SCIENCE, SCIENTIFIC TEMPER AND RATIONALITY: A REVIEW OF THE EXPERIENCES OF KERALA RENAISSANCE

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CERTIFICATE

This is to certify that this thesis **SCIENCE, SCIENTIFIC TEMPER AND RATIONALITY: A REVIEW OF THE EXPERIENCES OF KERALA RENAISSANCE** submitted for the award of the degree of Doctor of Philosophy of the University of Calicut is a record of bonafide research carried out by **Mr. SHIHABUDHEEN T.P.** under my supervision. No part of the thesis has been submitted for the award any degree before.

University of Calicut,
15.10.2019

Dr. K.N. GANESH

DECLARATION

I, SHIHABUDHEEN T.P., hereby declare that the thesis **SCIENCE, SCIENTIFIC TEMPER AND RATIONALITY: A REVIEW OF THE EXPERIENCES OF KERALA RENAISSANCE** is a bonafide record of research work done by me and that it has not previously formed the basis for the award of any other degrees.

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15.10.2019 **SHIHABUDHEEN T.P.**

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CONTENTS

Abbreviations

AN	–	*Akananuru*
BEM	–	Basel Evangelical Mission
BRI	–	The Bose Research Institute
CE	–	Common Era
CMS	–	Church Mission Society
FACT	–	Fertilisers And Chemicals Travancore Ltd.
IACS	–	Indian Association for Cultivation of Science
ICHR	–	Indian Council of Historical Research
IISc	–	The Indian Institute of Science
ISCA	–	Indian Science Congress Association
KPMS	–	Kerala Pulayar Maha Sabha
LMS	–	London Mission Society
Mal.	–	Malayalam
PN	–	*Purananuru*
SNDPY	–	Sree Narayana Dharma Parialana Yogam

INTRODUCTION

Scientific rationality, being one of the chief motivating forces of modern social formation had different trajectories during the course of its evolution and growth in different parts of the modern world. Science, being the objective and perceptible knowledge on natural as well as social phenomena derived through observation, experimentation, verification has been subjected to continuous falsification. Science was developed as an unambiguous system of knowledge during the modern period. The knowledge systems of pre-modern worlds should not be insisted as scientific, because science may not necessarily be the only possible valid knowledge on the universe and its constituents all over history. Peoples throughout history had been showing an inclination to some sorts of rationality, but all those processes of rationalizations may not necessarily be scientific. It is because scientific knowledge and its rationality are rigorously committed to the aforementioned methodology.[1] This methodological strictness of science differentiates itself from other forms of knowledge.

However, science can neither completely disconnect itself from all types of knowledge of pre-modern peoples nor can it be free from all values

1 Though there are serious debates on the sanctity of the methodology of scientific researches among scholars, the validity of the methodological strictness has not been completely written off, so far. The philosophic debates on various foundations including cultural, ideological, religious standpoints though altered, restructured and problematised, could not completely demolish the foundation of scientific methodology. For different positions on the methodology of science see Karl Popper, *The Logic of Scientific Discovery*, London Routledge, 2002 (1935). Thomas Kuhn, *Structures of Scientific Revolution*, Chicago, Chicago University Press, 1996 (1962). Paul Karl Feyerabend, *Against Method*, London, Verso Publications, 2010 (1975). Imre Lakatos and Alan Musgrave, *Criticisms and the Growth of Knowledge*, London, Cambridge University Press, 1970. Boris Mikhailovich Hessen, "Social and Economic Roots of Newton's Principia" in Paul Gary Wersky, *Science at the Cross Roads*, London, Frank Cass, 1971. J.D. Bernal, *Social Function of Science*, London, Routledge, 1939. etc.

and social systems. The evolution, growth, expansions of science are related to the socio-economic and political situations, emerged in the post-renaissance world. Its emergence shows an explicitly ecumenical character from the necessities and requirements of people in different parts of the world irrespective of their civilizational backgrounds. Though science is an objective knowledge system in itself, it gets the characteristics and functions according to the ideology, needs, and values of those social systems which hold and engage with it. During the modern period, naturally scientific discoveries and knowledge were performing as an instrument of capitalism. Still, science per se is not capitalistic in character.

The spread of modern science, according to Dhruv Raina, involved different processes including exchange, translation and redefinition.[2] The engagements of modern science with the traditionally existing knowledge forms of the society vary according to the social system and the process of the development of science in the society. In the course of interaction with the existing socio-intellectual systems in each society, science is capable of redefining the knowledge systems and social settings. At the same time, it is viable for undergoing required alterations and adaptations depending upon the socio-political and economic conditions and based on the people who engage with it. Therefore, an ideal state of scientific rationality seems to be a utopia. Notwithstanding, during the course of interaction scientific rationality engages in dialogue with the social systems on various new values allied with modern world order including, humanism, democracy, equality, liberalism, etc. Thus possible temporary consensus emerges in such confrontations, interactions and subsequent contradictions. This dialogical interaction continues further leading to alterations and social changes. Therefore, the existing social system and social movements play crucial roles in determining

2 Dhruv Raina, *Images and Contexts: The Historiography of Science and Modernity in India,* New Delhi, Oxford University Press, 2003.

the character and intellectual formations and the course of scientific rationality in modern societies.

Kerala Experience

The regional cultural and geomorphological variations and interactions with external cultures, in different stages of history gave birth to different intellectual and practical traditions in pre-modern Kerala. They had been undergoing required alterations and changes sufficient for the changing socio-economic and political system of those periods. However, the methodological unity of pre-modern knowledge and practices and perceptional similarity in different cultures provided an osmosis effect to these changes.[3] This knowledge rooted in different cultural traditions exchanged between peoples of the world could, therefore, inseparably assimilate each other.[4] In short, the daily life in the pre-modern Malayali culture constituted elements including perceptions and practices rooted in different social formations of the pre-modern world including indigenous, Chinese, North Indian, Arabic, etc.

