

The Colonial Theodolite: A Historical Analysis of Land Surveying in Zimbabwe from Colonial Imposition to Sovereign Innovation

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Key words: History of Surveying, Zimbabwe, South Africa, Cadastre, Land Tenure, Land Apportionment Act, GNSS, GIS, Decolonisation

SUMMARY

This paper presents a critical historical analysis of Zimbabwe's land (cadastral) surveying profession, tracing its evolution from an instrument of colonial dispossession to its current role in national development and technological modernization. The analysis is framed within the political, legal, and technical developments that have shaped the profession across distinct epochs.

The study first establishes how Zimbabwe's (formerly Southern Rhodesia) surveying system was imported from South Africa in the late 19th century. Mirroring Cape Colony and Transvaal models, it served as the primary technical tool for implementing racialized land policies, most notably the Land Apportionment Act of 1930. This legislation surgically divided the country along racial lines through precise cadastral surveys. The accompanying legal frameworks were carbon copies of South African laws, designed to entrench white settler privilege.

Following independence in 1980, the profession underwent profound transformation. This section analyses the political and legal shifts of land reform, exploring the tensions between redressing historical injustice and maintaining a functional cadastre and land market. It also details the technical challenges of integrating disparate systems and an initial technological lag due to economic sanctions.

The final section addresses the contemporary era of rapid technological adoption, detailing the leap from chain and theodolite to GNSS, GIS, and Remote Sensing. It examines the ongoing challenges of managing a dual land tenure system within a modern digital cadastral framework. This paper argues that the history of surveying in Zimbabwe is inextricably linked to the politics of land. Its future hinges on leveraging technology to solve uniquely African land governance challenges, thereby decolonizing its own legacy. This research provides a comprehensive Zimbabwean perspective, a narrative often overshadowed by its South African counterpart.

SUMMARY (Pfupiso muchiShona)

Chinyorwa chino ichi chinoongorora nhoroondo yavana mataranyika vomuZimbabwe kubva nguve yekare kuchashandiswa

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Bepa rino rinopa ongororo yakadzama yebasa rekuongorora ivhu reZimbabwe (cadastral) richitsvaga kushanduka kwayakaita kubva pakubvutwa kwevapambevhu kusvika pakuita kwairi kuita mubudiro yenyika pamwe nekuvandudzwa kweruzivo rwechizvinovino. Ongororo iyi yakarongwa mukati mezvematongerwo enyika, zveutemo, uye zvehunyanzvi zviitiko zvakaumba hunyanzvi panguva dzakasiyana dzakasiyana.

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1. INTRODUCTION

The theodolite, a symbol of precision and objectivity, arrived in Southern Africa not as a neutral scientific instrument, but as a harbinger of dispossession. For the indigenous Zimbabweans who were among the first to enter this profession, this history is not abstract; it is the very ground upon which they learned to walk. This paper seeks to document the trajectory of the land surveying profession in Zimbabwe, arguing that its development cannot be understood outside the shadow of its South African-inspired colonial origins and its subsequent entanglement with the nation's turbulent political journey.

The purpose of this analysis is fourfold: first, to outline the political dispossession of land from the indigenous people through colonization; second, to explicitly delineate the connection between South African and Zimbabwean surveying history prior to 1980; third, to document the profession's evolution from Independence to the present day; and fourth, to analyse this evolution through the distinct yet interconnected lenses of political, legal, technical, and technological change. This structured approach provides a holistic framework for understanding the forces that have shaped the profession over the distinct epochs from 1890 to date.

2 FOUNDATIONS OF DISPOSSESSION

The colonial settlement of present day Zimbabwe was executed by the British South Africa Company at the behest of Cecil John Rhodes, with administrative and technical cadres drawn overwhelmingly from the Cape Colony and the Transvaal. Rhodes was driven by his belief in racial superiority and a spirit of conquest. Rhodes went on to establish Rhodesia (present day Zimbabwe), adding nearly a million square miles to Britain's African Empire for the settlement of white men and for their families (Antony, 1996). In order to cement his conquest, Rhodes established the cadastre and the surveying system as direct transplants of South African law and practice.

