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USING VIDEO IMAGERY INTEGRATED INTO GIS TO UPHOLD LAND TENURE

A Rural Case Study from South Africa

Where governing authorities are striving to formalise land rights and interests in informal settlements and other similar situations, land tenure information that is accurate, current, and easily interpretable by members of communities about whom the information is held, will contribute to the security of tenure of individuals. This is especially so where there are high levels of conflict within a community and there is the potential for land grabbing and manipulation of local land tenure rules. This paper describes initial tests of the use of video film clips integrated with a spatial information system for the purpose of defining, adjudicating and recording land rights during the establishment of a Communal Property Association (CPA) in a rural community in South Africa.

INTRODUCTION

Experience in formalising land rights in urban informal settlements and rural land restitution cases in the Western Cape Province of South Africa has shown that conflicts between competing factions and sub-groups in these communities is often manifested in the manipulation of local land tenure rules within the community and manipulation of agreements made with land administration authorities. At times these conflicts can be violent and these situations are also often characterised by land grabbing (Barry 1999, Mayson *et al* 1998). The writings of Davies and Fourie (1998:240), Cross (1994, 1993), Byerley and McIntosh (1994) and Fourie (1993) suggest that this phenomenon is generally applicable to informal settlements in South Africa. Moreover, aspects of these behavioural patterns have also been observed in informal settlements throughout the developing world (e.g Durand-Lasserre and Clerc 1996:6, Doebele 1994:48). In the second author's experience, these conflicts are a major factor impeding the process of land allocation and delivery (Barry 1999).

It was found that official records are not the only system that underpin the rights in land that people in informal settlements in the Western Cape expect to be conveyed to them. A range of formal and informal structures and processes are used by communities to administer the land tenure system in different situations at different times (Barry 1999:318). However, although the official system of recording rights of expectation, in these cases rights of ownership, was not used in the manner that the administration authorities intended, in general the affected communities did not challenge the legitimacy of these official records. In the 1990's, there has been a major drive to grant permanent tenure to a large number of people in South Africa under state subsidy schemes. For a number of reasons, there has been a gap of a few years between the adjudication of who should be allocated land and the delivery of ownership in the Western Cape province. When ownership was finally delivered and it turned out that there was uncertainty as to who should be granted registered ownership of a particular parcel of land, the official record was found to constitute the primary means of affirming these rights. For example, in one part of the Cape Town metropolitan area, there were approximately 4427 cases out of a total of approximately 21 211 parcels that were to be delivered where there queries were raised against the legitimacy of the person claiming ownership. In most of these cases, the records did not reflect the name of the person who claimed to expect ownership to be conferred on them. In these cases, the onus was on the *de facto* claimant to prove that (s)he was legitimately entitled to be granted ownership of the parcel (Barry 1999:195). The official register constituted the primary evidence in such disputes. In general, the claimant was required to obtain an affidavit from the person whose name was on the official register to affirm that a legitimate transaction had been executed. If this could not be obtained, then other procedures such as the testimony of social structures within the community were adopted to resolve the matter (Barry 1999:336).

It should be noted that the above phenomena are not restricted to urban informal settlements. The experiences of Mayson (*et al* 1998) and further observations by the second author revealed similar behaviour in a rural settlement.

Situations such as the above are extremely complex and, from a land administrator's perspective, they are not easily resolved. At best the situation may be alleviated. However, resolving disputes is costly in both time and resources. Given that the official system of records was not challenged, and nor was the tenure system that the records were purported to mirror, one strategy to improve the situation is to encourage communities to use the official system of records when transactions in land take place. Some objectives that may be critical to such a strategy are improving the understanding of the need for records, improving the general legitimacy of the records and improving the ease of creating and accessing the records. A possible way of achieving this is to make the records more easily understood and to involve the community in the process of creating and designing the records.

This paper describes tests of video evidencing integrated into a geographic information system that was designed to confer permanent land rights to a community of nature conservation workers in the Cedarberg Mountains wilderness area in South Africa. Video evidencing was used to create a video record of the existing and the expected rights and interests in a particular parcel of land. The objective was to establish and document what rights exist, by whom they are exercised, and to what limitations, if any, they are subject. These rights and interests relate to current occupation patterns and a person's beliefs relating to issues surrounding future occupation (e.g. succession and inheritance).