With the growth and spread of modern capitalism and its vehicle, European colonialism as the hegemonic socio-political system, the existing social order had to undergo drastic changes.[5] The capitalistic world order accelerated the process of exchange of commodities and ideas among people. Traditional knowledge from different parts of the world reached markets of different continents. Modern science emerged in this socio-economic context, altered many of the traditional practices along with changing many beliefs

3 Basic parameters of socio-political and intellectual formations were more or less the same in different pre-modern cultures until the emergence of mercantile capitalism and the subsequent industrial revolution.

4 This may not necessarily mean that a cultural symbiosis has occurred in pre-modern Kerala. Instead, interactions leading to mutual exchanges of knowledge, practice, habits and commodities were frequent phenomena leading to the formation of a composite culture in Kerala.

5 The factors leading to the emergence of capitalism were not innate to the European cultures, instead, they also are the products of complexities produced by the post-renaissance socio-economic changes in Europe.

and notions. These changes also reflected in the religious beliefs along with exchanging commodities, knowledge and socio-economic practices. Such situations created turmoil in different parts, expressed in breach of conventions, religious conversions and cultural changes. Thus in these circumstances, the maintenance of traditional socio-political and cultural elements became necessary for the traditional elite and hegemonic class. Hence, the values and beliefs and norms binding the previous socio-cultural as well as political order began to be inculcated for their survival. It went to the extent that some sections of people who had been historically kept away from them due to various reasons began to get considerations. This extension of traditional education itself was capable of creating contradictions among the people and led to unprecedented social mobilisations, capable of creating a modern Kerala society.

Therefore, the Kerala renaissance emerged in this context was neither a process of Sanskritisation nor communalisation in itself, but both these elements were emerged either as a consequence or response to this movement. Renaissance in simple words can be defined as the emergence of the liberal, egalitarian, rational and critical socio-intellectual consciousness. Though certain notions of 'classical civilisations' might have inspired these movements, they did not aim at the reproduction of any civilisations of the past. People who participated in the social reform movements in the early phase had, of course, imagined a glorious past from the philosophic, historic and religious conceptions they had received through the extended traditional education. But they did not confine to such an understanding for long. Instead, the creation of a new social order based on modern ideals of education, liberty, equality, social justice, economic self-sufficiency, etc. were their leading ideals. These movements could create wider impacts in almost all walks of human life. However, it produced counter-movements based on notions of conventionalism, spiritualism, etc. But these counter-movements themselves were influenced by these reform movements to the extent that

many of them did not demand the recreation of pre-modern social order per se.

Scientific knowledge and instrumental rationality had played crucial roles in the formation of modern world-views, humanism and rational consciousness of the renaissance movements in the second stage. Therefore, the protagonists of these movements tried to promote scientific temper, scientific knowledge and rationality in the society through their debates and recently emerged publications. Thus, the notions of modern world-views, democratic values, and composite knowledge were debated in the journals published during the late 19th and early 20th centuries. However, serious scientific inquiries into the indigenous knowledge traditions were not been carried out here due to various reasons. This study is an attempt to trace the role of scientific rationality and allied discourses in the social reform movements from the writings and debates in the publications of the period.

Review of Existing Literature

Research works in this specific area, apart from some works on the imposition of colonial knowledge upon the indigenous tradition, especially the medical and technological fields are scanty. However, there are some ongoing researches in different universities in this field, especially on the influence of the spread of modern technology and modern medical practices in traditional Kerala society. Notwithstanding, there were numerous works on the characteristics of various streams of social reform movements in Kerala. Many of them are confined to the empirical narrations on various movements and there are also some biographical works on the protagonists of these movements. Apart from these, there were no serious historical works on the intellectual transition to modern Kerala with the growth of modern science and subsequent social formation.

The historiographical trends on evolution and the spread of modern science and its encounter with traditional knowledge forms of different

societies can be grouped mainly into two. One is, of course, the stream viewing modern science as a western European phenomenon; and the rest of the world as recipients of different standards. The second one views the evolution and growth of modern science as an ecumenical process, emerging from the practical needs and socio-economic experiences of people. However, both these groups are not unanimous compartmentalisations of scholarly positions, as they include different or even mutually opposing positions involving scholars, specialised in history, philosophy and sociology of science.

The first group of positions holding science as a western phenomenon can again be categorised into historical, cultural and socioeconomic positions according to the logic and arguments involved in them. The historical arguments in this perspective regard science as a formulation confined to Europe in the particular historical contexts of capitalism and renaissance and spread into different parts of the world through various agencies including capitalism, both commercial and industrial, colonialism, civilising missions, modern technology, etc. While the other positions viewing science as a cultural phenomenon of European civilisations hold modern science as an innate element of European cultures and its natural intellectual progression. To them, the rest- especially the oriental cultures are spiritual or 'another reason'. Therefore, the spread of 'western' science to them was either a civilisational responsibility of the west upon the rest; or the cultural imposition upon the richer indigenous heritage. To them colonialism and its agencies of medicines, education, language, literature, religion rationalisation, etc. are the representations of western rationality.

While, those who view the ecumenical character of modern science, observe it in two different ways. A section of them views science as a historic evolution from traditional knowledge forms in the particular context of the post-renaissance world. Therefore, its tributaries were deriving from different civilizations and assimilated in the huge river of the scientific revolution in

the historic western European context. Thus, the elements of knowledge from different cultures contribute to the evolution and growth of modern science. While other ecumenists, view science as emerged at a particular historical context all over the world irrespective of their civilisational achievements. To them, the spread of modern science to different parts of the world takes place through the processes of exchange, translation and redefinitions.

One of the most debated positions regarding dissemination of science from western European civilisations to different countries through a distinctly interpreted colonialism was raised by George Basalla. According to Basalla, there are three distinct stages in which science is disseminated from the western European core to the European or other cultures lying in the periphery.[6] In the first stage, the 'non-scientific' nations provide the sources and raw materials sufficient for the growth of science in the western European 'core'. Then the colonial phase in which the science from the core disseminate into the non-scientific colony in which actual political colonisation is not a requirement. The third phase is the final transplantation stage by which the periphery achieves an independent scientific tradition. His three-stage model of diffusion of science into European and non-European colonies had invited serious attraction and wide criticisms from scholars dealing with science studies.

