

Chancellor of the University of Johannesburg Professor Njabulo Ndebele
Honourable Former President of the Republic of South Africa and our Honorary Doctorate, Thabo Mbeki
Honourable Minister of Higher Education and Training, Mrs Naledi Pandor
Honourable Minister of Transport, Dr Blade Nzimande
Honourable Deputy Minister of Higher Education and Training, Mr Buti Manamela
Honourable Premier of Gauteng, Mr David Makhura
ANC Treasurer General, Mr Paul Mashatile
Former Ministers and Deputy Ministers
Members of Parliament and Senior Officials from National, Provincial and Local Government Structures
Former Deputy Prime Minister of Zimbabwe Professor Arthur Mutambara
Honourable Ambassadors and High Commissioners
Former UJ Chancellor, Ms Wendy Luhabe
The Chairperson of the UJ Council, Mr Mike Teke, and current and former Members of the Council of UJ
Former Vice-Chancellor, Prof Ihron Rensburg
Chancellors, Chairs of Councils and Vice-Chancellors from other Universities
The UJ Executive Leadership Group, Members of Senate and Distinguished Professors
UJ Staff, Students and Members of the Convocation
Partners from Business and Industry; Schools and Friends of UJ
Distinguished Guests, Ladies and Gentleman
Family members and friends, including my friends travelling from abroad
My wife Dr. Jabulile Manana my sons Khathutshelo and Thendo as well as my daughter Denga
I thank my parents who are here today Vho-Shavhani na Vho-Khathutshelo Marwala
I also acknowledge the presence of my first school teacher Mrs. Netshilema who taught me in great one.
I also acknowledge the presence of my high school principals and teachers Professor Matamba, Mr. Muloiwa and Mr. Lidzhade
I also acknowledge the presence of my Chief Vhamusanda Vho-Ligege and her delegation

It is indeed an honor for me to be leading one of the greatest and innovative universities in South Africa and beyond. With over 55,000 students and staff, we have an exceptional opportunity to transform society. Our mission is to modernise South Africa,

in particular, and Africa in general. A mission to transform our society from superstition to scientific thinking. A mission to infuse into our productive forces, technology so that they can do more to usher a developmental state, in the short term, and a developed state in our lifetime. As Kenyan Nobel Laureate Wangari Maathai said: “There comes a time when humanity is called to shift to a new level of consciousness . . . that time is now.”

Ke nako! iSikathi sifikile! Tshifhinga tsho swika! Now is the time to move to the fourth industrial age. My vision is to position the University of Johannesburg in the fourth industrial revolution, within the context of the changes in the social, economic and political context of the African continent. What is the fourth industrial revolution, and what does it mean for the University of Johannesburg?

The first industrial revolution occurred in England in the 17th century. Given the population size and density, the first industrial revolution should have happened in India and perhaps China but not England. Why did it happen in England, not China nor India? It was because the scientific revolution that gave us the laws of motion, the theory of gravitation and thermodynamics did not occur in New Delhi nor Peking but in London. It was also because of the centrality of universities such as Cambridge and Oxford that allowed scientific thought to flourish.

The first industrial revolution gave us steam engines and the mechanization of production of goods. The first steam train arrived in South Africa in 1860, 60 years after it was first invented. No nation can afford to be 60 years behind and we have no choice but to accelerate our pace. The second industrial revolution happened largely in the United States with ideas developed in England by Scientists Michael Faraday and James Clerk Maxwell. Faraday realized that moving an electric conductor next to a magnet generates electricity. To this day, the majority of electricity in the world, is generated by moving a conductor next to a magnet. Whether it is a coal fired power station, nuclear or hydro power stations, electricity is generated by moving a conductor next to a magnet. The corollary to that, is that when one puts a magnet next to a conductor, with electricity then the conductor moves. This is what we call an electric motor. An electric motor has been the basis for the assembly line in our factories. Assembly line revolution gave us mass production of goods. This sounds like magic, but it is nothing but a scientific principle that links a magnet to electricity as a unified force. Whether it is in our electric mowers or robots that are powering factory floors today, an electric motor is a basic ingredient. Scientist Maxwell theorized the

relationship between a magnet and electricity to give us the theory of electromagnetism, which was the basis for Einstein's theory of relativity. During this period, we were fighting in the battle of Isandlwana, where we won the battle but lost the war.

Why did we lose the war? We lost the war, because we had not mastered the scientific methods of organizing and enabling society. Now it is the time to master the art of scientifically organizing our society, to increase economic production, as well as social cohesion and to unite our peoples. The third industrial revolution came about because of the invention of semiconductors in the 1950s. These are materials that conduct electricity under certain conditions. These gave us a transistor and ushered the electronic age. Our phones, computers and television are powered by transistors. To this day, in South Africa, we do not have a homegrown computer, nor a cell phone nor a domestic automobile industries. Now it is the time to transform the landscape of our industrial base to tackle the problems of poverty, unemployment and inequality.

To paraphrase our Chancellor, Professor Njabulo Ndebele, we were objects of the first, the second and the third industrial revolutions, not subjects of these revolutions. We should become subjects rather than objects of the fourth industrial revolution. It is imperative that we become equal participants in the fourth industrial revolution. The colonization of our continent by the Europeans was precisely because we were objects of the first industrial revolution.

