienated from the land (Kadish 1987:7). Those privileged enough to be allowed into the utopian condition of *tower-as-nation* thus stared longingly at a landscape that needed improvement if the 'nation' were to claim it as their own. It is this latter quality that arguably is responsible for one of the more notorious arguments for the nation, namely perfectibility.

Perfectibility

Nationalist ideology, according to Elie Kedourie (1993:xiv), regards society as "a canvas that has to be wiped clean", and where the cleansing must, per force, entail violence. Although Kedourie represents a particularly cynical position with regard to nation-building, the notion of imagining, and consequently attempting to construct, the perfect society remains a concern for commentators, even where a positive role for nationalism has been argued. South Africa is often cited, although rarely thoroughly scrutinised, in texts dealing with the xenophobia of would–be nations. That the men who commissioned the Hertzog and Strijdom towers had a utopian vision of a perfect (white, and preferably Afrikaans) homogenous 'nation' is beyond doubt; however, large-scale eradication of the 'unfit' seems not to have been part of the plan to bring about paradise. Rather, as Oakes (1994:423) points out, Verwoerd "relentlessly push[ed] his separate 'nations' theory" and reiterated the Nationalist government's preparedness "to 'guide' Africans to 'self-determination'" in their own 'homelands' within the borders of South Africa. Thus, as unlikely as it may seem, the tapering shape of the Hertzog Tower − conceived when Verwoerd's utopian dream was still largely unchallenged − could be read as a sign of optimism, the

[14] It should be noted that the assumption that national spaces are constructed by men, and that women are hapless onlookers, has been unravelled by recent scholarship (e.g. Pickles 2002). The ideological rhetoric of what Paglia (1990:187) refers to as "mother nature's horizontals" — bridges, dams, and roads — thus also invites attention.

[15] In 1975 the *Afrikaanse Taal en Kutuurvereniging* (Afrikaans Language and Culture Organisation) unveiled its controversial monument to the Afrikaans language. Combining soaring phallic shafts and breast-like mounds, it forms an interesting counterpart to its natural cultural predecessors, the Voortrekker Monument, and the Sentech and Telkom Towers.

raising up of separate 'nations' in a combined effort to shed an unenlightened African past and grasp at a western, modernised future.[16] Curiously, the shape of the Hertzog Tower foreshadows the design of the current South African national flag that more overtly argues for the coming together but *parallel* development of a 'rainbow nation'.

On the other hand, the Strijdom Tower − the 'slender pencil' − when viewed from a distance does not so much rise up as plunge down into the earth like a stake. In Hillbrow the optimistic and even playful quality of a tapered shaft was jettisoned in favour of an unforgiving cylinder that plummets 42 meters into the African earth; whereas the Hertzog Tower celebrated change and flights of Apollonian imagination, the Strijdom Tower, upon consideration, signifies a retreat, and argues for a barricaded stability, and stasis.

Stasis

Perelman and Ohlbrechts-Tyteca (1971:107) contend that in many cases a speaker wishing to gain adherence to a particular premise has no firmer support than the inertia of his or her audience. Smith (2003:29) regards continuity — "the unchanging nation" — as a core concept, albeit an ambiguous one, of national consciousness. John Breuilly (1993) and Eric Hobsbawm (1991) might overly belabour the element of artefact, invention and social engineering implicit in national identity, but, as Smith (2003:85) concedes, "The resort to the ethnic past, however tenuous, can inspire in 'the people' a desire and will to self-sacrifice … that few ideologies can match". The task of concretising this imagined Golden Age then falls to the intellectuals − poets, sculptors, designers and, as this study posits, civil engineers − who may act deliberately but who, more often than not, intuitively express the condition of societies in which they function. Wood and Fels (1986:65) argue that the construction of national symbols cannot be a cynical, premeditated act; infused with the belief that the production of signifiers of nation is a natural function of the state, designers produce maps, banknotes and radio transmitters in "a gesture of instinct" that makes the ideological imperatives of these artefacts transparent.

