This dissertation deals with a study of the impact of physical and socio-economic environment on population distribution in Birbhum district, West Bengal. The present study aims at bringing out the degree and direction of relationship between the spatial distribution of population (rural component only) and the spatial aspect of some parameters of physical and socio-economic environment such as relative relief, drainage, rainfall, ground water, cropping intensity, road density, literacy etc. It is obvious that the relationship to be obtained is a measure of the impact of physical and socio-economic environment on population distribution.

The study comprises of 21 chapters. Chapter 1 introduces the study area. Chapter 2 discusses the methodological aspects regarding the study of impact of physical and socio-economic environment on population distribution. Chapter 3 considers some theoretical perspectives of population distribution in terms of selected elements of environment. Chapters 4 to 18 reveal the interaction between population distribution and the individual environmental elements, taking one at a time. Chapter 19 identifies only those elements that have a major contribution in explaining the total variation in rural population density through the multiple regression model using stepwise regression techniques. Chapter 20 compares the pattern of 1991 with that of the previous four decades. Chapter 21 brings out the highlights of the present study.

The Birbhum district was chosen as the study area for a number of reasons. Situated between the Chotanagpur plateau to the west and the Lower Ganga plains to the east, it represents more physical heterogeneity within a reasonable range than any other district of the state. Secondly, this district exhibits a low level of urban development, so that the rural component is significantly high in the total population compared to most other districts. Since the impact of physical environment is much more evident on rural population than on its urban counterpart, the choice of this district appears to be obvious.

The methodology elaborated in Chapter 2 consists of the analysis of available maps and data followed by the preparation of a series of isopleth and choropleth maps showing the spatial variation of different attributes of physical and socio-economic environment and their individual comparison with that of rural population distribution. In order to evaluate the degree of correspondence in quantitative terms, attempts have been made to formalize this approach in the framework of simple correlation and regression followed by multiple regression analyses. Maps have also been drawn to portray the results of quantitative analyses in graphic form. This study incorporates about 50 maps and graphs. There are approximately 5 computerised regression analyses for 5 census years, each comprising not less than 13 steps showing 70 odd calculations. This dissertation is based on data spanning 1951 to 1991.

To make the analysis as up-to-date as possible, the author was obliged to wait till 1997 for complete publication of 1991 census data.

Department of Geography, University of Calcutta
April 2002

Chitrata Bhattacharyya