There can never be the African renaissance unless we are active agents of the fourth industrial revolution. The important ingredient that will ensure that we are participants and not spectators of the fourth industrial revolution is education; education that is correlated to the demands of the fourth industrial age and that is grounded in the Pan African agenda. As the great Japanese educator of the Meiji restoration of the 18th century, Yukichi Fukuzawa put it: "It is said that heaven does not create one man above or below another man. Any existing distinction between the wise and the unwise, between the rich and the poor, comes down to a matter of education".

Beijing and New Delhi are no longer objects of the fourth industrial revolution but are full participants while we wish to define the rules of the game that we are not active participants. How can we be participants in the fourth industrial revolution if as a country we spend less than 1% of our GDP on research and development? Now it is the time for us, as the University of Johannesburg, together with our key stakeholders in

government, society and industry, to mobilise the intellectual, financial and social forces to invest and innovate through our research, teaching and learning enterprises.

The fourth industrial revolution is going to integrate man and machines, the physical and the cyber. Technology will continue to, and significantly so, affect us all. It is going to transform the world. Factories will have fewer people and will be powered by artificial intelligence technology and no one will be spared. The manufacturer of nuts and bolts in Benoni will be out of business if she does not adopt new ways of doing things.

What is the University of Johannesburg required to do to ensure that we dynamically influence and impact this new revolution? We are required to train scientists and engineers who understand humanities and social sciences. We are to train social scientists who understand technology. This is called multi-disciplinarily and will lead to the internet of skills and attitudes.

Our graduates must have fluency of ideas. Fluency of ideas mean that our graduates must be able to come up with multiple ideas about a topic. Our graduates must be active, agile and adaptive learners. Our graduates should be able to learn fast, relearn, learn and relearn and adapt knowledge as knowledge changes. The theory of dialectics teaches us that everything is always changing, and our graduates must have flexible minds that adapt fast. The other vital skill for the fourth industrial revolution is judgement and decision making. A robot will not be able decide how we should deal with migration of destitute people or about ethics or convince a leader of a country that war is an inappropriate way of handling disputes.

As Ben Okri, a Nigerian novelist, put it: “The most authentic thing about us is our capacity to create, to overcome, to endure, to transform, to love and to be greater than our suffering.” Another vital skill in the fourth industrial revolution is originality. As we tackle the increasingly challenging problems of migration, urbanization, and climate change, originality will be key. Now it is the time to incorporate all these skills into our curricula. So, going forward, deepening our research agenda will be paramount. Our research and innovation agenda should solve practical problems that are around us. For as I have often said: “Knowledge becomes education when it identifies a purpose in society and fulfils that purpose”.

As we deepen the originality of our research agenda we should be guided by what the great Chinese modernizer Deng Xiaoping stated when he said that we should “seek

truth from facts” in the transformation of the African continent. We should create open spaces where the culture of asking questions becomes our institutional culture.

As Albert Einstein often said: “The measure of how clever you are is by asking more questions than you can give answers”. We should infuse into our research agenda an African ethos. Our leader Steve Biko often taught us that “our contribution to the world shall be giving the world a human face” where the pursuit for maximization of value is not what defines us. What defines us should be the pursuit for that which is good and just.

As the Fourth Industrial Revolution is a catalyst that will transform society, its inclusion in the curricula is therefore required. We should increase the graduation rates of our students. We should bring technology into our classrooms, whether by means of blended learning or robotic tutors. We should use technology to monitor the progress of our students. We should be kind to our students, treating them as our own family. We should increase the qualification levels of our staff and achieve over 80% of our staff with PhDs by the year 2025. We should deepen our international profile by bringing the world into our classrooms and taking our staff and students into the world. We should aim to have 20% of our staff to be international by the year 2025 and 15% of our students to be international by the year 2020.

Those who will thrive in the fourth industrial age will have to understand the world, and University of Johannesburg should therefore be at the forefront of laying down a foundation for the University of the 22nd century.

We should create a conducive environment for our staff and students to master the tools of the fourth industrial revolution. Our campuses should be safe spaces for generating new and very often provocative ideas. Spaces around our campuses should facilitate learning. UJ will master the fourth industrial revolution only if we invest in our implementation capacity and infrastructure. Our approach should facilitate open engagements. It should facilitate blended learning where technology is the integral part of teaching and learning.

We should link UJ to the innovation architecture of South Africa, playing a critical role in increasing the productivity of our industrial sector and, thereby, reducing the challenges of unemployment, inequality and poverty. Our newly established

Johannesburg Business School should facilitate the flow of the latest technology, leadership and management to our industrial and government sectors.

Our Pan African Institute of Thought and Conversation, which is also in partnership with the University of the West Indies in the Caribbean Islands, and the Johannesburg Institute of Advanced Study, which is in partnership with the Nanyang Technological University in Singapore, should facilitate advanced thinking on aspects of our social, economic, political and technological being. One of the major projects these institutes will undertake will be to write 10 biographies of African leaders who have played critical roles in our lives such as Mrs. Lillian Ngoyi, Mrs. Gertrude Shope, Queen Nzinga Mbande and others.

Our Institute for Intelligent Systems will play a central role in deepening our advances into the fourth industrial age. Now is the time! I, therefore, call all our stakeholders in society, industry, government, domestic and international as well as our alumni, staff and students to join me in this great initiative of taking our university into the fourth industrial age. Let us jointly mobilize our intellectual and physical resources to facilitate success in this great initiative. Ke nako!

Ke a leboga

Ngiyabonga

Baie Dankie

Ndi a livhuwa

Ndza Khensa

Ndiyabulela

I thank you.