

Post Conflict Boundary Systems – Browns Farm, Cape Town

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Summary

As South Africa transformed from the apartheid system to a non-racial democracy, so a number of land reform and land tenure options were proposed during the negotiations leading up to the first elections in 1994. Accompanying these proposals were a number of suggestions for the determination of cadastral boundaries and for registering land. The community in the Browns Farm settlement had experienced high levels of violent conflict prior to their settling there and it was important to measure, amongst other factors critical to effective land administration, what system of cadastral boundaries would be appropriate in such a settlement in the long term. Aerial photographs of the as built situation overlaid on a digital file of the legal cadastral survey layout suggested a different system to what a series of interviews with officials indicated. The study could not be completed as researchers were prevented from interviewing residents, and for security reasons ground surveys were also stopped. However, a number of other cases where ground surveys could be completed provided conclusive support for the findings emanating from the Browns Farm study; i.e. the existing system of fixed boundaries surveyed to high precision is the most appropriate.

Zusammenfassung

Während der Transformation Südafrikas von einem Apartheid-Regime zu einer nicht-rassistischen Demokratie wurden mehrere Vorschläge zur Landreform und zu Katastersystemen eingebracht. Dies geschah in den Verhandlungen, die schließlich zu den ersten freien Wahlen im Jahre 1994 führten. Inhalt der Vorschläge waren neue Verfahren zur Bestimmung von Katastergrenzen und zur Registrierung von Grundbesitz. Die Gemeinde Browns Farm beispielsweise war vor der Besiedelung von gewalttätigen Auseinandersetzungen geprägt, so dass neben der Bestimmung anderer Faktoren auch darüber entschieden werden musste, welches Katastersystem am geeignetsten für eine langfristige und stabile Besiedelung sei. Eine Bestandsaufnahme mittels Luftbildaufnahmen der derzeitigen Situation in Kombination mit digitalen Katastergrenzen wies auf ein anderes System hin als es aus Interviews mit Regierungsbeamten hervorging. Leider wurde eine weitere Studie abgebrochen, da den Wissenschaftlern die notwendigen Interviews mit den Einwohnern versagt wurden und Vermessungskampagnen wegen des hohen Sicherheitsrisikos eingestellt wurden. Trotz dieser Hindernisse konnte aufgrund anderer Studien und Vermessungskampagnen ein abschließender Bericht fertiggestellt werden, der die Browns-Farm-Studie bestätigt mit dem Ergebnis, dass das existierende System von hochpräzise vermessenen und festgelegten Grenzen am geeignetsten ist.

1 Introduction

In a post-conflict situation, land reform, land redistribution and land restitution are often critical functions in the process of building a politically stable society. For long-term stability, it is most important that land tenure models (e.g. ownership, leasehold and communal forms) which address the long-term needs and wants of a society are correctly identified. Enabling policy and legislation, administration systems, legalisation processes (e.g. adjudication, registration, dispute resolution) and boundary types and survey procedures should also address these needs and wants effectively. Incorrect identification and implementation of any of the above may, instead of reducing conflict, contribute to further conflict.

This paper describes the analysis of appropriate boundary systems in Browns Farm, an urban settlement of more than 3.000 parcels some 20km east of the Cape Town city centre. As a post conflict situation, South Africa has had what some observers consider a miraculously peaceful transition from a racially based oligarchy to a non-racial democracy. However, in spite of it being labelled a success, this transition has been fraught with difficulties. A number of settlements such as Browns Farm have endured high levels of conflict before and during this transition and these pose some of the greatest challenges for land administrators. Failure to address the needs of large numbers of people in these settlements and to provide them with secure tenure will ultimately result in social and political unrest and a host of other social problems.

Prior to the first fully democratic elections in 1994, numerous tenure types for a post-apartheid South Africa were proposed by interested parties across the political spectrum, demonstrating a sizeable continuum of political philosophies influencing the change process. As these proposals unfolded, so the efficacy of implementing them had to be examined. The technical systems which would match and support many of these proposals also had to be explored. Cadastral surveying and boundary types were part of these technical systems.