Responding to Basalla's three-phase model and other theoretical positions on the trajectory of the spread of science in India, Pratik Chakrabarti explains the process of the promotion of science in India was not merely an imperial initiative.[7] While making a long walk through the historiography of science studies he concludes that though the European medical men have initiated the introduction of science in India, it was forwarded and completed

6 George Basaslla, 'The Spread of Western Science', in*Science,* Vol.CLVI, no.3775, May 1967, pp 611-622.

7 Pratik Chakrabarti, *Western Science in Modern India: Metropolitan Methods, Colonial Practices,* Delhi, Permanent Black, 2004.

by the Indian intellectuals during 19th and 20th centuries. Initiations by European men in India, like Asiatic Society of Bengal (1784), Botanical Garden at Calcutta (1787), Bombay Literary society (1804), Madras Literary Society (1818) etc. for studying different features of India and its people, were continued and expanded by newly emerged Indian intellectuals and inaugurated independent research in India leading to the 'cultivation' of 'western science' in India.

The perspective, that direct knowledge of classical science, leading to the scientific revolution was an import to the European continent from the oriental cultures by Persians and Arabs after the disintegration of Christendom, was raised, among others by A. Rupert Hall. The control of the church over the university system led several people to get out of them and start independent researches, producing wider results. Such initiatives including scientific societies like 'Invisible College', Royal Society, *Academie Royale des Science*, etc. were the spaces of actual scientific researches than the official universities.[8] Thus, Hall substantiates that the growth of science in Europe was not the natural continuation of ancient civilisations nor was its journey so smooth and supported by the authority of any kind. However, he asserts that rational science is the only possible method of understanding and 'controlling' nature.

An impressive text on the evolution of knowledge from the needs of people and changing socio-economic context was produced by David S. Landes. He logically links the connections among increasing demand for knowledge, further productions, geographical explorations, inter-cultural familiarity and the scientific revolution.[9] To him, the industrial revolution was the first historical instance of a breakthrough from the agrarian economy to an

8 A Rupert Hall, *The Scientific Revolution 1500-1800: The Formation of Modern Scientific Attitude,* London, Longmans,1962,(1954).

9 For details see, David S. Landes,*The Unbound Prometheus: Technical Change and Industrial Development in Western Europe from 1750 to the Present,* (II Edn.,) Cambridge, Cambridge University Press, 2003 (1969).

industrial and mechanical manufacturing system. He analyses the major effects of industrial revolutions as the changes reflected in the substitution of human skills by mechanical devices, inanimate power taking over the animal strength and the easy availability of raw materials. Thus these changing situations necessitated the discovery of new knowledge and resulted in the scientific revolution. Thus the Prometheus bound by the Church was unbound by intercultural familiarity and knowledge of other strange systems.

Joseph Needham presented a well-debated, ecumenical perspective of scientific knowledge in his frequently quoted work *Science and Civilization in China,* and other subsequent publications. To him, like many other materialistic interpreters of human civilisations, every knowledge form emerges from the lived experiences of people belonging to different civilisations, so was the science. Through the example of China, he tried to prove that, it was the practice of people including filial piety that gave birth to the emergence of science, rather than ancient positive laws.[10] He developed one of his students' questions and posed it more seriously that *why did the scientific revolution not take place in China?* This highly reflected question, though was not specifically answered by him, had derived a possible conclusion that the agrarian bureaucratic cultures of oriental civilisations resisted the emergence of a mercantile and industrial capitalism which was said to be the foundation of modern science. However, he found the post-renaissance Western Europe providing suitable socio-economic geography for the emergence of modern science from the knowledge derived from the oriental cultures including China, through the Persian mediations.[11] The

10 Joseph Needham, 'Human Laws of Nature in China and the West-II: Chinese Civilizations and the Laws of Nature', in *Journal of the History of Ideas,* Vol.XII, no.2, April 1951, pp. 194-230.

11 This argument along with many of his other positions was criticised and rejected by many westernist scholars like Toby E. Huff, who reiterates the older argument that modern science emerged from the Semitic cultures of Europe with roots in Greek civilisations. For details see, *dem, The Rise of*

Needhamian 'grand question' had reflected in the fields of science studies in different regions, including in India.

Dhruv Raina and S. Irfan Habib inverted and redirected the question into the fields of science studies in India and posed it as, why did not a Needhamian history of science emerge in India?[12] To this non-emergence, they consider the predominance of the orientalist position of an exaggerated spiritual India among members of the 'high church of science'. The Needhamian point that the history of science of a region was integrated with the social environmental and economic history did not attract the scholars dealing with the history of science in India like J.C.Bose and others. It was mainly because they held that the history of science should have a humanist taste in the context of instrumental rationality possessing sway over daily life. Thus they were trying to search their contemporary notions in the past. Raina moves further and traces certain attempts by some Indian scientists to advance pre-modern Indian knowledge and their experiences of being treated as 'second-grade scholars' in the colonial context.[13]

C. A Bayly enquires into the status of knowledge and intellect among Indians and their encounter with colonialism and science and technology. He traces the debates among the learned south Asians (in the north Indian context) and the British during the 19th century.[14] He comments on the British perceptions of Indians along with the way Indians found themselves and the Europeans. To him, Indians were using their traditional methods of

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Early Modern Science: Islam, China and the West, Cambridge, Cambridge University Press, 2003 (1993).

12 Dhruv Raina, S. Irfan Habib, 'The Missing Picture: The Non-Emergence of a Needhamian History of Science in India', in S. Irfan Habib, Dhruv Raina (Ed.,), *Situating the History of Science: Dialogues with Joseph Needham,* New Delhi, Oxford University Press, 1999.