We first discuss what we have assumed to be advantages of using audio-visual data as part of a record of rights in land. Following this is a discussion on guidelines for using videos for this purpose. These guidelines have been derived from the requirements for the use of video clips as evidence in court. Thereafter the use of video evidencing in Algeria, a community in the process of creating a Communal Property Association is described.

JUSTIFICATION FOR VIDEO EVIDENCE

There are a number of general advantages to using video clips as part of a record of land rights. Moreover, there is a possibility that video evidence may reduce the level of conflict and reduce the scope for factions to manipulate rules in situations such as those described in informal settlements and rural land restitution cases earlier. We have assumed that video clips of community members describing their current rights in land, the rights that they expect to be granted and those of their immediate family and possibly their successors in title might contribute to this goal in a number of ways which we describe below.

The main advantage of the video evidencing system is that the claimant knows that what (s)he says is on record and if necessary the record can be played back. This may prevent some manipulation of the land tenure rules. For example, registering land in the name of a single person may vest ownership in the name of a person who *de facto* does not enjoy such narrowly defined ownership. There have been cases in poor communities in South Africa where land has been rented by a family for decades. As a consequence of a move towards democracy in the 1980's and the early 1990's, ownership was bestowed on the family in the form of a registered title deed. Once the land was registered, newly registered owners have then evicted household members who up to the time of registration held a legitimate *de facto* right of occupation (Barry 1998). A video record of the *de facto* rights and interests in the land prior to registration may obviate such behaviour, providing that the laws relating to ownership and registration support this.

Video records can be easily understood, even by illiterate community members, and the persons claiming rights and interests and the objects which are the subject of these rights can be visually identified from the records. A claimant(s) may be filmed in the same video frame as the parcel or object in which (s)he testifies to enjoying rights. For example, in Algeria, community members read a prepared affidavit in front of their house and in certain instances in front of a vegetable garden parcel to which they claimed exclusive use rights. It is also possible that other interest holders (e.g. family members) may be included in these frames while affidavits are being read, especially if some of the rights and interests described pertain to them.

The process of collecting the evidence is cheap and simple. Firstly video cameras are inexpensive. Secondly, a video record provides a detailed description of each individual's beliefs and attitudes relating to the land tenure system, which is not subject to an interviewer's interpretation of events. Moreover, interviews to determine the nature of the tenure system do not have to be interpreted and then transcribed for later analysis. They can form part of the official record of land rights and interests.

A written record of the person in whose name the land is to be registered can merely link to a video record of rights which have been approved by authorised members of a community and the land administration authority. With current technology, including video clips in a database using off-the-shelf hardware and software is a relatively simple matter, albeit that there are constraints on storage capacity.

Video records lower the levels of skills required to capture data relating to the land tenure system and encourage more frequent collection of data for the land records. Filming certain events, such as a person reading an affidavit in front of their house, is a simple operation and after a short period of training does not require much skill. Processes such as this can be standardised and community members can participate by collecting the data themselves. Moreover, if this can be achieved, then in changing situations it will be possible to repeat the reading of affidavits to ensure that the official record remains current.

We caution that video evidencing should not be seen as the sole evidence of rights in land. It should be viewed as an additional tool in a range of administrative tools that may be used to uphold tenure security, for adjudication and for dispute resolution. Video evidencing system provides additional information to any symbolic, written, pictorial, mathematical or social evidence relating to the definition and adjudication of boundaries and rights.

GUIDELINES FOR USING VIDEOS AS EVIDENCE

In the development of the video evidencing system the eventual use of the video records in law courts was considered. Guidelines were developed from a review of cases (Goldstein 1986) to ensure that the video recordings are acceptable as evidence. The guidelines were not used as criteria for analysis, but merely to assist in the design of the video evidencing system. The guidelines are:

The video recording must be proven to be authentic and accurate; and proven to contain all the parts that are necessary for completeness.

No editing may be done, unless it is necessary to remove superfluous material.

The recording must be used in its entirety.

The audio track is just as important as the visuals of the recording.

The parties involved must verify the recording.