South Africa has a cadastral survey system which has an admirable level of integration in that a large number of boundary beacons have been fixed and coordinated on geodetic control. This is a result of a policy of incrementally compelling surveyors to coordinate cadastral surveys on the national geodetic control network as surveying technology advanced over the last 80 years (Barry 2004). However, in the early 1990's the appropriateness of this system was challenged during the turmoil that is typical of major societal transformation, and a number of other systems were proposed. One criticism was that the cadastral system had served the needs of the white

population to the exclusion of other races. The main proposals included

1. retaining the *status quo* system of fixed boundaries surveyed to high standards,
2. replacing the system of fixed boundaries with general boundaries,
3. using combinations of fixed boundaries and general boundaries and
4. using communal block titles where members of a community block would determine and lay out the boundaries themselves (Fourie 1994, Jackson 1996, Barry 1995).

There were also proposals to radically change the system – the author sat in one workshop where a commentator argued that the existing survey system »was designed purely to keep land surveyors rich«.

In examining the above proposals, Browns Farm was chosen as a case study to analyse the effectiveness of the cadastral system, primarily the surveying and registration systems, during South Africa's transformation. It is of special interest in that the community had endured high levels of conflict in the 1980's and in the years leading up to the first fully democratic elections in 1994. The paper starts with a brief history of the Browns Farm settlement. This is followed by a description of the data collected and then an analysis of the case in the context of the proposals mentioned above. Finally, some recommendations are made regarding possible strategies in such circumstances.

2 History

Browns Farm was developed as a site and service scheme in 1991. The government allocated beneficiaries a fully serviced site – running water, electricity, water borne sewerage and telephones. Some site and service schemes, such as Browns Farm, had tarred roads. Initially the only service provided was a flush toilet (see fig. 1) and occupants had access to telephone lines and electricity. Occupants built temporary structures with the idea that they would build permanent structures later on. As people constructed permanent top structures they could connect to all the engineering services.

People from three different surrounding squatter communities were given plots in Browns Farm. These were the Lusaka settlement under the leadership of Melford Yamile, Miller's Camp under the leadership of Alfred Siphika, and Nyoka settlement under the leadership of Christopher Toise. What is interesting about this mix of beneficiaries is that all three of the leaders, squatter lords or warlords as some referred to them, were involved in the squatter wars in the Browns Farm vicinity in the latter half of the 1980's.

Starting in 1984, there was a nationwide escalation in revolutionary activity against the government and



Fig. 1: Browns Farm Prior to Occupation in 1991

government aligned organisations, and internecine violence between revolutionary organisations throughout the country. The escalation in violence was attributed to economic recession, the unpopularity of black town councils formed under reforms instituted by the apartheid government, the African National Congress's (ANC) intention to make the country ungovernable, and dissatisfaction with the constitution of 1983 which included aspects of power sharing among racial groups but retained most of the state's power in the hands of the minority white population. Revolutionary activity included large-scale stayaways from work, rent and service boycotts and consumer boycotts. It also included the intimidation and murder of black local councillors, policemen and black Africans who supposedly co-operated with the apartheid government. In many cases gangs of teenage revolutionary *comrades* used the necklace method, whereby a car tyre was hung around the victim's neck, filled with petrol and set alight, to execute so-called traitors in public (Liebenberg 1993, TRC 1997, Goldstone 1993).

In this already tense atmosphere, the squatter wars in the Browns Farm area were sparked by an attempt by the government to move black Africans in Cape Town's existing suburbs of Langa, Nyanga and Gugulethu and a number of squatter settlements outside of these areas to a new area for black Africans, Khayelitsha. In addition, the violent intimidatory activities of the *comrades* did not enjoy universal approval amongst black Africans and the result was the rise of so-called vigilantes or counter revolutionaries in opposition to them (Liebenberg 1993). It is evident that certain factions within the black community entered into a strategic alliance with government agencies such as the police and the army. They were later strengthened by conservative elements in the community, the headmen. This culminated in a major conflict in 1985 and 1986 where the *witdoeke* (»white head bands«) of Crossroads, the largest informal settlement in Cape Town, battled with United Democratic Front (UDF) aligned neighbouring settlements (Cole 1987, TRC 1997, Goldstone 1993).

