ADDRESS TO THE UCT ENGINEERING AND BUILT ENVIRONMENT STUDENT COUNCIL
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The first two lines of the Preamble to our Constitution read

>*We, the people of South Africa,*
>
>*Recognize the injustices of our past:*

Space and its use, was the cornerstone of apartheid. So, the democratisation of space is an enormously important part of improving the quality of life of all citizens, as we are required to do by the Constitution.

The economic history of South Africa was shaped by the demands of the mines – for land and for the creation of a proletariat. The 1913 Lands Act, accompanied by the introduction of migrant labour soon after the discovery of gold and diamonds shaped residential patterns in South Africa. Much of the struggle against apartheid was shaped by struggles against the Group Areas Act and forced removals. Space was central to the undemocratic practices of apartheid. So, how do you correct the use of space in the interests of democracy?

The City of Tshwane covers a huge geographic space. It still contains all of the elements of apartheid design – so, in one direction there are the townships of Mabopane and Soshanguve side-by-side. Mabopane is a proper place name, the township of Mabopane

was incorporated into Bophutatswana, as a township for seTswana speakers, whilst the old area of Mabopane East was set aside for the Sotho, Shangaan, Nguni and Venda speaking people and called Soshanguve. None of the Pretoria townships – Mamelodi and Atteridgeville for Africans, Eersterus for Coloureds and Laudium for Indians, were within twenty kilometres of the city centre, and each one of them kept distinctly separate. Towards the east, Ndebele speaking people were herded to areas such as KwaMhlanga, Quaggafontein and Vlaklaagte , where people still live, whilst they work in Pretoria – people travel distances in excess of 100 km each way per day, and it is not unheard of for people to spend in excess of 5 hours a day in buses to and from work. Government subsidises these bus trips at the rate of almost R 400 per passenger per month – some of the commuters are contract cleaners, currently on strike because they earn wages as low as R 600 per month. At face value, these subsidies do not appear very rational.

So, how do you democratize the space in and around Pretoria, within and beyond the boundaries of the Tshwane Metro area?

Or, let us turn to Cape Town. An imaginary line was constructed at Beaufort West, called the "Eiselen-De Vos-Malan Line'. This marked the eastern boundary of the Coloured labour preference area. Africans were preferred in as migrant workers – with families required to stay beyond "the line". African people needed to secure Section 10.1.a rights to live West of "the line" with their families. Of course, the dompas carried all of the details of where the bearer was from, where he/she worked, what rights accrued to them and whether they had paid their "hut and poll taxes".

All of the geography of apartheid is still present in the Western Cape and in the City of Cape Town in particular. In terms of the geographic design, the wealthy, obviously whites, would live on the Atlantic Seaboard, and in the leafy suburbs at the foot of Table Mountain and Devils Peak, and Black people collectively, confined to the Cape Flats. Twelve years into democracy, the patterns are still very much the same – some blacks, as a consequence of social mobility now live in the former white areas, but the patterns of the Group Areas remain, long after its repeal.

Under apartheid the system was maintained through vicious repression, including the extensive use of Influx Control legislation.

So, how should we democratize space to destroy the patterns of race, language and class? Naturally, when influx control was repealed and people were free to move, many people left the poverty of the rural areas, flocking to the cities in the hope of finding employment . The City of Cape Town saw an in-migration of   129 400 people between 2001 and 2006 – amongst this number are the poorest inhabitants of this City. When people leave their rural homes for a chance in the cities, they are frequently desperate, and therefore do not hang around until accommodation, employment and schooling are in place. People move and try and make do – so nationally despite our best efforts, the number of informal settlements has increased since the dawn of democracy. We built 2.3 million houses since 1994, but during the same period, the number of informal dwellings grew by about 450 000.

How should we democratize space and the built environment in particular?

Our belief system was shaped by the Freedom Charter, adopted at Kliptown on 26 June 1955 – in regards to space especially, it reads
> *All people shall have the right to live where they choose, to be decently housed and to raise their families in comfort and security;*
> *Unused housing space shall be made available to the people;*
> *Rent and prices shall be lowered, food plentiful and no-one shall go hungry;…….*
> *Slums shall be demolished, and new suburbs built where all have transport, roads, lighting, playing fields, crèches and social centres>*

So, how do we perform against our own value system and aspirations?