13 Dhruv Raina, *op cit., Images and Contexts….*

14 C.A., Bayly, *Empire and Information: Intelligence Gathering and Social Communication in India, 1780-1870, Cambridge, Cambridge Univerity Press, 1999* (1996).

communication simultaneously with the postal and other means for spreading the messages during anti-colonial movements. He compares two situations of European understandings on India. One, the Europeans' penetration into the Indian knowledge that made them conquering the territory and minds and the second was the context of the rebellion of 1857, which was caused by shrinking of European knowledge on Indians to a mere understanding of census and statistics of caste. He suggests the relationship between Indian and European systems of knowledge was that of mutual influence rather than competition. It was when the Europeans began to study the Indian intellectual traditions including their astronomy that the Indians felt worth learning.

Kapil Raj, responding to the contexts of the historiographical situation of science studies, depicts different stages of construction of science in India. Unlike many other scholars, he acknowledges the agency and active roles of traditional Indian intellectuals in the making, reconfiguring and circulating knowledge.[15] He rightly questions the notions of 'colonial science' as they negate the universal characteristics of science and circumscribe knowledge into specific regions. To him, the circulation of science involves the process of negotiation, reconfiguration with unequal participation of indigenous people in the colonial context. He further sees the contribution of 'open-air' knowledge rather than the enclosed laboratory experimental philosophy and mathematics as the foundation of the evolution and development of science. Kapil Raj cites several examples for his argument that the merchants and commercial ventures were not passive seekers of knowledge from the intellectuals, but views them as producers of knowledge or in certain cases as employers of intellectuals, producing scientific knowledge.

Deepak Kumar rejects the foundation of the argument that science in India was a product of colonial benevolence. To him, racism and bureaucratic

15 Kapil Raj, *Relocating Modern Science: Circulation and Construction of Scientific Knowledge in South Asia and Europe-Seventeenth to Nineteenth Centuries,* Delhi, Permanent Black, 2006.

governmentality was the base of the British colonial state. They did not bother about scientific or technological researches capable of promoting scientific knowledge and bringing economic and social benefits for Indians.[16] The colonial, result-oriented, applied researches in India were aimed at colonial expansion. Their surveys and hydraulic engineering etc. were not the projects for the social up-gradation of Indians. In spite of the bureaucratic hindrances, many intellectuals emerged in India and they were inspired by the nationalist aspirations rather than colonial bureaucratisation. He reveals the hindrances that the newly emerged scientists had to face in their career leading them towards active participation of anti-colonial mobilisations. To him, these scientists and intellectuals were the real founders of scientific tradition in India.

Scholars like Gyan Prakash observe science, as a violent imposition of western rationality upon Indian culture, which had been another reason. Prakash views science as a cultural authority introduced in India by the British colonialism in the early 19th century.[17] According to Prakash, it was the British vision that empirical science is a universal knowledge, free from prejudices that led them to attempt disenchantment of the worlds of superstitious natives, dissolving and secularising their religions and rationalising their society. However, Prakash observes that the western educated elites, being enchanted by science thought the reason as a syntax of reform. He has been criticised for generalising three themes of science, colonialism and modernity. He does not differentiate between colonialism, capitalism and modernity. Science is ahistorically treated as a cultural import into India by the colonial state for civilising mission. He undoubtedly accepts everything western as scientific and opposed to the orient. He uses the Foucauldian concepts like 'governmentalisation' of state in India as the

16 Deepak Kumar, *Science and the Raj: A study of British India,* New Delhi, Oxford University Press, 2nd Ed. 2006 (1995).

17 Gyan Prakash, *Another Reason: Science and Imagination of Modern India,* New Delhi, Oxford University Press, 2000.

persuasion for the policies of 'nurturing' and 'exploiting' by maintaining it as a productive colony.

Notwithstanding, there has been no serious historical attempt to study the encounter of modern science with the traditional Kerala society. The role of science in the transformation of modern Kerala apart from some casual comments, on modern education and science in the studies on modern Kerala is not well studied. However, there are some nonacademic, empirical works introducing various scientific concepts and scientists to the Malayali readers published by people associated with Kerala Sasthra Sahitya Parishad, (a voluntary non-profit organisation engaged with activities for popularising science). So was the case of renaissance and social reform movements in Kerala. Therefore the present attempt seems to be relevant as far as the areas engaged in it were concerned.

Hypotheses

The present study put forward some hypotheses on the evolution, spread and growth of scientific rationality and its impact in the making of modern Kerala. The pre-capitalistic Kerala society formulated knowledge for practical life from the lived experiences in a particular geographical and social settings. They attributed use-value to knowledge, rather than exchange value. The requirement of more sophisticated technologies and knowledge in capitalistic social order necessitated a shift into new systems. The extension of a variant of pre-modern education to the lower class in the colonial capitalistic socio-economic order was the immediate factor for the emergence of social reform movements in Kerala. Modern education and allied way of life led to the formation of a new middle class. The social reform movement held scientific and instrumental rationality as an arbiter of social change. Communalisation of social discourses was an effect of community reform movements and attempts of the revitalisation of tradition.

Methodology and Sources

This thesis is not intended to be an empirical work dealing with the events of growth of science or the social renaissance movements. Instead, it is an attempt to trace different theoretical positions on the evolution, growth and intellectual encounters among various knowledge traditions and to enquire the social reform movements in Kerala during the late nineteenth and early twentieth centuries in their circumstances.

Data from different sources including publications of the late nineteenth and early twentieth century are used for substantiating the arguments. These primary sources include debates in different journals and other writings; such as biographies, novels and other literary creations published in Kerala. Moreover, some secondary sources and literature are also used for better conceptual understandings.