Factions aligned to Yamile, Siphika and Toise had been prominent in the inter-squatter settlement conflicts in the

Browns Farm area in the 1980's. Furthermore, they were on opposing sides during some of these conflicts (TRC 1997, Goldstone 1993). One informant believed that one of the Browns Farm leaders had aligned with pro-government forces in the conflict between the *witdoeke* and anti-government forces mentioned above.

Thus, allocating parcels in Browns Farm to three communities which may have been fighting one another was fraught with difficulties. A typical parcel in Browns Farm is between 150 m² (10 m × 15 m) and 200 m² (10 m × 20 m). When parcels were allocated, an official noted that occupants had a neighbour on each side from a different rival

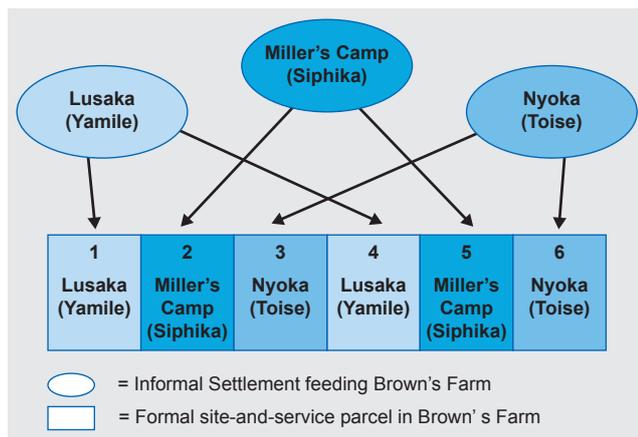


Fig. 2: Land Allocation Patterns in Browns Farm

faction as shown in fig. 2. This was supposedly intended to diminish the power of the warlords in mobilising their factions against people who had come from other informal settlements.

The influence of the original warlords re-emerged periodically as local political power struggles were played out in the community. Soon after Browns Farm was settled in 1991, another leader, Oliver Memani, split off a faction from Toise's group within Browns Farm. Memani's faction then aligned with the factions of Yamile and Siphika. In 1995, Toise and approximately 40 of his followers were violently evicted from Browns Farm in a faction fight, in which two people died. In 1997, Toise attempted to return to Browns Farm, sparking further violence (Barry 1999).

Violence between different politically aligned grass roots community groups flared up occasionally, which was part of a pattern of conflict and competition in the area surrounding Browns Farm (see for example Goldstone 1993). For example, South African National Civics Organisation (SANCO) supporters burned several shacks and evicted people connected to the Western Cape United Squatters Association (WECUSA). They also evicted people suspected of being aligned to Toise, who was connected to WECUSA (Cape Times 10 July 1998).

Today Browns Farm is relatively peaceful, although political tensions still exist, primarily between representatives of official political parties. High violent crime rates remain a major problem.

3 Data Collection

The author surveyed and beaconed the cadastral layout of 220 of the parcels in Browns Farm in 1991 to a precision of some 3 cm, i.e. the beacons in the ground should have been within 3 cm of the position of the coordinates on the survey plan. The City of Cape Town flew large format (23 cm × 23 cm) 1:3.000 and 1:10.000 aerial photography in 1995 and these photographs were used to produce as built layers of a sample of 350 parcels, which included the 220 parcels set out by the author. Ground control surveys were performed using static differential GPS. Ground-truthing of a number of objects on the ground was planned but could not be completed for reasons discussed below. Instead a set of 51 points were observed in a stereo-plotter by an experienced operator and re-observed by the author and another inexperienced operator. The as built layers were then overlaid on a digital copy of the legal cadastral layout in ArcView and occupation patterns were measured against the legal layout.

The digital layer generated using the 1:3.000 photography was also compared with the layer generated using 1:10.000 photography to establish the precision with which objects could be positioned in site-and-service schemes using 1:10.000 photography. As is discussed further below, a number of other sites were studied after Browns Farm where only aerial photography at smaller scales than 1:3.000 was available. The two sets of photographs of Browns Farm provided an opportunity to test if the desired results could be obtained using photography scales as small as 1:10.000.