Part of what we have to unpack is that the very Constitution I referred to earlier has given us a complex three-tiered system of government, with the powers of functions of national, provincial and local government defined and protected. Part of the difficulty is the speed with which urbanisation takes place – nobody waits for the most appropriate time. Part of the difficulty is that the backlogs inherited were phenomenally huge. Part of the complexity is that our economy is not creating sufficient employment for unskilled or

low-skilled workers. So, unraveling this issue is exceedingly an important part of the measure of the quality of democracy. Yet, there is no reason for despondency – take a metric of services delivered – 2.3 Million houses built; over 700 clinics built and 215 mobile clinics established; thousands of classrooms constructed, almost 100% enrolment of learners between the ages of 7 and 16, with literacy rates of 15-24 year olds now at 96%; there are more than 10 million beneficiaries of the social grants system, of whom 7 million are recipients of Child Support Grants; water has been supplied to 10 million people, sanitation facilities to over 6 million people and electricity to about 16 million people, all financed by government; over 3 million hectares of land has been redistributed benefiting some 700 000 households.

Yet all of our best efforts are still far short of that vision set out in the Freedom Charter which reads

> *Slums shall be demolished, and new suburbs built where all have transport, roads, lighting, playing fields, crèches and social centres.*

This is not a uniquely South African problem, many developing countries experience similar challenges in varying degrees. There is this wonderful Brazilian movie called *City of God.* I say a 'wonderful movie' because its texture is so rich, and it offers a prism through which we can see our own situation refracted. The City of God – is a slum in Rio de Janeiro – it is a story of juvenile gangs, heavy drug and arms trafficking and alarming levels of violence.
Why is Brazil still battling to democratize its built environment – their history is somewhat different from ours – or is it really?

In fact the similarities between the movies City of God (Cidade de Deus) and our own Oscar-winning Tsotsi are truly incredible, though it shouldn't be since life in the favelas in Rio and the townships in Johannesburg are indeed so similar. In fact, the city of God could be Manenberg, Vosloorus, or even parts of Chatsworth. Paolo Lins, the author of the book, Cidade de Deus, who himself is a native of that City of God, talks of three social layers that obtain there – on top are people who continue to keep families together, and find jobs outside the slum; in the middle, one finds people who can still organize their lives, but do so on much lower, and frequently less-formal pay, and at the bottom are the unemployed, alcoholic and drug-addicted people, striving to survive their

social exclusion. He goes on to ask, "If it was not possible to sell drugs, what would drug dealers do?"

 I repeat that the City of God offers a useful prism through which we should see the lives of many of our people refracted. The challenge before us is how to democratize the built environment and who will be the heroes and heroines who will drive these changes?

Thorstein Veblen was one of the few great economists of the 19th Century who understood that the world was a rough, nasty place, in which businessmen left to their own devices were savage and unprincipled, and markets are governed more by greed and power than by prices or competition. He was an untidy, unkempt neurotic social critic of Norwegian farming stock, who refused to have a telephone and gave all his students the same grade irrespective of the quality of their work, except that if someone needed an A instead of a C in order to get a scholarship he would happily oblige. He wrote *The Theory of the Leisure Class* and gave us the concept "conspicuous consumption" and explained that modern business practices were elaborate constructs for the seizure of booty through the minimum of physical exertion.

The hero of Veblen's world was not the hard-headed capitalist, nor the enterprising trader of the "classical" economists, but the engineer. Businessmen, in his view, were most successful when they deceived the public and abused the power and opportunities at their disposal: it was the engineer, the physical planner, the designer, the industrial craftsmen, who was the real creator of prosperity and modernisation.

The exploitation of a business opportunity requires a single-minded, blinkered, brook-no-opposition ruthlessness. The organisation of an industrial operation, or the planning of a city, or the integration of a transport system - the things that are the business of engineering and operational design and built infrastructure - these things require intelligent systems integration and coordination and honest transparency.

