GETTING IT FOR FREE: USING GOOGLE EARTH AND ILWIS TO MAP SQUATTER SETTLEMENTS IN JOHANNESBURG

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1. INTRODUCTION

The mapping of squatter settlements has been a difficult task for geographers (Manoj, 2008). This is due to the dynamic nature of the settlement and the organic growth that these types of settlements take on (Brian, and Ranvinder, 1995). It has proven extremely difficult to accurately map individual households in these settlements and even boundary discernment can be difficult. These issues of mapping informal settlements are exacerbated when we look at the socio-economic context of cities where informal settlements flourish (Jenkins, 2000). Often poor and technologically challenged, urban governments need mapping settlements needs to be done cheaply. Using Google earth as the base image, cartographers can begin to map the organic informal settlements that are the cause and symptom of many of the problems in developing cities.

2. METHODOLOGY

Google Earth low resolution satellite imagery and aerial photo imagery were used as a technical aid to map both the boundary of squatter settlements in the city wide context and individual households in individual settlement (Manoj, 2008). It is the aim of this study to provide a concrete instance of applying open source software solutions to urban development issues. Mapping was carried out using imagery acquired from Google in November 2008 with the images being taken from 8000 feet for boundary determination and individual households from 6000 feet. It was noted that the use of the aerial photo at 6000 feet from Google earth needed some field verification and field based GPS verification of data was done - on the whole the data was accurate. The result of the analysis shows that boundary data and household position extracted from aerial photos from Google provide a new opportunity to make detailed locational maps of shack households in Squatter settlements. Applying the large scale analysis to Johannesburg, an overall boundary map of squatter settlements can be developed. Mapping accuracies were based on ground verified data. Overall, these results show that aerial photo data from Google earth, coupled with field verifications can be used effectively for precision mapping of squatter settlements.

3. RATOINAL

Squatter settlements are a growing problem for many developing countries (De Soto, 2001). The United Nations has recognized the need to develop and upgrade these squatter settlements (De Soto, and Cheneval, 2006*)*. In South Africa alone there is a shortage of 2.4 million houses forcing the urban poor into slums and squatter settlements (Guliwe, 1997). The major concern for many developing cities is that squatter settlements are not shrinking but rather expanding. It has become clear that governments need to work with the existing settlement as there are not enough resources to develop formal housing. For this reason squatter settlements need to be mapped. Using Google earth can be problematic when looking at an organic settlement like informal settlements (Gilbert; 1999). This is because remote images are not always current and in many parts of developing countries no images exist. However, in developing countries there are often no other alternative images available and many poor municipalities do not have the necessary resources to collect the required data (Guliwe, 1997; Jenkins, 2000). By using the existing images from Google earth, cartographers can create a base map from which to work from. In informal settlements the importing of a Google image into a geographic information system (gis) can provide vital information on the spatial layout of the settlement and allow for better planning for the superimposition of basic services into the existing settlement.

11. REFERENCES

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