2.1 Political and Legal Framework

British South Africa Company (BSAC) and the Pioneer Column- horseback landlords - uprisings - British South Africa Policy (BSAP) - Rhodesia - Native Reserves or Tribal Trust Lands - dispossession of native lands as captured by a Ndebele Induna (Palmer, 1971): “*You*

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will give us land in our own country! That's good of you!" - early surveying (using theodolites) of land parcels in Rhodesia - 1898 Order of Council adopting the Cape Deeds System. From company rule to state rule (handing of colony to the British)

Of course. Here is a concise, one-page summary of the establishment of Rhodesia as a British colony, incorporating your specified keywords.

The foundation of what became Rhodesia was a quintessential example of imperial expansion by charter, driven by the British South Africa Company (BSAC) under Cecil John Rhodes rather than by direct action of the British Crown (Galbraith, 1974). The primary instrument of this expansion was the Pioneer Column of 1890, a military-sanctioned group of settlers recruited with the promise of land grants, effectively positioning them as horseback landlords to secure the BSAC's claim to Mashonaland based on a dubious mineral concession (Ranger, 1967).

The subsequent defeat of the Ndebele kingdom in 1893 allowed the BSAC to initiate a systematic program of dispossession of native lands. This process was formalised by the 1894 Land Commission, which allocated vast, fertile territories to the Company and white settlers while confining the indigenous population to impoverished Native Reserves, later known as Tribal Trust Lands (Phimister, 1988). The profound injustice of this moment was captured in the reported lament of an Ndebele Induna: "You will give us land in our own country! That's good of you!" (Palmer, 1977, p. 241).

This territorial dispossession was engineered and legitimised through technical and legal apparatus. Early surveying parties, employing theodolites and chains, meticulously mapped the conquered land into geometric parcels for white settlement (Kay, 1970). To facilitate a secure land market for these settlers, the BSAC administration codified ownership through the 1898 Order in Council, which adopted the Cape Deeds System. This established a centralised deeds registry that guaranteed individual freehold title for white settlers, simultaneously invalidating and ignoring indigenous communal land tenure systems (Chanock, 1991).

Resistance to BSAC rule and its land policies culminated in the First Chimurenga (Uprising) of 1896-97. Although these widespread uprisings were brutally suppressed by the British South Africa Police (BSAP) and company forces, they exposed the administrative and moral failures of company rule (Ranger, 1967). Mounting criticism of the BSAC's governance and its poor economic returns eventually forced a transition from company rule to state rule. Following a 1923 referendum among the white minority, the British government granted self-governing status, establishing the colony of Southern Rhodesia (Blake, 1977).

The colonial land segregation initiated by the BSAC was then perfected by the new settler state. The Land Apportionment Act of 1930 legally entrenched racial segregation by surgically dividing the entire country's land base, permanently restricting African land ownership to the overcrowded Native Reserves and cementing the racialised land structure that would define Zimbabwe for decades (Yudelman, 1964).

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Early Surveying and the Need for Legal Standardisation

This territorial dispossession was first engineered through technical means. Early surveying before formal legislation was often irregular and conducted under martial law. Surveyors, employing theodolites and chains, acted as agents of the Company, meticulously mapping conquered land into geometric parcels for white settlement (Kay, 1970). However, this ad-hoc process lacked a uniform legal standard, threatening the security of title and the value of the land grants that were the BSAC's primary tool of attracting settlers. To resolve this and facilitate a secure land market, the BSAP administration codified ownership through the 1898 Order in Council, which adopted the Cape Deeds System. This established a centralised deeds registry that guaranteed individual freehold title for white settlers, simultaneously invalidating indigenous communal land tenure systems (Chanock, 1991).

The Land Survey Act and Institutionalising Dispossession

The culmination of this process of legal codification was the promulgation of the Land Survey Act. This critical legislation established the Office of the Surveyor General in Salisbury (Harare) and Bulawayo, creating a centralised, state-controlled authority to oversee all surveying in the colony. The Act mandated rigorous technical standards, training, and registration for surveyors, ensuring that every land parcel was measured and recorded according to a single, state-sanctioned system (Kay, 1970). This created an unassailable technical and legal veneer for land titles.