Organisation of the Thesis

The present thesis is organised in four chapters intended to provide a brief understanding of the social context of different intellectual traditions of pre-modern Kerala and modern science. Different agencies worked for the promotion of scientific knowledge and instrumental rationality in Kerala, this work analyses the social reform movements, their trajectories and the contributions of modern scientific methodology to Kerala society. Moreover, the study also analyses different factors that created a counter-current against the spread of modern science and its methodology and the trajectory as well as the constituent of the evolution of modern Kerala. In short, an attempt is made through this thesis to provide an explanation to the process of the evolution of modern Kerala from modern science's point of view. The thesis is expected to problematise some derived notions and common senses regarding the spread of modern science, formation of new middle class, different varieties of education, inculcation of modern knowledge, differentiation of science and technology, different norms of traditional

society, the process of changing appearance of modern Kerala, etc. it also is expected to provide a comprehensive understanding on various debates and the formation of a printed public sphere in modern Kerala.

The first chapter is an attempt to trace, the evolution, growth and interaction between different forms of knowledge in pre-modern Kerala formulated from the practical experiences of people lived over here. The processes of formation of different systems of knowledge including herbal, calendrical, medical, astrological, agricultural knowledge required for an agrarian society in the particular geographical, socio-political condition of pre-modern Kerala, etc. were analysed in it. Subsequently, the process of interaction of the shastra traditions of knowledge, with the practical knowledge systems its social structure, economic and political formation, etc. were interrogated. These changes in the existing social order were reflected in the intellectual traditions by restructuring, translating and redefining practical knowledge of people. It led to the structuring of the kinship relationship of labour (*kulathozhil*) and subsequently to the mechanical reproduction of knowledge and labour from each generation to the other. This process brought a setback to the adaptive knowledge formations as the shastra were commands formulated by previous generations. However, the existence of caste-based hierarchical system led to the survival of ancient practical knowledge along with the shastra traditions. In short, the first chapter analyses different forms of knowledge sufficient for the particular socio-economic systems familiar in pre-modern Kerala.

The second chapter deals with the ecumenical evolution of modern science from the practical experience of the people and their interactions as well as encounters with different intellectual traditions. The encounter between religion (being one of the hegemonic institutions of the pre-modern world especially Europe) and science became fatal in the case of several scientists and many research projects. The conversion of scientific rationality into instrumental rationality and redirecting scientific knowledge and researches by the agency of colonialism and capitalism is also discussed in it.

The expression of science as a productive force in the changing world order and achieving acceptability and attraction from different corners including traditional institutions and ideology is also made part of the discussion.

The third chapter looks at the origin, constitution strategies and mobilisations of social reform movements and Kerala renaissance. These movements emerged during the late 19th century and early 20th century were the creation of the internal contradictions in the society in the particular socio-economic circumstance of the period. Extension of traditional educations to the middle and lower castes; changing technological, industrial, colonial and capitalistic situations, etc. contributed to the growth of demands and movements for social change. These reformers demanded a break from the caste regulations and restrictions based on it. Thus they used instrumental rationality and logic for proving their demands and standpoints against the caste-based social order. However, scientific rationality was confined to discourses of a section of the middle class. However, there were regional variations to these movements due to different political, social and cultural formation of the constituting provinces of modern Kerala. Therefore a single method of analysing different socio-political movements of modern Kerala becomes ineffective. Anyhow the socio-political movements of the 19th and 20th centuries influenced by the instrumental and capitalistic rationality were crucial in the formation of modern Kerala. Many of the characteristic features including radical political orientations were founded by these movements.

Finally, the fourth chapter traces different positions on scientific temper among the newly emerging middle class, social reformers etc. as expressed in their discussions and debates. Three broader groups classified for the convenience of this study hold traditionalistic, modern and eclectic positions. However, there were variations of opinion within each group on certain issues but their overall viewpoints had certain similarities, which united each of them in these groups. The traditionalists stood for the revival of the pre-modern socio-intellectual situation through slighter alterations. This

group stood for revitalising the tradition of their perception, as they were held as complete in themselves. While the second group stood for changing the socio-intellectual situation as a solution for the social inequalities, backwardness, etc. the third group, in the changing circumstances stood for an eclectic intellectual tradition with the elements of valid practices and knowledge from the tradition as well as modern scientific and instrumental rationality. This third position had been identified similar to the ecumenical perception of science. They held that the practical knowledge being evolved through the practical experiences of indigenous people in the particular geo-morphological and historical conditions may involve both valid and invalid knowledge. Practically valid knowledge from the tradition and the applicable scientific knowledge should be accepted for the formulation of social systems and practices. This last group had wider acceptability in contemporary society and could actively participate in the socio-political formation of modern Kerala.

Thus the thesis analyses the formation and trajectories of the intellectual tradition of modern Kerala. Different versions of practical knowledge and perceptions of society and nature were evolved from the daily life of people in accordance with the social and economic and geomorphological conditions of the region. They changed accordingly and exchanged redefined and translated knowledge and practices in their interactions with people from different socio-intellectual settings. This 'ecumenical formation of knowledge' is applicable to the evolution, growth and changes in modern science as well. Though rationality is not a modern phenomenon, scientific rationality with science being an arbiter has been a completely modern making. The growth and spread of capitalism as well as colonialism had influenced and redirected the scientific knowledge and made it a tool of their expansion. However, all these three are neither synonymous nor can they be used interchangeably. Colonialism and capitalism together

made science and its rationality into mechanical and instrumental rationality. Therefore, in Kerala instrumental rationality rather than scientific knowledge was predominant.

