A Brief Introduction to Archaeological Predictive Modelling in Central Cameroon

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Introduction

The first archaeological data in Cameroon was collected by German colonial administrators and military personnel between 1890 and 1912. In the 1930s and 1950s, French and British colonial personnel and missionaries followed in the footsteps of the Germans. Amongst their number were E.M. Buisson, J. Fourneau, J.B. Jauze and pastor G. Scwab who identified several sites in northern and southern Cameroon. The material collected across the country was mainly surface collections consisting of prehistoric stone tools but devoid of any archaeological context (Essomba 1986).

Also around 1936 and in the 1950s, researchers such as J.P. Lebeuf and A. Lebeuf set the stage for archaeological research on a more scientific basis. The pair worked foremost in northern Cameroon where research was mainly concentrated at that time. J.P. Lebeuf used an ethnoarchaeological approach to investigate Chad and northern Cameroon (Essomba 1986). Since the first data was collected archaeological research in Cameroon has gone through several stages of development. This development has been characterised by the extension of the research field and research problems in the ten provinces of Cameroon. One of the regions showcasing this development is the Central Province.

Numerous studies were carried out in the Central Province and were pioneered by Mveng (1971)(cited in Mbida 2002), de Maret (1980-1983) (cited in Atangana 1993, Mbida 2002), Essomba (1983-1984)(cited in Essomba 1992), Claes (1985) (cited in Mbida 2002) and Elouga (1985)(cited in Essomba 1992; Mbida 2003). However, it should be pointed out that there has been a trend of research that is focused to certain areas while others have remained very poorly documented. In this light, research has been mainly concentrated in the capital city, Yaounde, and its environs, and the Tikar Plain (Atangana 1992; Delneuf et al. 2003; Elouga 1993; Essomba 1986, 1992; Mbida 2000, 2002, 2003).

The Central Province (N4°45’ E12°00’) covers an area of 68926 km² and is divided into 10 divisions. Nevertheless, research has been conducted mainly in Yaounde (N3°52’00″ E11°31’00″) and the Tikar lain (5 ° and 6° of latitude North; 11° and 12°30’ of longitude East), resulting in an insufficient archaeological coverage of the region as a whole and a sketchy documentation of site location analysis.

This paper is therefore looking into the possible application and design of predictive models for the analysis of past human locations in undocumented areas of central Cameroon and also to enhance survey processes in surveyed and unsurveyed areas.

Predictive modelling has been defined on archaeological grounds by Kohler and Parker in 1986 (cited in Verhagen and Whitley 2012) as follows: “Predictive modelling is a technique that, at a minimum, tries to predict the location of archaeological sites or materials in a region, based either on a sample of that region or on fundamental
Predictive modeling in archaeology can be traced back to the work carried out on settlement pattern analyses beginning in the 1930s-1950s (Canning 2005; Verhagen and Whitley 2012) and it later developed with land management projects in the USA in the late 1970s and early 1980s (Kamermans 2010).

Initially, large scale infrastructural and construction work in the USA (mostly), and Europe led to the development of predictive modelling mainly for Cultural Resource Management (CRM) / Cultural Heritage Management (CHM) applications. The second reason predictive models were developed was to account for site selection and past land use. The former is a CRM-based model while the latter is an academic-base model (Kamermans and Wansleeben 1999; Whitley 2003).

The two main approaches to predictive modelling are inductive and deductive. The inductive approach is based on the correlation between known archaeological sites and the attributes, from (mostly) the current physical landscape while the deductive approach is based on theoretical knowledge; known sites are then used, to evaluate the model (Kamermans and Wansleeben 1999).

Predictive models also make use of various statistical methods as Dempster-Shafer or Byesian probability theories and GIS. Mathematical models use various multivariate statistical method to determine correlations between archaeological site locations and variables under analysis exist, while Graphical models rely on modern computer hardware and software (GIS) in order to develop a model as a series of map overlays of the relevant variables under consideration (Canning 2005; Stančič and Kvamme 1999).

As earlier indicated, numerous archaeological studies have been carried out in Central Cameroon with substantial archaeological data gathered in Yaounde and its surrounding areas, and the Tikar plain. Nonetheless, large areas within Central Cameroon have remained undocumented or have been poorly documented.

The archaeological database available for the aforementioned areas would be a good starting point to apply either an inductive or deductive approach to predictive modelling in the region in question. The approach developed would be geared to understanding site selection and enhance survey processes, and the following aspects would be considered when designing the model (Canning 2005; Kamermans 2010; Kamermans and Wansleeben 1999; Stančič and Kvamme 1999; Whitley 2003):

- Division of the archaeological record of the region into different time periods (analyzed separately).
- Distinguishing between prehistoric economic systems e.g. hunter-gatherers, agriculturalists, pastoralists etc.
- Taking into account different variables (environmental, social and cultural) and incorporating distorting factors.
- Use of spatial statistics and geospatial maps.
- Testing the model.

It should also be noted that predictive modelling has been subject to a lot of debate and criticism particularly that levelled at its theoretical poverty, methodological approach, and problems with testing predictive models (Kamermans 2010; Kamermans and Wansleeben 1999; Verhagen and Whitley 2012; Whitley 2003).

Designing archaeological predictive models in the case of central Cameroon would be a project worth exploring and the possibility of applying predictive modelling to insufficient survey coverage and site location analysis would open new research avenues. In addition, developing predictive models would reduce field survey efforts, time constraints and financial costs.
Bibliography

Atangana, Ch.


Canning, S.


Delneuf, M., T. Otto, and M. Thinon


Elouga, M.


Essomba, J.M.


Kamermans, H., and M. Wansleeben


Kamermans, H.


Mbida, C.


2002  Ndindan: synthèse archéologique d’un site datant de trios millénaires à Yaoundé (Cameroun). L’Anthropologie 106: 159-172.

Stančič, Z., and K.L. Kvamme


Verhagen P., and J.-F Berger


Verhagen, P., and T.G. Whitley


Whitley, T.G.


Map sources:
https://en.wikipedia.org/wiki/Centre_Region_(Cameroon)#/media/File:Cameroon_-_Centre.svg