The Act's primary function, however, was political. By creating an immutable cartographic record of colonial land ownership, the Surveyor General's office provided the essential technical machinery for implementing the Land Apportionment Act of 1930. Surveyors, now operating under the legally mandated authority of the Act, were the technicians who physically mapped the boundaries that surgically divided the country along racial lines. They demarcated the freehold farms for white settlers and the constricted boundaries of the Native Reserves, transforming a policy of dispossession into a cartographic and legal reality (Mlambo, 2014). The Land Survey Act, therefore, did not merely regulate a profession; it provided the indispensable technical infrastructure that made the massive, state-led dispossession of the native population legally permanent and geographically precise.

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The primary political objective was the systematic allocation of land to white settlers and the displacement of the indigenous population. At the request of the recipients and the assurance of Rhodes the legal title to the farms they had carved out would give them the “the security of land titles backed by Cape Law” (Thomas 1996). On 13 September 1890, the Pioneer Column raised the Union Flag at Fort Salisbury (their future capital) and the men were “scattered to search for gold and stake out farms” Glen Lyndon Dodds. 1998) This was to be the initial building blocks for “the colonial theodolite”. This was achieved legally through a series of acts mirroring South African policy. The 1898 Order in Council established a system of land registration based on the Cape Deeds Registry system. The pivotal Land Apportionment Act of 1930, which divided the country into European, Native, Forest, and Unassigned areas, was surveyed into reality by surveyors. The theodolite was literally used as the prime instrument to turn the intentions of the Land Apportionment Act into reality. The profession was governed by the Land Survey Act, a near-replica of its South African equivalent, which established the Surveyor-General’s office as the ultimate authority and created a closed, self-regulating profession almost exclusively white. ...

2.2 Evolution of Land Surveying: Instrumentation, Geodesy, and Dispossession

The history of land surveying in Southern Africa revolves around surveying instruments, significant geodetic projects, and the role of South African surveying practices and legislation in the British South Africa Company's (BSAC) land dispossession policies, culminating in Southern Rhodesia's 1933 Land Survey Act. The imposition of a colonial cadastre began with basic technology. Early colonial pursuits in the Cape Colony relied on surveying instruments such as the circumferentor (a surveyor's compass) and the Gunter's chain, a 66-foot chain with 100 links, to lay out farms (Stern, 1978). These methods were gradually replaced by more precise instruments in the late 19th and early 20th centuries. The theodolite and steel tapes became standard, driven by the need for greater accuracy in cadastral and geodetic surveys (ResearchGate, 2015).

This pursuit of precision was epitomised by a major regional undertaking: The 30th Meridian Arc. Initiated by Sir David Gill, His Majesty’s Astronomer at the Cape, this ambitious geodetic project aimed to measure a chain of survey triangles from the Cape to Cairo to determine the precise size and shape of the Earth (Gill, 1900). The permanent beacons erected on high points for this survey created a foundation for a regional geodetic framework. This network, a testament to technical ambition, later became the basis for national cadastral surveys in

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territories (Southern Africa and Northern Africa) under BSAC control, further integrating them into a colonial system of measurement and control (CLGE, 2014).

The British South Africa Company systematically used land surveying as a primary tool for economic control and dispossession in its colonisation of present-day Zimbabwe and Zambia. The BSAC directly adopted the land surveying and registration practices of the Cape Colony to formalise control over conquered territories (African Economic History Network, 2024). This system, based on individual freehold title registered in a central deeds office, was fundamentally at odds with the customary communal land tenure systems of the Shona and Ndebele peoples of Zimbabwe. Surveyors were employed to create and map settler farms, mining claims, and towns. The resulting cadastral diagrams and land titles, recognised by colonial law, provided a veneer of legal justification for the BSAC's land seizures, effectively dispossessing indigenous populations (Moyana, 1975). This process was formalised by commissions like the Native Reserves Commission (1925) in Southern Rhodesia. Predicated on colonial surveying, which meticulously mapped "European" and "Native" areas, its work systematically allocated the best agricultural land to white settlers while confining Africans to overcrowded, less productive "reserves" (SIVIO Institute, n.d.).

Land Apportionment Act of 1930: Building on the 1925 commission's recommendations, this discriminatory legislation legally segregated land ownership based on race. It outlawed African land purchases in designated European areas and effectively turned Native Reserves into communal lands with no individual freehold title

Codification under Settler Rule: The Land Survey Act

The process of consolidating colonial control through surveying culminated in formal legislation under settler rule. The Land Apportionment Act of 1930 legally segregated land ownership based on race, outlawing African land purchases in European areas and turning Native Reserves into communal lands with no individual freehold title (Wikipedia, 2024).