CHAPTER 1
KNOWLEDGE TRADITIONS IN PRE-MODERN KERALA

Introduction

Stagnancy and irrationality had been two frequently accused features of pre-modern society and intellectual traditions in Kerala. Contrary to this generalisation, there were elements of motion, rationalisations and evolutionary changes in them. Sloping terrain, lying between mountain and ocean, a large number of rivers and other water bodies, continuously repeating rainy and hot seasons, requiring different lifestyles and occupations, etc. necessitated people to develop different knowledge traditions. A working calendar system, navigation, different agricultural practices, water management, herbal medical knowledge including different immunity and toxicological practices, etc. were required for the daily life of people in pre-modern Kerala. However, these knowledge systems, formulated in accordance with the lived experiences of people, had undergone different changes in the course of history due to socio-economic and political changes leading to changes in the means of subsistence, changes in the notions of seasons, floods, droughts, etc. The migration of people from different socio-cultural settings, interactions with people belonging to external traditions, etc. added to the changes in socio-intellectual traditions. However, with the adaptation of knowledge into the shastra tradition and binding practices with kinship and clan relations (*kulathozhil*) based on the newly imposed hierarchical caste system, knowledge transactions became a simple reproduction of the practices and knowledge of the previous generations. Different knowledge including calendric and astrological traditions was reoriented for coping with the feudal social order. Thus there was a presumable stagnancy in the forms of society and knowledge by the medieval

period. But there were adaptations to the situations and alterations and additions in the knowledge reflecting motions in sedentism in pre-modern knowledge traditions.

The history of knowledge traditions in Pre-modern Kerala can be stretched back to the Stone Age cultures, where the ancestors of modern people lived by hunting and gathering food from their natural habitats and surrounding regions. These wandering people used tools made out of stones and its flakes harnessing the available geomorphological conditions of the region. The implements like core, choppers, etc. were reported to have received from different sites like Kanhirappuzha. It will not be wrong here to assume that these people made their tools from the stone flakes and their continuous usages led to the preparation of more effective, sharper and handy tools that have been received from various archaeological sites of later period in Kerala. These chopping devices were improved by ages and transformed into microlithic tools. These microlithic tools were discovered along with choppers from various sites in different parts of Kerala. There are stone blades, burins, adzes, scrapers, sickles, etc. in these microlithic discoveries. They are more complex in their making than choppers and required better skills.[1] As reported by various scholars, the mesolithic artifacts in Kerala are mainly made of flakes with a small share of nodules, pebbles and blades and most of them are not morphologically identical with microliths.[2] These skills might have been acquired through continuous observations and practical experiences of the people. There are some regional variations in the type of implements but all of them extol the increased skill of the people who made and used them compared to the previous choppers and hand axes.3 Unlike the

1 *Rajan Gurukkal, Myth Charithram Samooham* Mal), Kottayam, Sahithya Pravarthaka Cooperative Society, 2013, pp.309- 310.

2 Rajendran. P., 'Prehistoric Research in Kerala' in *Current Science,* vol. LVI, No. 6, Bangalore, 1989, pp 266-268.

3 Such tools and implements made out of the available stones according to their usages and subsequent advancements and finishing in them indicate that people develop their skills and knowledge required for their day to day life

other parts of South India, Quartz is the raw material for the mesolithic techno-complexes in Kerala.[4] The materials used for these implements in almost all cases are locally available quartz of milky and transparent varieties. The typology and morphology of implements indicate to the mastery and skill of the people in working on quartz, which is otherwise considered as a very poor type of rock to be used as raw material for any strong implement. This highlights the regional evolution of knowledge and skills from the practical experiences of the people harnessing available materials.

The tools discovered so far from various mesolithic sites include mainly "bi-facial points, blades, borers backed knives , scrapers, discoids and small choppers etc. unlike from central and northern India, the absence of geometric types such as triangle and trapeziums are are conspicuous; while there is a notable presence of bilateral symmetric and bi-facialpoints among tools in Kerala".[5] The overall assemblage indicates the predominance of flake elements. However, the use of blade technology was not altogether absent as is evident from the presence of fluted core tools and blades. The variety of scrapers made of flakes point towards the richness of technical skill and observation of the people. The gradual evolution in the morphology and typology of the implements clearly depict the process of evolution of the skill and knowledge according to the environmental and geographic conditions. This process of shift from Paleolithic traditions through the Mesolithic culture is a clear evidence for the shift in the rationales of the occupied people through different generations.

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from their surroundings by utilising their rationality and knowledge. Therefore, rationality is not a modern phenomenon; instead, it changes according to the changes in the methodology and living conditions of people. Here the practical experience and requirements of the people led to the discovery of necessary tools and implement for meeting their needs.

4 Murty, M.L.K., 'Archaeology and Human Ecology of Late Pleistocene and Early Holocene Cultures in India: Implications for Transition to Agriculture', *Puratattva,* vol. XLV, 2015, p.17.

5 Rajan Gurukkal, *Social Formation in South India,* New Delhi, Oxford University Press, 2010,p 98.

It has been reported that Philip Lake had discovered Neolithic axes from the foothills of the Kannyakad area in Kerala. Later archaeologists like Fawcett are said to have collected few quartz flakes, fragments of neolithic celts, etc. from Wayanad area.[6] Stone axes, flakes, blades and beads, etc. were there among the discoveries. Stone axes are said to be well made through flaking, pecking, grinding and polishing. They are finished in symmetrical shape and with well-polished, working edges. Some of the axes bear use marks as striation at the convex working edge on the right angle. Moreover, some of the artistic representations of the rock shelters of Edakkal, Arkode and Marayur are also said to be belonging to the neolithic culture.[7] But due to the shortage in the availability of reliable evidence to corroborate a social formation during this period, many scholars have challenged the authenticity of these discoveries. However, the cave paintings probably belonging to neolithic age at Marayur and Edakkal and the discoveries of megalithic remains from the nearby sites may indicate to the progress in technology and continuity of traditions.[8] There are different interpretations regarding the motif in their paintings as indicating their conception of the universe, god and nature. But many of them were rejected by historians by accusing the fallacy anachronism and attempts of locating present in the past. Moreover, any attempts of interpretations regarding the social life and knowledge forms of the people lived in these cultures require corroborating shreds of evidence and fresh interpretations of the available pieces of evidence.