ALGERIA CASE

The Algeria community consists of 240 people who live in a Cape Nature Conservation (CNC) village in the Cederberg Mountains located in the southwest of South Africa some 230 km from Cape Town (figure 1 below). Most of the inhabitants of the Algeria village are descendants of Khoisan families who have lived in the area for at least two hundred years. They have gravitated to Algeria from small settlements in the area that evolved in the eighteenth century, but which have subsequently ceased to exist (SPP and Algeria CPA 1998). The families from these settlements moved to Algeria as employees of the Department of Forestry. Other families settled in Algeria because of forced removals from the farms that they lived on under the racial segregation policies that existed in South Africa until recently. For example, one family was forced to move in 1961 when the farmer insisted that they remove their livestock from the farm. At this time most of the male members were working for the Department of Forestry, so a successful appeal was made to Forestry to allow the family and their livestock to move to Algeria. Also, some families lived in part of the Cedarberg that was declared a Wilderness area in 1980, and as a consequence they were forced to move to Algeria. (Roux 2000)

Security of tenure has been fragile for the community, since tenure was dependent on employment with the Department of Forestry and later (1980) Cape Nature Conservation. Through the years, various families were required to vacate their houses and leave Algeria at retirement, so as to provide space for new workers (SPP and Algeria CPA 1998:1). With the change in the South African government in 1994, the community became aware of the new opportunities available to them to obtain permanent rights to the land they live on and they decided to pursue these options. In discussions with a non governmental organisation (NGO), the Surplus People Project (SPP), the community decided to pursue the option of obtaining ownership of the land on which they reside by means of a Communal Property Association (CPA).

South Africa's Communal Property Association (created in terms of Act 28/1996) is a new form of legal entity through which communities can collectively acquire, hold and manage land. Ownership vests in the association as a juristic person, and individuals in the community are entitled to various use rights in terms of their membership.

The Algeria community was ideal to test video evidencing for two reasons. Firstly the community is well established and relatively stable and a number of factors that might have detrimentally affected the tests of the video evidencing were absent. The majority of the community members were born in Algeria and have lived there all their lives. As a consequence power groupings in the community did not have a detrimental affect on the process. There are groupings along political and religious lines, but because of the overriding want of the community to obtain the land they live on, intergroup conflicts did not affect the process. Furthermore, the various *de facto* rights were mostly well defined, albeit informally. There are also currently no or minor disputes relating to rights. There were some groups that initially did not want to be included in the CPA, but the committee and SPP convinced them of its viability early on in the process (Roux 2000). It was therefore possible to concentrate on the process of collecting video evidence and incorporating it in a GIS, without a number of complex social factors impinging on the process itself.

VIDEO EVIDENCE IN ALGERIA

For the establishment of the CPA, the video record comprised a spatial component relating to land parcels and a non-spatial component. The non-spatial components included the identity of the current occupier(s) and other interest holders, and their beliefs about succession. There were two types of parcels to which exclusive rights could be claimed: a right of domicile in a house and a right of exclusive use to *kombuisplotte* (vegetable gardens) on the banks of a river that runs through the settlement. House parcel boundaries were well defined as the existing fences were long established, but precise locations of the boundaries of the vegetable gardens were ill defined. (See figures 2 & 3).

Video evidence was collected by filming individuals in front of the parcels or objects to which they laid claim. To obtain the evidence, each claimant read a written affidavit which (s)he had prepared for the purpose of reading in front of the camera. To verify that the recording took place, in compliance with one of the guidelines mentioned earlier, each written affidavit was signed by each claimant.

Collection of the video evidence was done in two stages. In the first stage, a workshop was conducted with volunteer community members. In the workshop, the nature and purpose of video evidencing was explained and the general details of the information that should be included in the affidavit were agreed upon. Volunteers were then each requested asked to prepare their own affidavits in time for a subsequent visit by the researchers to film the video records.