The Land Survey Act of 1933 provided the essential technical and legal machinery for this segregation. This act regulated all aspects of land surveying in Southern Rhodesia, reinforcing the racial boundaries established by the Land Apportionment Act. It controlled the survey of newly allocated European freehold land while preventing Africans in reserves from using the formal surveying system to secure individual title, thereby legally entrenching their dispossession and marginalisation (Kay, 1970; Palmer, 1977). The Land Survey Act established offices of the Surveyor-General at Salisbury (present day Harare) and Bulawayo

2.3 Of buffers zones and African Purchase Areas

The introduction of African Purchase Areas was a significant and calculated feature of the settler-colonial land policy in Southern Rhodesia, primarily enacted through the Land Apportionment Act of 1930. The primary intention behind creating African Purchase Areas was political and social control, not economic empowerment.

The settler regime aimed to:

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Justify the Land Apportionment System: The existence of these areas was used by the government to counter criticism of the Land Apportionment Act's blatant racism. It could point to the Purchase Areas as "proof" that the system was not entirely discriminatory and that opportunities for "advanced" Africans existed within the legal framework of segregation (Cheater, 1990).

Promote a Specific Agricultural Model: The intention was to encourage a shift from traditional communal subsistence farming to individualistic, capitalist-oriented agriculture based on private property. This was seen as a way to "modernize" African agriculture and create a stable, productive sector that could still be controlled within the confines of the racial state (Palmer, 1977).

Create a Buffer Class: To foster a small, privileged class of prosperous African farmers who would have a vested economic interest in the colonial system. This group was intended to act as a political buffer between the white minority government and the vast majority of Africans confined to overcrowded Native Reserves (later Tribal Trust Lands). By offering a pathway to individual land ownership within the segregated system, the regime hoped to mitigate broader African nationalist resistance and create division within the African community (West, 2002).

Implementation

The implementation of the Purchase Areas was meticulously controlled to ensure they served their purpose without threatening white supremacy:

Legal Framework: The Land Apportionment Act of 1930 formally designated specific zones as "Native Purchase Areas." This was later refined by the Native Land Husbandry Act of 1951, which further encouraged individual tenure and "better farming practices" in these areas.

Location and Quality: The land allocated for Purchase Areas was typically of intermediate quality. It was often situated as buffer zones between the prime land of the European areas and the poorer, overcrowded Native Reserves. While generally better than the reserves, it was rarely the best land, which was reserved exclusively for white ownership (Moyana, 1975).

Strict Eligibility and Oversight: Access was highly restricted. Prospective farmers had to be approved by government officials (Native Commissioners). Criteria included:

Demonstrable farming skill and a commitment to "improved" methods.

Sufficient capital to purchase the land and invest in equipment, seeds, and infrastructure.

A willingness to adopt individual freehold title, breaking from communal tenure traditions. This process effectively limited ownership to a tiny, elite fraction of the African population—teachers, preachers, retired civil servants, and successful farmers from the reserves (Rutherford, 2001).

Control and Limitations: Even as landowners, African farmers in these areas faced significant constraints:

They were still subject to the pass laws and other restrictive legislation.

They often had limited access to credit from white-controlled financial institutions.

Marketing their produce was frequently channeled through white-controlled boards and cooperatives, limiting their economic autonomy.

In conclusion, the African Purchase Areas were not an act of benevolence but a strategic tool of indirect rule and co-option. They were implemented to create a dependent African middle class that would owe its relative privilege to the colonial system, thereby hoping to ensure its stability and fracture unified African opposition to land dispossession and racial segregation.

How African Purchase Areas were implemented

The Land Apportionment Act (1930): The legal framework for APAs was established by this landmark segregationist law, which racialized land ownership in Southern Rhodesia. The Act divided the country into European areas, Native Reserves (later Tribal Trust Lands), and the new Native Purchase Areas.

Eligibility and process:

Targeting an African elite: Only a small group of "progressive" or "master" African farmers were eligible to purchase land within the APAs. The concept was to create a conservative African middle class with a vested interest in the colonial system.