Interviews were held with an official who had been involved in allocating sites to beneficiaries in 1991. The author had also observed some of the on-site negotiations between the different leaders and officials at the time while the layout was being surveyed. A number of local politicians, NGO employees, and officials involved in administering the site were also interviewed between 1996 and 2003. An attempt to conduct a comprehensive set of interviews with residents in the late 1990's was prevented by a local committee of a political party. However, a small number of residents have been interviewed informally since 1997.

Because further work on the ground was stopped in Browns Farm, further case studies were conducted in Cape Town in Khayelitsha and the settlements of Marconi Beam and Imizamo Yethu. The last case is particularly relevant because in addition to comprehensive sets of interviews, a resurvey of the cadastral beacons was completed in 2005 (Barry 2005). The results of this survey have confirmed results for which interviews provided persuasive support in Browns Farm.

4 Results

In theory 1:3.000 aerial photographs should provide a planimetric accuracy of ± 10 cm (Kraus 1994). This was obtained for points that could be considered suitable as ground control points. The RMS for the two sets of 51 points observed by the experienced operator and the author was of the order of 30 cm. Based on this and comparisons of the 1:3.000 layer and the 1:10.000 layer, if an object measured on a stereo model was found to be encroaching by more than 50 cm over the legal cadastral boundary, it was counted as an encroachment.



Interpreting whether a fence was encroaching in an attempt by one landholder to grab land from their neighbour or if the supposedly »injured« landholder had merely built the fence within his or her boundaries proved to be difficult. After a number of different methods of interpreting the data were tested, the primary criteria for counting an encroachment was whether the position of a fence or dwelling might lead to a dispute in the long run.

Allowing for some error in interpretation, some 147 of the 350 parcels (42%) were judged to have fences which encroached over their boundaries. Of these, 91 parcels had fences which encroached onto public land. Some 34 parcels (10%) were interpreted as having buildings (generally shacks) encroaching over the boundary. Of these, 20 parcels were adjudged to have shacks encroaching onto public land. Many of these latter buildings were spaza shops – small, subsistence grocery shops built on the street in front of a residence – reflecting the multi-faceted livelihoods of people in these settlements. Spaza shop structures are easily moved or dismantled if neces-

sary, and so as encroachments they do not pose a major administrative problem.

What was noticeable is that fences tended to adhere to the surveyed boundaries along the mid-block boundaries. An inspection of fig. 3 also shows that the patterns of encroachment by fences were not random, especially encroachments onto streets and other public land. One can speculate that if the first person in a block built a fence that encroached onto the street or public land, the neighbour merely tacked their fence onto this encroaching fence. The rest of the neighbours then followed suit.

Site inspections in 1998 suggested that there were more encroachments onto the street and more spaza shops. However, as mentioned above, because political structures had refused the author permission to interview people, no further work was done on the ground.

Interview data suggested that the system of fixed boundaries was desired, in spite of the large number of encroachments. Analysing a number of interviews with one official, it would appear that two to three disputes a month occurred over boundaries between 1991 and 1996. This amounts to between 24 and 36 disputes over the period. This figure could not be verified and other officials challenged

this. What did emerge was that disputes between neighbours could arise over issues unrelated to encroachment. The dispute was then articulated as a boundary dispute where the party whose land was encroached upon approached the local municipal office to request that their neighbour remove the offending structure. In 1996, he did not deal with these disputes any longer.

In confirming the figure above, a building inspector noted that he had dealt with some 20 boundary disputes between 1996 and 1998. Most often he was called onto site when people had started to build brick and mortar houses as a result of being granted a National Housing Fund (NHF) subsidy. He believed that encroachments were caused by beacons being destroyed, or people being unsure of their boundaries. In his observation spoliation, or land grabbing, was also a major problem and he had encountered cases where the dominant party had moved the boundary beacons – »it was only a minority of gluttons who grab land« (Barry 1999). He believed that one reason for moving beacons was jealousy. For example when a neighbour started to build a house, an encroacher might

move the boundary pegs in jealousy. He had also encountered a case where people had enlarged their shacks and surreptitiously encroached on a neighbour's land. He suggested that a number of boundary beacons were stolen or deliberately destroyed. In the former case they are probably sold to scrap metal merchants. This is a likely scenario – the author had had the beacons from an entire township layout of 300 parcels which, he had surveyed, stolen overnight in another area of Cape Town. The issue of stolen beacons was to surface often in a number of the case studies that formed the broader study of the cadastral system in Cape Town.