Veblen was describing the late American 19th century age of rampant capital accumulation and rapid industrial expansion, and it is an extraordinary feature of this age that we know more about its great business tycoons, the Rockefellers and van der Bilts and Carnegies, than about the great engineers and designers. But think about the

extraordinary genius and far-sightedness of the designers of the great American cities, their transport and sanitation systems, the construction of electricity and water supply networks, the calculus and conviction that made high-rise buildings possible.

Nowadays, the headlines are dominated by business dealmaking and career prospects in high finance are disproportionately tempting. But in fact, as Veblen rightly understood, it is engineering design and network planning and organisational interconnectedness that are the real intellectual challenges of South Africa's economic reconstruction.

The complexities are not just structural.

Think about the difficulties of designing, financing and managing regional water systems, that serve several villages and communities, some rich, some poor, in several municipalities, with several sets of municipal councillors and community groups to consider, a few farmers and a prospective platinum mine all wanting to secure water rights at the lowest possible cost, the provincial environmental regulatory office and a clutter of inquisitive ecology-sensitive NGOs and lobby groups to complicate matters, all the uncertainties associated with weather predictions and climate change to consider, and a rapidly rising cement price to take into account.

That's just the first clutch of complications. It turns out that the project is partially funded from the national budget, the province has a regulatory and planning responsibility and three municipalities all have overlapping interests in purchasing water for local use. The Public Finance Management Act comes into play because of the national funding, but so do the MFMA and the Municipal Systems Act, and their requirements are in several respects incomprehensible or contradictory.

Or think about modern communications infrastructure planning: do we really know whether it makes sense to invest in inter-city fibre-optic cable networks, or rely on wireless satellite-based transmission; do we shift to digital broadcasting transmission, or do we wait for the next cost-reducing technical step-change?

In the early 1890s, the then town council of the leading frontier town of Grahamstown had to decide how to go about improving the state of lighting in the main high street and

thoroughfares, then served by a solitary paraffin light. Careful consideration was given to the new-fangled "electricity" option, but the city fathers decided unanimously that they would invest rather in piped coal gas as the more reliable and familiar source of lumination energy. Did they really have the best available advice? Who gets the blame if costly mistakes are made when network investment decisions are taken?

We never have perfect information at our disposal when these decisions are taken; technological change is too rapid for that. But this simply makes it that much more important that good quality analysis is available- to sort out different categories of uncertainty, to select and plan on the basis of informed judgment and a healthy sense of the relevant probabilities and possibilities.

Think now about how the world changes when we move from sluggish economic growth, even slow decline, behind barriers of self-reliance and sanctions, to modernisation, accelerated trade and integration into the global industrial and technological environment. Economic growth even at comparatively modest rates of 5 or 6 per cent a year means something like a doubling of the investment in new plant and equipment, adaptation of new technologies, learning of new skills and construction of modern infrastructure, by comparison with the slow-growth era. It is an enormously more challenging and interesting world, and especially for the engineering and design of network industries.

This isn't only a technological challenge. In reality, almost any engineering project brings with it social, environmental, economic and financial dimensions that involve difficult judgments and value considerations. Relative interests of rich and poor, farmer and industrialist, households and businesses, short-term gain against long term sustainability - these trade-offs and judgments come into play in all kinds of ways, in the siting of the waste disposal plant to the pricing of the water services to the choice of electricity generation technique.

And urban planning, for all its analytical principles and environmental norms and standards, is very much about how society brings different groups of people together and how we integrate, or separate, lives and livelihoods. The old apartheid city planners built just two entrances to every township so that a Casspir could be parked at each

junction to check what was going on. (Do today's students know what a casspir is?) Today we have to drive new highways through those control-points, and build market spaces and trajectories across town and township that contribute to social consolidation. This is about thinking laterally, imaginatively and with a long term vision. And it's surely a whole lot more fun than merchant banking.

The challenge remains – how do we democratize space? And, how do we right the injustices of our apartheid past? Are we worthy of our Constitution, or the vision of the Freedom Charter that shaped the Constitution? Who will be the heroes and heroines of this new struggle?

Thank you.