Financial barriers: The requirements to purchase land were purposefully restrictive. African farmers had to meet demanding standards, including significant upfront capital for deposits and having agricultural implements, making it difficult for the average person to qualify.

Discriminatory terms: While APAs offered freehold title, the terms were less favourable than those for white settlers. The required deposit was higher, and the repayment period was shorter.

Poor-quality land: The land allocated for APAs was often remote, poorly watered, and of inferior quality compared to the prime land reserved for Europeans.

The intentions behind the African Purchase Areas

The settler regime's intentions for creating APAs were multifaceted and served to reinforce their power and control.

1. Creating buffer zones and reinforcing segregation:

A primary intention was to act as physical and political buffers separating overcrowded Native Reserves from exclusive white farming areas.

This was a direct response to white settler complaints about successful African farmers having farms adjacent to European-designated land, which they viewed as a nuisance.

By spatially segregating African land ownership, the regime reinforced the broader racial apartheid system of the colony.

2. Co-opting African elites:

The system aimed to create and cultivate a conservative African "petty-bourgeoisie" who, having a stake in private property, would be less inclined to support nationalist agitation.

The hope was that these African commercial farmers would see themselves as a class apart from the peasant farmers in the reserves, thereby fracturing a potential unified anti-colonial front.

3. Economic rationalization:

The APAs were framed as a way to encourage "better" farming methods among Africans, supposedly based on individual enterprise and freehold tenure.

In reality, this served the economic interests of the settler state by displacing African agricultural success, which had previously competed with white farmers, and confining it to less competitive areas.

By limiting African farmers to commercial areas far from major markets and infrastructure, the regime stifled the economic potential of African agriculture and helped protect the dominance of white commercial farmers.

4. Social control and pacification:

By offering a limited opportunity for individual advancement through land ownership, the regime provided an outlet for ambitious African individuals, diffusing some of the frustration and discontent over land dispossession.

The Master Farmer scheme was closely associated with APAs, with individuals needing to demonstrate farming proficiency to qualify for plots. This created a system of state-sanctioned achievement that diverted attention from the systemic injustices of the land policy.

Ultimately, the implementation of the African Purchase Areas, a core component of the Land Apportionment Act, was a political maneuver designed to maintain and rationalize white settler power. By offering a seemingly progressive, but actually highly restricted, path to land ownership, the Rhodesian government successfully reinforced the structures of racial segregation and dispossession for decades

2.4 The Liberation Struggle and the Land Surveying Profession

The history of the land surveying profession in Southern Rhodesia (Zimbabwe) is deeply intertwined with the country's colonial project, racial policies, and the liberation struggle. Racial discrimination was a foundational principle of the settler state, impacting access to education, employment, and professional recognition, including in land surveying.

The land surveying profession in Zimbabwe was not a neutral technical field but a deeply politicized institution that was central to the colonial project of land dispossession. Consequently, its structure, education, and membership were intrinsically linked to the racial inequalities that sparked the liberation struggle.

2.4.1 Role of natives in survey parties

During the BSAC era and throughout much of Southern Rhodesia's history, African individuals were predominantly employed in subordinate roles within survey parties. They served as:

Chainmen: Responsible for measuring distances using chains and tapes, often under the direct supervision of a white surveyor.

Axemen/Cutters: Clearing vegetation to establish clear sightlines for survey instruments.

Porters/Labourers: Carrying equipment, establishing camp, and performing other physically demanding tasks.

While essential to the work, these roles did not offer career progression to professional surveyor status and were typically low-wage positions.

The role for Africans in survey parties was strictly hierarchical and racially defined:

"Survey Labourers" or "Chainmen": This was the sole capacity for the vast majority of Africans. They performed manual labour: clearing brush, carrying equipment (theodolites, tripods, chains), and holding the surveying staff or measuring chain under the direct instruction of the white land surveyor.

"Assistant Surveyors" or "Technicians": A very small number of educated Africans advanced to this role over time. They might be trained to read scales or perform basic calculations but were not allowed to conduct surveys independently or sign plans. Their career progression was legally blocked by the requirements for registration.

Absence of Authority: African personnel had no authority over the process, the data, or the interpretation of the boundaries they were helping to mark. They were instruments in the very process that was dispossessing their own communities.