Common sense dictates that the foundations of the Strijdom Tower were not designed as a figuration of national identity. However, when compared to the apparent fragility of the Hertzog Tower, the *rootedness* of the former absorbs signification from its context. The geological strata underpinning the tower in Brixton present an exceptionally stable rock mass that, paradoxically, supports a tower which is light and airborne; the geological strata in Hillbrow consists of soft shales, yet this uncertain and erodable stratum was called upon to support a tower with three times the bearing pressure of its counterpart in Brixton. Here it is tempting to draw a parallel between the divergent strata and the 'state of the nation' when the towers were erected. The Strijdom Tower was 'imagined' into being by an embattled government in the wake of Sharpeville and the "removal" (Davenport & Saunders 2000:421-422) of the country's architect of public policy in 1966. The latter event elicited near hysteria in Nationalist circles: a newspaper tribute to Verwoerd on the day following his murder questioned whether the Republic would recover from this, "the worst possible disaster imaginable". The soul of the nation had been "run through"; its heart "torn apart". A "great gap appeared in the life of the people … an empty place which can never be filled" (excerpt from leading article in *Die Transvaler,* 7th September, 1966 as quoted in Hefer & Basson [sa]:4, authors' translation). The 'disaster' notwithstanding, in June 1968 the shafts were sunk for the Strijdom Tower.[17] Normally a tower of this height would sway several metres (which is not an option for microwave broadcasts), but due to special structural techniques, which included taking the foundation down 42 metres, the sway was reduced to less than 500mm. As the Arup report (GNB 1972:30 aptly states: "[T]he structure was designed rigidly enough to dampen any tendencies for the oscillations to become excessive": the imagined nation was, indeed, fixed in the face of attack.

But the tower not only burrows down into the African earth, it also reaches back into its past: in inadvertent mimicry of the Voortrekker Monument, the walls inside the Strijdom Tower were hung with tapestries depicting the early history of Johannesburg. Finally, and defiantly in the face of calls for change, the tower was named for a national patriarch − JG Strijdom − a past Prime Minister who summarily abolished both the Union Jack and *God Save The King,* and during whose tenure "[e]xtraordinarily detailed rules had been made for the control of groups of people" through his capacity for resisting political intimidation and making expedient and, what Davenport and Saunders (2000:398;406) politely call, "resolute decisions".

It is of interest that Strijdom (who died in office in 1958), was succeeded by Verwoerd but the latter had difficulty winning the loyalty of Strijdom's cabinet. Where it may have been logical to name the tower in Brixton, mooted in 1959, for a respected and recently deceased Prime Minister, Verwoerd appears to have resolved tensions amongst his predecessor's supporters by cajoling Albert Hertzog to take the Ministry of Posts and Telegraphs, with the added benefit of having his name immortalised (or so it was thought at the time) on the FM tower.[18] Similarly, one may have expected the tower in Hillbrow to be named after an adored and recently assassinated leader, yet Verwoerd (who at the time of his death had critics on both sides of the political spectrum) was bypassed and Strijdom's heavy-handed regime valorised. Hertzog *de*named 'his' tower as an act of political dissent, but, Strijdom only relinquished his posthumous 'ownership' of the (second) tallest male metaphor in Africa in 2005 − a condition that maybe reveals an ongoing predilection for patriarchal control and resoluteness in the profile of the South African nation.[19]

Thus the two towers stare at one another across the unremarkable landscape of the Gauteng highveld: they are the only 'landmarks' of note (apart from a very tall apartment block) in

[16] It should be remembered that Verwoerd was "not born a son of South Africa" (Hefer & Basson [sa]:6); he was European, born to Dutch parents in Amsterdam in 1901.

[17] Davenport and Saunders (2000:424) report that Verwoerd's death "left no apparent political vacuum and hardly caused a hiatus in the continuity of government policy". However, the act of subversion could only have hardened the resolve of Verwoerd's successor to arm the state against such potentially destabilising events.

[18] Curiously, the man who first detected and named radio waves in 1886 was Heinrich Hertz (Shlain 2007); whether Hertzog claimed kinship is unknown.

[19] The official renaming of the Strijdom Tower took place on 31 May, the anniversary of South Africa becoming a Republic − ironically an achievement closely associated with Verwoerd's vision and leadership.

and around Johannesburg and this characteristic brings the study to the final *locus* of nationalist rhetoric, namely tourism.