Prior to 1996 when Browns Farm was still a rental scheme, the Browns Farm municipal office used to resolve boundary disputes by measuring off plan dimensions from existing pegs and if necessary ordering people to remove an encroaching structure. The relevant warlords could be called upon to put pressure on a recalcitrant party to the dispute, if necessary.

After 1996, municipal elections were held and officially elected councillors usurped the warlords' authority. In addition, locally elected street committees further usurped the power of the warlords. Although there is no legislative recognition of them, street committees often play an important role at community level in areas such as dispute resolution. Street committees had their origins in alternative governance structures which were put in place as part of strategies to make South Africa ungovernable during the 1980's. They still operate in many sub-economic developments in South Africa today, but clearly their mandate has changed since the demise of the apartheid system.

The building inspector noted that permanent structures could not be built without his approval. At times landholders guilty of encroaching had resisted his findings in the field. In these cases he would call in the head of the street committee. The street committee had always enforced the findings of his adjudication, in both rented properties and properties in registered ownership. In some twelve instances where the offender had refused to move an encroaching structure, groups in the community, with the support of the street committee, had burned the offending shacks down.

5 Analysis and Conclusions

The aerial surveys in Browns Farm did point to the boundary system being inappropriate. Engineering services and public land issues aside, perhaps a general boundary system would be more appropriate. However, interviews with officials, politicians, a small sample of residents and other interested parties suggested that the system of fixed boundaries surveyed to a high precision is appropriate.

This view was echoed again and again in studies of a number of informal settlement upgrade projects and in a rural land restitution case. What emerged was that there

were so many factors which could cause conflict in the turmoil that accompanies rapid social change at the national and settlement level, that a boundary determined by a land surveyor, which can be re-established to a high precision if needs be, is highly desirable. It removes one of the potential areas of conflict in situations where communities have been constructed from different areas. As mentioned before, Browns Farm had been constructed from three different competing squatter settlements.

There was certainly no suggestion that handing the responsibility of laying out boundaries to communities themselves was appropriate. Presumably, this would merely be another cause of conflict.

The Browns Farm case provided persuasive evidence that the existing system of fixed, surveyed boundaries is appropriate in post-apartheid South Africa, in spite of the large number of encroaching fences observed. However, until a complete resurvey of the boundary beacons was done, one could not regard support for this hypothesis as conclusive.

The support came in the form of a resurvey which was done in the Imizamo Yethu settlement, which provided the essential conclusive support for a number of similar studies. Imizamo Yethu is a settlement in the Hout Bay area of Cape Town and it had a similar pattern of occupation to Browns Farm. As in Browns Farm, people from surrounding areas had been moved onto site and service plots, but it did not have the same violent history. However, it has endured considerable levels of conflict in the 15 years that it has existed, primarily over access to land, power and resources.

Aerial surveys of 262 parcels flown in December 1994 indicated that dwellings on 50 parcels (19%) encroached over the boundaries. However, the phenomena observed in the case were very similar to those in Browns Farm. Boundary beacons were supposedly stolen or destroyed, apparently some were moved by early occupants in land grabbing attempts, and in one case a woman asked the research team to assist her in resolving a dispute over a boundary. In another case an interviewee claimed to have been stabbed by his neighbour in a dispute over the boundary. However, interviews with officials and a sizeable sample of residents pointed to the existing system of fixed boundaries being appropriate for the reasons outlined above. One resident in Imizamo Yethu also explained that many of the encroachments were due to lending of land. A landholder might allow a neighbour to build over their boundary on a temporary basis. They could reclaim their land whenever they chose to (Barry 2005).