There are also interpretations by some scholars regarding the evidence of people descending the hills around the megalithic period.9 The people

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6 *ibid., p.101.*

7 *ibid.*

8 Raghava Varrier, Rajan Gurukkal, *Kerala Charithram*,(Mal), Sukapuram, Vallathol Vidya Peetham, 2004(1991), p.54.

9 K S Madhavan have interpreted, citing various songs of the early Tamil literary corpus (popularly called the Sangham poetry), that there are pieces of evidence of the people coming down the hills, cultivating the lands and formation of the agrarian society in his unpublished Ph.D thesis entitled 'The Primary

developed their cultural and social life from the available geomorphological and geographic situations. The burial sites and typology of these burial cultures as well as the materials used for them indicate the local evolution and practical improvements in skill and other knowledge. Dolmens, Dolmenoid Cists, Umbrella Stones (*kudakkallu)*, Hat Stones (*toppikkallu)*, various kinds of Rock-Cut Chambers and Urn Burials (*nannangadi)*, etc. are central features of the megalithic burials discovered in Kerala so far. The Dolmens are mostly found in the upland regions where granite is abundant whereas the burial types like Kudakkallu, Toppikkallu, etc. were found in the laterite zones in northern and central parts. While the rock-cut chambers are confined to the midland laterite region mainly in the central and northern parts of Kerala, the urn burials are mainly received from the deltaic and coastal regions and are noticed in the midland and upland regions as well.[10] Moreover, the grave goods and urns found in these burial sites indicate the skill and talent of the people.[11] Burial sites also presuppose the habitational sites nearby; the megalithic burial sites and their presumable settlements are argued to have been contemporaneous to the society and settlements represented in the literary texts belonging to the early Tamil literary corpus, Ettuthokai.[12] There are also claims of representation of the objective structures of material culture and lived experiences of the people of megalithic society in the Sangam corpus of literature.[13]

Producing Groups in Early and Early-Medieval Kerala: Production Process and Historical Roots of Transition to Castes(300-1300CE)', University of Calicut, 2012.

10 K.S., Madhavan, *op cit*., p 69.

11 These goods also indicate the existence of communication and transactions, between cultures contemporary to them.

12 *Ibid.*, p. 70.

13 K.N. Ganesh, 'Lived Spaces in History: A Study in Human Geography in the Context of Sangam Texts', *inStudies in History* Vol. XXV, No. 2, August 2009, pp 151-195.

The knowledge and technology of iron had brought about drastic changes in the life and understanding of the people. Though there is no direct evidence to prove that with the beginning of the usage of iron as tools rapid increase in cultivation and the pattern of life of the people occurred, there were gradual tenable changes in the agricultural production and allied culture simultaneous to the replacement of stone implements with more reflexive metallic tools in the history of Kerala. The downhill migration of the people from Kurinji tracts and availability of fertile land and plenty of water along with new knowledge and technology changed the course of history and began a new social formation based on surplus production and non-producing dependent class.[14] The changes in climate and availability of edibles in their living spaces must have caused the migration of people and finding their solutions to immediate problems and acquaintance or confrontation with alien cultures culminated in new ways of life leading to an altogether new social formation. These, in turn, might have become a primary progenitor of inventing newer techniques, skills and a detailed understanding of the basic pattern in the functioning of nature. During the early stage of settled agriculture and agrarian social life, the shifts in settlements from hill slopes to the plains might have begun and wetland agriculture became common. Thus a socio-cultural life pattern and system of knowledge sufficient for wetland agriculture began to evolve here. The large scale discovery of iron implements from the burial sites is a clear indication of the growing use of iron implements possibly for the agricultural activities and other, daily life of the common people. Moreover the iron age relics include iron objects of wide variety such as spears, swords, tangled daggers, wedge-shaped blades, barbed arrowheads, and horse fittings; a large number of knives, tripods, bell-like objects, lamps a few hoes, shovels spades, plough, bronze and copper objects(though not common) were also seen.[15] Moreover among the grave goods primitive hunting and related tools were more common than the

14 *Ibid.;* also see K.S. Madhavan *op cit.*

15 Rajan Gurukkal, *op cit.*, *Social Formation…* p. 137.

agrarian type tools. All these indicate the transitional stage of socio-cultural life. They are also indicative of the rationale of common people depending on the natural phenomena.

The knowledge and practices of agriculture, evidenced by the Sangam literature, to be originated in the *Kurinji* region, where the slash and burn of shifting cultivation are reported to have developed.[16] There are references to blacksmiths who were speciallised in making these implements.[17] Hunting for pig, elephants, cheetah, bears, etc. are referred to on several occasions. There are references in *Purananuru* and *Akananuru* regarding this; *Vil Vettuvan*, a hunter with bow and arrows and *Irumpuli Vettuvan* are widely depicted in the literary corpus.[18] All these require collective, planned and cooperative efforts, skills and knowledge. This would also indicate the emergence and growth of an agrarian society with some knowledge about the environment, geographical and geomorphological conditions. Iron implements made by blacksmiths were widely used for agricultural activities, hunting, etc.[19] Blacksmiths who made weapons for battles are mentioned as *porkollan* and those making axe and arrow (*vel*) for hunting are also mentioned. There are also references to carpenters making carts (*enter cheyyum tachan*) and potters making pots in furnaces of old settlements (*chulai nannathalai muthur*

16 K.S., Madhavan, *op cit*.,

17 The specialization in making these implements indicate to a primitive form of division of labour among the ancient, people. For example, in Purananuru (henceforth PN) there is a reference to *Vil Vettuvan* (PN- 150) *Karunkai Kollan* (PN.2017) and *Uthalai* and in Akananuru (henceforth AN) *Irumpucheykolenathontrum* is a reference to black smith working on iron implements (AN 72:5)

18 For example in 'Purananur' there is a reference to 'Orval vilvettuvan' (PN.150), and the Akananuru a hunter attacking a boar with bows and arrows is depicted as 'Kanavan kurukinan thodutha kurarai pakazhi (AN-248: 6-7).