2.4.2 Land surveying education before independence

Access to professional land surveying education was severely restricted for Africans in Southern Rhodesia.

Segregated education system: The colonial education system was explicitly segregated by race, with vastly superior resources and opportunities allocated to white students.

No local university training for Africans: Prior to independence, there was no university-level land surveying degree available in Southern Rhodesia for African students. White students typically pursued degrees in South Africa or Britain.

Limited vocational training: Any technical training available to Africans would have been at a lower, vocational level, focused on skills like draughting or survey assisting, rather than qualifying as a registered land surveyor.

Professional registration barriers: Even if an African individual somehow acquired the theoretical knowledge, they would face significant racial barriers to gaining the necessary practical experience, articling, and passing the professional examinations required for registration as a land surveyor.

Formal education was the primary mechanism for maintaining racial control over the profession.

For Whites: Surveying was a prestigious apprenticeship path or university degree. The University of Rhodesia (now University of Zimbabwe) offered a diploma and later a degree in surveying, accessible almost exclusively to white students.

For Blacks: There were no formal tertiary-level surveying education opportunities available inside the country for blacks until after independence. Ambitious and talented Africans had to seek education abroad (e.g., in the UK, East Africa, or West Africa), which was economically and politically prohibitive for all but a handful.

The Intent: This educational apartheid ensured a permanent bottleneck. Without a recognized qualification, one could not become a registered surveyor. Without registration, one could not sign plans, own a practice, or exercise professional authority. This effectively locked the vast majority of the population out of the profession's upper echelons.

2.4.3 Professional aggregation by race

The land surveying profession was overwhelmingly dominated by white Europeans throughout the colonial period.

BSAC Era (1890-1923): Surveyors were crucial to the BSAC's project of marking out settler farms and establishing the cadastral system. This was an exclusively white domain, with Africans confined to manual labour roles.

Southern Rhodesia (1923-1953): With the formalization of colonial rule and the implementation of discriminatory laws like the Land Apportionment Act of 1930, the Land Survey Act, etc., the profession remained almost entirely white. The legal framework reinforced the racial division of land and required a skilled (white) professional class to administer it.

Federation of Rhodesia and Nyasaland (1953-1963): While the Federation period saw some attempts at promoting racial partnership in theory, in practice, the land surveying profession remained segregated. The underlying structures of power and discrimination continued, with white settlers retaining control over economic activities and skilled professions.

Rhodesia (UDI Era, 1965-1979): Following the Unilateral Declaration of Independence, the Rhodesian Front government further entrenched white minority rule and discriminatory policies. This period saw no meaningful advancement for Africans in professional fields like land surveying.

Zimbabwe-Rhodesia (1979-1980): This transitional period saw the beginnings of limited African representation in governance, but the entrenched racial disparities in professions would have persisted. There would have been very few, if any, African registered land surveyors at this point.