The initial resurvey of Imizamo Yethu was done in 2003 and some minor amendments have been ongoing over the past three years. The land surveyor involved estimated that between 50% and 60% of the original beacons were found. He also indicated that he had only experienced positive attitudes to his doing the survey and

in his opinion the existing system of fixed boundaries was not challenged at all. This is in harmony with studies done by the author where people pointed out their boundaries to him.

The question then is why were so many encroachments observed in Browns Farm and Imizamo Yethu if fixed boundaries set out by an agent external to a community who can re-establish their positions, if need be, desired? The reasons are many and complex, as can be expected during radical, far reaching change. From a technical management perspective, one reason is the type of beacon used. In most cases the boundaries were marked with 12 mm steel reinforcing rods, which are not clearly visible and in many cases easily removed. My experience of surveying Browns Farm was that easy removal was not a factor. Driving the pegs into what was a very hard sub-surface was extremely difficult, as would have been their removal. However, the pegs are not clearly visible and this may be a factor.

To avoid this large number of encroachments, which did become a problem in some cases in Khayelitsha where encroachers refused to move their structures, one strategy would be to involve householders in constructing boundary markers after the survey has been done. For example, the 12 mm iron peg could be referenced to three suitably positioned points, removed and then replaced by a fence post of suitably durable material as part of the handing over process. This has significant legal implications as in South Africa, as in most countries where land law has occidental roots, the position of the original beacon is paramount in the event of a dispute. However, in an integrated cadastral survey system it is easy to re-establish recently surveyed beacons based on the mathematical survey evidence. Thus a community can be involved in constructing boundary beacons as part of the handing over process. This provides a number of witnesses and publicity to the process and should significantly reduce the number of boundary disputes.

Another strategy which appears to have been successful is to include measuring up the site and checking the boundary beacons with the beneficiaries when the site is handed over. This ensures that people are aware that the beacons can be re-established from measurements.

In conclusion, a country experiencing radical political and social change is likely to have to deal with a number of contrasting proposals relating to land tenure and land management. The Browns Farm study has shown how one can examine aspects of these proposals in a situation of potentially high conflict and where ill-conceived policies and strategies can be the root of social and political unrest.

References

- Barry, M.: Conceptual Design of a Communal Land Registration System for South Africa. *South African Journal of Surveying and Mapping*, December 1995, 23(3), No 139, 153–162, 1995.
- Barry, M.: Evaluating Cadastral Systems in Periods of Uncertainty: A Study of Cape Town's Xhosa-speaking Communities. PhD thesis, University of Natal, Durban, 1999.
- Barry, M.: Official Coordinates, Lawfully Established Monuments and South African Cadastral Surveys. *Geomatica*, 58(4), 202–205, 2004.
- Barry, M.: Boundary Systems in Informal Settlement Upgrades: Imizamo Yethu Settlement in Cape Town. *New Zealand Surveyor* December 2005. 295, 34–39, 2005.
- Cole, J.: *Crossroads: the Politics of Reform and Repression 1976–1986*, Ravan Press, Johannesburg, 1987.
- Fourie, C.: Options for the Cadastre in the New South Africa. Report to the South African Council of Professional and Technical Land Surveyors (PLATO), April 1994.
- Goldstone: Goldstone Commission : Report on Violence at Crossroads. Sandton, 11 November 1993. http://www.anc.org.za/ancdocs/history/transition/gold_crossrd.html
- Jackson, J.: Extending the South African cadastral system using a mid-point method, *South African Journal of Surveying and Mapping*, 23(5), 277–284, 1996.
- Kraus, K.: *Photogrammetrie, Grundlagen und Standardverfahren*, Band 1, Dümmler, Bonn, 1994.
- Liebenberg, B.J.: Part 5: 1996–1991, in Liebenberg BJ and Spies SB (eds). *South Africa in the 20th Century*, J L van Schalk, Pretoria. 488–533, 1993.
- TRC (Truth and Reconciliation Commission): Human Rights Violations: Submissions – Questions and Answers. Date: 10-06-1997; Name: Sam Ndima; Case: KTC Hearings Day 2. 1997. <http://www.doj.gov.za/trc/hrvtrans/ktc/ndima.htm>

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