URBANISATION AND THERMAL COMFORT CHANGE; THE CASE OF COLOMBO METROPOLITAN REGION.

**A dissertation submitted to the University of Moratuwa
As a Partial Fulfilment of the requirements for the Degree of
Master of Science in Architecture.**

D. R. Sirimanna
Department of Architecture
University of Moratuwa.
May 2000

ABSTRACT

It appears that urban process (Urbanisation) itself has great contribution to its own microclimate. In urban design /planning point of view urbanisation must then be essential to recognise and deal as physical urban element change (built areas, tree covered areas, green/ grass areas, streets and paved areas, and bare lands) to identify its effect on its microclimate while that change occurred in a particular area, then being calculated as thermal comfort change.

Since the research study is framed on Time Rate Change Method; series of aerial photographs from the Survey Department at different intervals, over respective time period of 50 years, provide information regarding urban physical element change. Day and night temperature humidity values taken from the meteorological department provide basis to calculate monthly day and night thermal comfort indices a particular area.

The study concentrated on three segments of Colombo Metropolitan Region, namely Colombo City, Katunayake, and Rathmalana. Each areas studied include at 0.5-Km radius circle around the meteorological stations. Data was collected for the period of 1956-1999.

The study high lights the urban physical element changes occurred due to such process during the studied period contributed to thermal comfort variation. Finally this research point out some of the very important relationships between urban physical change and thermal comfort change. The three areas have been ranked, according to thermal comfort change in order to identify the future urbanisation and thermal comfort scenarios of that particular areas.

ACKNOWLEDGEMENTS.

I wish to express my heartfelt gratitude to the following persons , whose assistance to me during the study is greatly appreciated .

Professor N.Silva , Head of the department, Department of Architecture , University of Moratuwa for valuable guidance.

Dr. R. Emmanuel my dissertation tutor, for the unstinted support and inspiration extended to me, in importing his experiences on the subject, and guiding me. I wish to extend my deep appreciation and gratitude to him for directing me, his patience and precious time expended in this aspect.

Dr. L.S.R. Perera, Archt. Chadrasekara, senior lecture department of Architecture and planner , K.D. fernando , senior lecture , department of town country planning University of Moratuwa for their initial guidance and invaluable comments.

I must express my heartfelt thanks to the staff members of the Survey Department and Meteorological Department for their kindness and help in the collection of data in this dissertation.

Nuwan for photographs

Thilini Daluwatta, Thilini Alahakoon, Chandima Bandaranayike, Chamila perera, Samanthika , Salmali , Chamika, Sewwandi accompany and Gayan for being my source of strength and encouragement in numerous ways.

My mother, brother and sister for all their support , tolerances and above all , for the one extended to me at all difficult time.

TABLE OF CONTENTS

CHAPTER THREE
Methodology

CHAPTER FOUR
Results and Analysis

LIST OF FIGURES

LIST OF TABLES