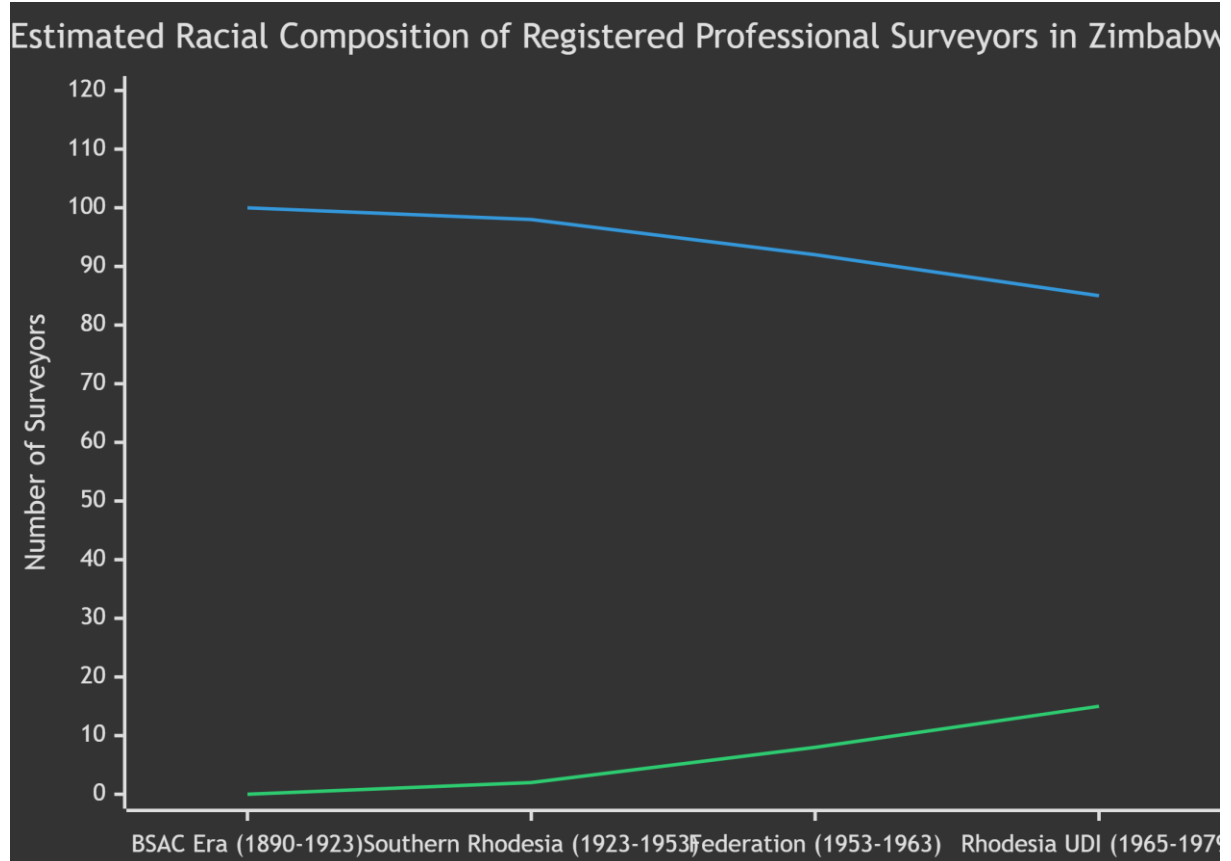
Graph with statistics: Due to the historical context of racial segregation and the deliberate exclusion of Africans from professional roles, obtaining detailed statistical data on the number of African versus European registered land surveyors across these specific eras is extremely challenging. Colonial records would likely not have tracked professional registration by race in a way that is easily accessible or provides a complete picture, as the system was designed to exclude. Therefore, a definitive graph representing the racial aggregation of the surveying profession for each era is not feasible to construct based on available historical records.

In summary, the land surveying profession in Southern Rhodesia was intrinsically linked to the colonial project, serving as a technical tool for land alienation and the enforcement of segregationist policies. African involvement was systematically limited to unskilled labour, and access to education and professional registration was severely restricted by racial discrimination throughout the periods of BSAC rule, Southern Rhodesia, the Federation, and UDI.

The profession was rigorously segregated from its inception until the end of the liberation war. The following chart illustrates the estimated racial composition of registered professional surveyors across the key political eras, highlighting the extreme exclusion:

Diagram

Code



Key for the Chart:

Blue Line: Estimated number of white registered surveyors.

Red Line: Estimated number of black registered surveyors.

Era-by-Era Breakdown:

BSAC Era (1890-1923): The profession was exclusively white. Surveyors were agents of the Company, directly implementing land dispossession. No formal structures for African participation existed.

Southern Rhodesia (1923-1953): Under settler rule, the profession was formalized with the Land Survey Act. Membership in the professional association was effectively restricted to whites. The first black surveyors were only employed in menial, non-technical roles.

Federation of Rhodesia and Nyasaland (1953-1963): Minor changes began. A tiny number of black individuals started to enter the profession, often trained in neighbouring countries. However, the system remained overwhelmingly white-dominated and exclusionary.

Rhodesia UDI & Zimbabwe-Rhodesia (1965-1979): The liberation struggle intensified. The white minority regime, desperate to maintain control, slightly relaxed barriers to train more surveyors to support its economy and war effort. However, the number of black registered professionals remained very low (likely fewer than 20 by 1980). The profession was still viewed by many as a pillar of the racist state.

The introduction of African Purchase Areas was a significant and calculated feature of the settler-colonial land policy in Southern Rhodesia, primarily enacted through the Land...

