Developments of the Digital World of Remote Sensing and GIS, Their Comparison to, and the Importance of the Human Side of Information Reference Services

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INTRODUCTION

This article is about the essence of data sources specific for *geo-spatial science* (Bossler et al., 2002) information for land cover mapping. The use of geospatial science techniques provides opportunities and challenges in many aspects of life including for land cover, forestry for climatic change measurements and agricultural engineering which is vital for food security (Opara, 2003).

First, it elaborated about developments of digital world in *remote sensing* and *geographical information system (GIS)* as modern day techniques for Earth surface monitoring (Mather & Koch, 2011). Satellites whose data has widespread international applications for the past four decades are discussed in details and compared (Figure 3). Second, it puts emphasis on the importance of the human side of information reference services that is essentially the brain behind machine based data. The human thinking is applied in the interpretation of this machine data and it acts as knowledge substitute where the remote sensing and GIS data are inadequate or unavailable. The 2012 study on *the reconstruction of historical landscape for the investigation of land cover change* in (Maphanyane, 2012), the human side of information reference services based method on Ramotswa, Botswana case, had sufficiently proved that it can be applied to fill in the gap where modern technology is inadequate or unavailable (Figure 1 and Table 1). For emphasis, graphical examples are given, where the aerospace based Ramotswa digital data; its analytical techniques and their resultant information are compared to the same area data, but those that had been derived from the systems based on the human side of information reference services (Figure 2). This too has shown that the human side of information reference services was complementary.
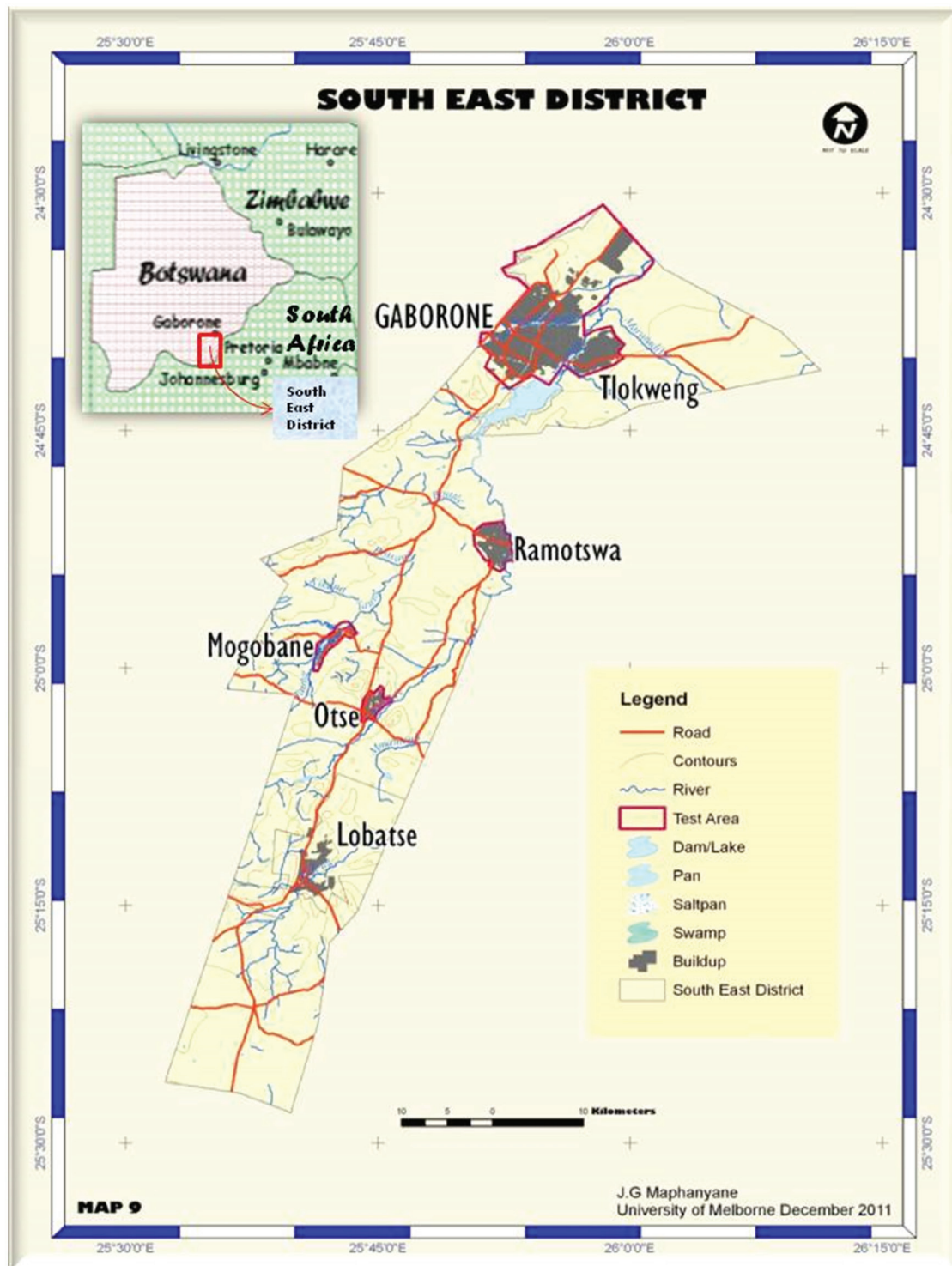
BACKGROUND

The essence of this study hinges on technological developments of robust data collection tools. Remote sensing is one such. It shows the importance of human side of information reference services and the role it

Table 1. Botswana – south east district data, comparison of the two methods for the investigation of land cover change

Analysis of the results on how reconstruction of historical landscape compares to remote sensing method(Maphanyane, 2012)				
No.	Test Area	1973	1990	2002
1	Gaborone/Tlokweng	66.94%	66.13%	77.42%
2	Ramotswa	80.00%	71.79%	71.88%
3	Otse	65.27%	65.87%	67.07%
4	Mogobane	77.88%	70.72%	67.31%

Figure 1. Botswana: south east district locational map

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