## Tourism

Chris Ferms (1999:2) comments that no matter how inaccessible utopia might be, it always finds room for at least one visitor who must observe and later testify to the wonders of the perfect society. Tourism is therefore carefully managed by the state in order to ensure that the 'traveller's tale' is one of awe and affirmation: it was, states Wambui Mwangi (2002:42), only through the gaze of Europeans that African topography assumed a material existence. Anderson (1993:181) demonstrates the relationship between national culture and tourism in his analysis of print reproductions of the renovated Borobudur Temple in Indonesia; Roland Barthes deconstructs the Eiffel Tower in Paris, where tourists purportedly *become* civil engineers through the purchase of plastic mementoes of the famous landmark (see Knight 1997:60). Several capitols have their own version of the French landmark*:* many are more-or-less direct copies (in such disparate cities as Tokyo and Bloemfontein), others refer to the prototype, but surpass it in their "need to extend international identity through staking some new claim to noteworthy modernity" (Vale 1999:396).

Thus an official website (CN Tower 2007) proudly refers to the CN Tower in Toronto (built in 1976) as "Canada's wonder of the world … the World's Tallest Tower". The potential tourist is told that the aim of Canadian National (CN) was "to demonstrate the strength of the Canadian industry by building a tower taller than any other in the world". The tower "inspires a sense of pride and inspiration [*sic*] for Canadians and a sense of awe for tourists". Only further down the page the "origins" of the structure − "firmly rooted in practicality" − are explained, but also in patriotic terms: Toronto enjoys "the clearest reception in North America". The need to be recognised as a world power, to out-do a neighbouring state, even grasping the opportunity to establish the 'rootedness' of the nation, is clear in both the text and the visual impact of the building. As Vale (1999: 397) comments: "[W]e are witnessing a global war of images in the ongoing struggle to host the world's tallest building".

The Hertzog Tower, in the late 1950s, entered the 'tallest tower' battle before the latter had even been recognised as a war zone: the 'origins' of this tower were, indeed, rooted in practicality. However, as the decade rolled over into the 1960s, the open steel latticework evolved into a concrete shaft, after which a viewing platform was added, followed by the obligatory restaurant (regrettably at ground level due to its contingent nature). But, maybe recognising the lost opportunity in Brixton, in the case of the Strijdom Tower (like its CN counterpart), the client seemed to favour tourism and national pride over microwave communications as an aim in Hillbrow. For ten years, it was "one of Johannesburg's great tourist attractions" (Davie 2002) and served as an indispensable rhetorical tool in the argument for Verwoerd's modern, rational nation. However, by the end of 1981, both the Brixton and Hillbrow towers were closed to the public; rather enigmatically, although the security threat that prompted this closure has abated, neither towers are scheduled to be reopened despite the potential advantages to tourism. A recent article on the Hillbrow tower, sourced from the official website of the City of Johannesburg, quotes − rather wistfully and at some length − from a 1970s promotional brochure in an attempt by the city to vicariously benefit from the erstwhile splendour of 'superb cuisine … luxurious comfort … superb service … with at least one waiter to every 10 visitors' (in Davie 2002). That the public spaces of the tower would have been off-limits to black South Africans (bar the waiters) is not mentioned by the author in her eagerness to present the past as reason to be proud of the present.

In 2007, visitors (both black and white) may gaze *at* the towers, but not *from* them, and since it is difficult to photograph either structure in any meaningful way from street level, tourists must resort to postcard depictions of what are still Johannesburg's main landmarks.[20] Conversely, the Voortrekker Monument, in 2007, is an open and thriving tourist site that, in 2002, was honoured by a visit from Nelson Mandela (Chance 2005). Its history and meaning are actively debated and incorporated into a dynamic, cultural dialogue in South Africa. Ironically, the structures that would claim anonymity due to the *logic* of their construction appear to be too pregnant with meaning, too dangerous, to risk admittance to − and thus they remain at the periphery of − the '*re*imagined' nation.

## CONCLUSION

Having made an imposing entrance into the scientific literature of the 1960s, the Brixton Tower (renamed the Sentech Tower in the early 2000s after the present owners), has retreated from print, if not from view: it is rarely, if ever, foregrounded in tourist publications, appearing rather as a footnote in more fulsome descriptions of the 'Hillbrow' tower (officially renamed the Telkom Joburg Tower in 2005). Although it is only "slightly shorter" (Davie 2002) than its successor, the Sentech Tower has paid the price for its lack of millimetres. This is maybe unfortunate, since it is the more elegant of the two structures and stands on an open, grassy ridge that offers visitors panoramic views even at ground level, unlike its counterpart that is hemmed in by high-rise and often squalid apartment blocks.