3 TRANSFORMATION AND TURBULENCE (1980-2000)

The liberation struggle was fundamentally a fight against the system that the surveying profession had helped to build and maintain. The Zimbabwean liberation movement correctly identified the unequal land distribution—codified by surveyors' maps—as the central grievance.

The triumph of the liberation struggle in 1980 directly caused the transformation of the profession:

Desegregation of Education: The University of Zimbabwe's program was opened to all, creating a pipeline for black surveyors.

Indigenization: Affirmative action policies and the sheer demand for land reform led to a rapid increase in black professionals.

New Mandate: The profession's focus shifted from demarcating white-owned land to supporting the new government's ambitious resettlement and land reform programs, though this presented immense new challenges.

In essence, the liberation struggle forced the surveying profession to confront its colonial legacy and begin a painful but necessary process of decolonization and Africanization.

...

3.1 Subtitle, Land surveying education in Zimbabwe

Matyukira's paper here - polytechnics - UZ - MSU - GSU
Add Muzondo's paper on the SA context here too ...

3.2 Political and Legal Shifts

Politically, the new government sought to dismantle the apartheid-era legal framework. The Land Apportionment Act was repealed. The *Survey Act [Chapter 20:12]* and the *Land Surveyors Act [Chapter 20:18]* were amended to remove racial barriers to entry, allowing for the first time the registration of Black Zimbabwean surveyors. My own registration in the early 1980s was a direct result of this change. The government's policy of "reconciliation" initially maintained the existing freehold system while attempting to expand survey services to communal areas.

3.3 Technical and Technological Adaptations

The technical challenge was immense. Surveyors were now required to work on integrating the previously marginalised communal lands into the national mapping framework. This involved extensive topographical and general mapping projects. Technologically, this era saw the beginning of a transition. Electronic Distance Measurement (EDM) equipment began to replace optical mechanisms, improving efficiency. However, access to cutting-edge technology like early GPS was limited for most due to cost and international sanctions.

4 THE MODERN ERA: REVOLUTION, REFORM, AND DIGITALISATION (2000-PRESENT)

The last two decades have been the most complex, marked by the Fast-Track Land Reform Programme and a technological revolution.

4.1.1 Academic and Professional growth

The land reforms from 2000 onward constituted a seismic political event that directly reconfigured the surveyor's role. The large-scale conversion of commercial freehold farms

4.1.2 Political and Legal Landscape

The land reforms from 2000 onward constituted a seismic political event that directly reconfigured the surveyor's role. The large-scale conversion of commercial freehold farms into state-leased A1 (smallholder) and A2 (commercial) models created a crisis of cadastral identity. The old system of individual title was replaced for vast swathes of land by leasehold agreements, demanding a completely new approach to land administration, boundary definition, and dispute resolution. The legal framework is still grappling with this new reality.

4.1.3 Technical and Technological Revolution

Paradoxically, this period of political upheaval coincided with a technological boom. The adoption of Global Navigation Satellite Systems (GNSS), particularly RTK GPS, has been transformative. Geographic Information Systems (GIS) and Remote Sensing are now central to the profession, used for land planning, environmental management, and managing the complex new land tenure patterns. Unmanned Aerial Vehicles (UAVs) are being deployed for rapid, high-resolution mapping. This technology is crucial for building a new, digital and inclusive national cadastre capable of handling both formal and informal tenure rights.

5 CONCLUSION: DECOLONISING THE THEODOLITE

The history of land surveying in Zimbabwe is a microcosm of the nation's history. Forged in the image of South African apartheid, it was a profession of exclusion and dispossession. Post-independence, it struggled to transform itself into a tool for national development and justice. Today, it stands at a crossroads, navigating the legacy of radical land reform while simultaneously embracing a digital future.

The future of the profession lies in its ability to fully decolonise itself. This does not mean rejecting its technical foundations, but rather leveraging technology like GNSS and GIS to develop context-specific solutions for African land tenure challenges. It means developing cadastral systems that are flexible enough to recognise and record a continuum of rights, from formal leasehold to communal customary tenure. The theodolite, once a symbol of division, must now become an instrument of unity, precision, and equitable development. This is the ongoing journey of the Zimbabwean land surveyor.

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