In the second stage, each claimant was filmed while reading a prepared affidavit in context of the house or vegetable garden that was being claimed. An attempt was also made to include the boundaries of houses or vegetable gardens in the visual records. In the case of the houses this was easily achieved (see figure 2). In the case of the vegetable gardens, flags were placed at the corners of the vegetable garden (figure 3). The method of using flags was adopted from a system of symbolic delivery used for the transfer of informal subdivisions and transfers by a tribal community in the South Africa's Eastern Cape province. In the specific case where the previous use of this system had been recorded, the properties that were being "subdivided" had been formally registered under freehold tenure in a deeds registry. However, the community had considered it "too expensive" to register subdivisions and had used flags to demarcate and publicise the new subdivision boundaries. When agreement was reached as to the position of the boundaries, stones were placed at the corners and furrows dug along the dividing line. The process was presided over by a master of ceremonies from the village and witnessed by a number of members of the community. Delivery of the subdivided portion was symbolised by an inspection of the flags and impressed in the memories of all those present by the holding of a feast afterwards (Ralawe 1993:8).

The Algeria community and the tribe who used the informal "flagging" system are not of the same ethnic origins. however, it was assumed that aspects of the system of flags to publicise the positions of boundaries are suitable for incorporating in a video evidencing system.

In Algeria, while recording the video evidence relating to the vegetable gardens each claimant was required to "walk the boundaries" of their vegetable gardens whilst describing their boundaries and to whom the rights to the gardens adjacent to theirs belonged. The description of the claims of neighbours were considered important in that the boundaries of the vegetable gardens were ill defined and were likely to move over time as the fields are worked. albeit that such movement is likely to be slow and imperceptibly. In the case of vegetable gardens we believed that the record of the topological relationships was more important than geometric relationships. Topology implies the general pattern of vegetable garden parcels and who had exclusive rights to neighbouring parcels is important, and not the precise location of the boundaries. It is assumed that the boundaries may move slightly over time. What is important is that the record should protect a particular holder of a vegetable garden against the sudden grabbing of a large portion of their garden. The placing of flags and the description of who were the holders of the neighbouring gardeners were intended to achieve this.

The filming of the affidavits was surprisingly quick. Twenty five affidavits (22 houses and 3 vegetable gardens) were recorded in a morning.

The guidelines for the use of video evidence in law courts were adhered to, e.g. no editing was done of the individual clips and the clips were used in entirety. In addition, the individual in the clip could verify the authenticity, accuracy and integrity of the video clip after inclusion in the database. Finally, as mentioned before, the affidavits were signed as verification.

After the recording of the video evidence the clips were captured onto a PC using a video capture card and associated software. Because of the size of the video clips (up to 120 000 KB per interview/affidavit) they were then burned onto a CD-ROM. The clips were then linked to an existing relational database (MS Access software) containing data relating to the community. The relational database was also linked to a spatial database (ArcView) software. A report from the relational database can be seen in figure 4. The report shows the identification of the parcel, the identity of the claimant, and the video clip image that can be played by the database software.

LOGISTICAL LESSONS

A few logistical problems emerged during the collection of the video evidence in Algeria. The first difficulty was the creation of the affidavit and problems with securing commitment to the testing of the video evidence. Fourteen of the twenty one volunteers did minimal or no work on the affidavits. Ten of these fourteen were younger members who were not likely to receive any immediate benefits from the creation of the CPA. Any permanent rights that they might receive were likely to be derived from the rights of their parents.

This behaviour can be explained by the Theory of Reasoned Action (Fishbein and Ajzen 1975) and the Technology Acceptance Model (Davies *et al* 1989, Mathieson 1991), which is founded upon the Theory of Reasoned Action. The Theory of Reasoned Action holds that people are more likely to perform a particular behaviour if they hold a positive attitude toward performing it (Fishbein and Ajzen 1975). Moreover, people are more likely to use a specific technology if they perceive that using it holds real benefits for them (Davies *et al* 1989, Mathieson 1991). It follows that a belief that preparing an affidavit and reading it on video would lead to real benefits for respondents should result in a positive attitude to the process and motivate them to participate fully. We speculate that the volunteers who did no work on the affidavit perceived that the study did not provide immediate foreseeable advantages or benefits. However, although parts of the study in Algeria formed part of the process of creating the CPA, the video evidencing was an academic study which was not a formal part of this process. The issue of "non performance" might not occur, or the instances might be substantially diminished, if the video evidence constitutes part of an official record. However, the fact that a number of claimants are unlikely to prepare an affidavit is still likely to be an issue in a more formal process.