The Telkom Tower, on the other hand, has become the uncontested symbol for the city, despite the tower's closed doors and hostile appearance. It forms an integral part of the city's logo (where the stylised shape has been manipulated to appear less austere) and its silhouette graces the home page of the official website of the City of Johannesburg. The structure has superseded its 'origins': standing amidst a largely black population of émigrés, many of them illegal immigrants from other African countries, it has come to symbolise "freedom, opportunity, homes, schools, jobs, a safe haven for those who have fled from places far worse" (Dlamini 2004). Planted like a stake, conceived as a citadel celebrating Verwoerd's dream, the Telkom Tower now signifies the dreams of those people that Verwoerd laboured to keep at bay. However, despite this apparent turn-about-face, the tower still signifies division of peoples, it continues to interrogate issues of gender, and,

[20] An unlikely parallel exists at Pisa, Italy, where tourists may no longer enter the famous tower, or even walk around it. The tower "has become so scripted that each visitor is now forced to take the same photograph" (Medina Lasansky 2004:xxii) − or buy the same postcard.

Janus-faced, makes a claim both to African *rootedness* and Western modernity. As a result of the latter, for many South Africans, the tower represents empowerment, change and political emancipation − a 'modern', therefore 'new' South Africa; for others it evokes nostalgia for a 1960s Johannesburg − a utopia glimpsed, and misplaced in the past.

What, may one ask, do foundation structures have to do with any of this? If, as mayoral committee member, councillor Sol Cowan (in Dlamini 2005) suggests, there is a possibility that the City of Johannesburg may persuade Telkom to reopen its tower to tourists, one may be sure that diners − revolving at a height of 270 meters − will only be able to swallow their ostrich fillets with equanimity if they are convinced that their sky-borne dining room will not come crashing down. Invisible and unglamorous, foundations generate *trust* in a structure; where the structure signifies the nation, this trust is transferred to the nation itself. One may imagine a bright-eyed guide reassuring future visitors of the enormity of the Telkom Tower foundations and then, since comparisons are a useful rhetorical device, referring to its counterpart where the foundations are a paltry 2.5m deep. Luckily, the dining room at Brixton is at ground level, but then no-one appears to be eager to re-establish the latter as a tourist site. Arguably, the Sentech Tower is too *un*African, too whimsical, to serve as signifier of nation. Unlike the Voortrekker Monument and the Telkom Tower − that share an unlikely affinity in their portrayal of the nation as immovably rooted in the African earth − the Sentech Tower represents a moment in South African nation building that was arguably socially, culturally and politically *foreign*.

It is then this rich and ever-deepening text − excavated in the present study by means of an exploratory reading of two quotidian structures and their contrasting geotechnical conditions − that pushes through the surface of 'everyday' civil engineering endeavours to alert the student to both her potential influence as a designer of imagined nations, as well as her burden of responsibility in this regard. Those who aspire to the profession must be made aware that engineering feats underpin many seminal utopian tracts: King Utopus famously digs a canal in Thomas More's *Utopia* (the text that provided the genre with its name), in Yevgeny Zamyatin's *We* the perfect society is housed in towering buildings made from glass, and in James Hilton's *Lost Horizon* Shangri-la is brought to perfection by American sanitation (Carey 1999). Conversely, the student should understand that *dystopia* − a bad society − is just as easily associated with the 'uncivil' outcomes of engineering: the intensely engineered but ultimately nightmarish environments of many contemporary computer games are a salient example of this condition.[21] In the event, ideas of 'utopia' differ little from ideas of 'nation', and the latter are as vulnerable to dystopian ambition as are their counterparts. Encouraging the student to critically examine the role that civil engineering − within the vast scope of roads, bridges, dams, power schemes (and sanitation) − plays in this dynamic mix breaks down the notion of the invisible 'backroom engineer' and hails a 'socially aware, communicative and empowered engineer' for the future.

The paper demonstrates that the engineering sciences and the humanities, when introduced to one another, produce an interesting, workable and valuable dialogue; forced out of their respective corners, geotechnical engineering and cultural studies together are able to generate important new perspectives on communities and their relationship with technology, identity, and visual communication. Whether this hybrid conversation, and its outcomes, is valued, or even acknowledged by educators or the engineering profession itself, still remains to be seen.

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[21]See, for example, the action game *Half-Life 2* (issued by the Valve Corporation in 2004) in which the player's visual experience of City 17 is dominated by The Citadel, a glittering but oppressive structure that reaches into the clouds and is the headquarters of the dystopian dictator Dr Breen.

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