The second issue was that not all the volunteers could be recorded on video resulting in an incomplete record and it is imperative that community members are prepared to be filmed. During the testing two young men refused to deliver evidence although they were available. This was probably due to camera shyness. Also, one young woman did not turn up on the agreed date when the video clips were filmed.

The above suggests that the record is likely to be incomplete and the processes used to capture video evidence should be flexible. An alternative to the use of affidavits would be to conduct a structured interview, using prepared questions, during the video recording. The advantage is that this would entail no preparation from the side of the claimant and illiteracy would not influence the process. Verification would then have to be obtained in some other manner - for example a standard form that the claimant would sign.

Apart from these instances, the volunteers participated enthusiastically. What was also noticeable was that volunteers who had to participate in more than one recording (i.e. those who described their vegetable gardens) became more comfortable and at ease in front of the video camera. This suggests that a series of video records over time may be possible. In this way changes in tenure could be monitored and conflicts could be identified over time.

The final logistical lesson was that it is not always possible to obtain clear visuals of parcels. In the case of Algeria there was vegetation surrounding the houses and vegetable gardens. Also, difficult terrain caused shaky visuals in the recording of the boundaries of the vegetable gardens. Methods of obtaining clear visuals of parcels are context dependent and there are many ways in which this can be addressed. If possible it may be advisable to separate the audio and the visual recordings. For example, in the case of vegetable gardens the video camera can be positioned some distance away to include as much of the parcel as possible. The claimant can still "walk the boundaries" and deliver evidence onto a tape recorder while walking. The sound track can subsequently be overlaid onto the visual recording.

GENERAL LESSONS

The testing of the video evidence revealed other advantages. The process of collecting the video evidence is a quick and easy process. The recording of 25 affidavits was completed within a morning. Also, the video recordings were done in public and so the claims to land become public knowledge within the community. Moreover, the process of filming the videos educates communities in issues relating to land tenure and the administration of the CPA. During the collection of data for the case study it was observed that after a very short period of time the whole community was aware of the researchers' work.

CONCLUDING REMARKS

This initial test of incorporating video evidence in a land information system shows promise, especially as a means of addressing the issues relating to uncertain situations such as in informal settlements. Videos provide valuable data that can augment the information that is normally held in such an information system. Moreover, they can be incorporated in a spatial information system which records both spatial and non-spatial attributes of land rights. Given the uncertainty that prevails in formalising land rights in informal settlements and in certain rural land restitution cases, the use of video clips as part of the official record may reduce some of this uncertainty. The process creates publicity concerning particular land rights and the questions posed in formulating affidavits or in structured interviews educate the community in land tenure issues. Moreover, subjects who are recorded on video are aware that their testimony can be played back and it will be difficult to manipulate local land tenure rules.

However, the effectiveness of using video is dependent on a range of factors. Firstly, the general community and individuals within the community need to be supportive of the system. In volatile situations in informal settlements, this support may not be garnered. In fact, individuals who are excluded from being granted permanent land rights may strive to undermine the process. Moreover, the Algeria study has shown that even in stable situations, it is difficult to obtain a complete record of video clips of community members. Individuals have to be prepared to appear on camera, and in some communities this may be taboo.

We also caution that video evidence should not be seen as the sole evidence of rights in land. It should be viewed as an additional tool in a range of administrative tools that may be used to uphold tenure security, for adjudication and for dispute resolution. The video evidencing system thus provides additional information to any symbolic, written, pictorial, mathematical or social evidence relating to the definition and adjudication of boundaries and rights.

In conclusion, technological advances have made it technically feasible for video clips to form part of a permanent land record. The video recordings present evidence in an accessible format and it is easy to update in a short period of time. Moreover, video records also lower the levels of skills required to capture data relating to the land tenure system and encourage more frequent collection of data for land records in rapidly changing situations. The video records can be easily understood, even by illiterate community members, and the persons claiming rights and interests and the objects which are the subject of these rights can be visually identified from the records. Finally, video evidence has the potential to contribute to reducing conflict over land rights and minimising threats to security of tenure.

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