19 Different terms denoting blacksmiths such as Karunkai Kollan [in Purananuru 21 -7], irumpu chey kol enathontrum *[Akananuru* (henceforth AN)72-5] and their workshop, *Uthala* , where weapons were maed are referred in different songs of the early Tamil literature, cited in K.S., Madhavan, *op cit*, p 86.

kalamchey kovai) indicating to the skill and knowledge of the people in the agrarian and pastoral economy of early Common Era (henceforth CE). There are also references to going uphill in search of medicinal plants for curing diseases in different folk songs. Knowledge and belief possessed and maintained by the tribal and hunting-gathering economy were not sufficient for the people who had come downhill and began a settled or sedentary agricultural life. The climatic geographical knowledge sufficient for the maintenance of an agrarian society was evolved here out of the lived experiences of people. The migration of people downhill paved the way for two major developments. They are evidences of settlements near water bodies and the formation of extensive cultivation that led to the formation of *uru* and *kuti* in the cultivable area in midland regions.[20]

Agrarian Society and Knowledge Formation

The progress and correction in their knowledge had taken place frequently indicating regional variations of social knowledge and tools or techniques of life due to the way of life followed by them. Agricultural societies required and practiced knowledge entirely different from that of the hunting-gathering people. As the knowledge required for a settled agricultural life also differed from what people had been practicing until then. In this situation, they had to generate a new understanding and ways of life. Knowledge and skill of drawing water from distant places as well as techniques for releasing out excess water from the fields, understanding various measures for protecting their crops, better knowledge about seasons, better ways of making strong and lasting tools, etc. All these curiosities and new thinking were evident from various songs of early Tamil literature. Inhabitation of people near natural sources of water such as lakes, rivers, backwaters, etc. necessitated better transportation and fishing devices.[21] The

20 *Ibid.*, p 96.

21 It is evident from various usages denoting boats in early Tamil sources like *timil*', *nedumtimil*', *kodumtimil*' etc. for details, see *ibid.*, p. 88.

extension of settlement from basins of water bodies to more distant places was the result of demographic growth and the increase in the number of people relying upon agriculture. They also had to expand the area of cultivation as well. Thus the situation necessitating an increase in production must have necessitated the requirements, of production especially water. Therefore, the water had to be brought into the newer fields through digging canals and other means. This is also evident from Sangam literature.[22] Bunds were constructed for water management and there are references to drawing and storing excess water for agricultural and irrigation purposes and preparations for meeting such needs in the future. Small streams called *todu* were dug near the paddy fields for bringing in water to the fields and drawing out excess water from the fields accordingly. This helped for converting the more barren land into fertile arable agricultural fields. All these require new technology and practical knowledge and it was the beginning of a new social formation. Various agrarian practices had evolved here which were developed modified and altered with regard to the geographical and geomorphological conditions of the region. Changes in crops and the inclusion of more wild crops into cultivation were in a suit to the socio-economic conditions of the people. All these processes of choice, alterations, acceptance and rejection were out of the rationale of the people inhabiting in those particular socio-cultural stages of history.[23]

The reference to the practice of house construction and domestic spaces reveals the process of transition from nomadism to a sedentary

22 There are several references in various occasions to canals in this literature for example in the tenth song of the third Pathikam, in *Pathittupathu,* the seventeenth line goes like this '*Vendalai chemapunel puranthuvay mikukkum'* for details see G. Vaidyanatha Ayyar, (trans.,) *Pathittupathu,* Thrissur, Kerala Sahitya Akademi, 1997(1961), p 67.

23 Charles Darwin, '*On the Origin of Species By Means of Natural Selection or the Preservation of Favoured Races in the Struggle for Life*, K.R., Sivarama Panikkar (trans.,) New Delhi, Indian Atheist Publishers, 2016 (1986), pp. 99-119.

agrarian culture.[24] Habitational spaces called *il* are widely referred to in Sangam corpus. They included the location of the residences and structures if any.[25] Various types of structures of houses are also mentioned in these songs. *Kurinji, Mullai* songs mention structures for *il* called *Kurampai*.[26] They are huts made of wood and thatched with grass which is evident from the usage *pulvai kurampai* in various songs.[27] There are also houses called *kurumpu* which seem to be made of broken stones.[28] However, various forms of indigenous house making including structures and other features can be seen in these corpora themselves. It is interesting to note that thatched homes made of mud bricks or stone widely known as *manai* have been referred in various occasions. It had a plastered floor called *tharai* (plastered with cattle dung in some occasions), erected walls from *tinnai*[29] doors on the wall called *katavam/katavu.*[30] There are also reference to the roof (*ampanam),* wooden cross beam (*chippu, elu*), door hinge (*kutumi*) window (*karunakan or kattalai)* indicating the existence of structured houses more or less similar to those in medieval Kerala.[31] This pre-modern 'Kerala model' of house construction in

24 However, K.N. Ganesh observes that nomadism was not a continuous wandering, instead, it involved stationary aspects of movements connected to birth, childrearing, family life and death, etc. likewise sedentism also involves aspects of movements such as migration, transportation, production and exchange. Therefore he argues that there was 'position' in the 'movements' and 'mobility' in between two 'positions'. See for details, K.N Ganesh, *op cit.*, Lived Space… p. 164.

25 There are various references to such spaces indicating their socio-economic conditions in the songs like 'older or longer standing *il' (mutil)* PN-19, Younger or smaller *il (ciril*)PN-319, famous or important *il (peril*) PN-33, prosperous and labouring *il (vinai punai nallil)* AN-98.

26 AN 12, 63, 210, 229, 272 and PN 129, 285, 302.

27 AN 87, 72, 200, 369.

28 AN-31 Kal *utai kurumpu*.

29 AN-289 *Tin chuvar* .

30 PN. 98 -*katavam on matir;* PN 341-*tinilai katavu*).

31 One of the chief reason for this 'stagnancy' might have been the systematised hierarchical caste regulations superimposed upon the newly formulated agrarian society. These social regulations unquestionably specified the style

accordance with the geomorphological and socio-economic conditions as well as climatic features is indicative of a system of knowledge and lifestyle peculiar to the region with a more or less indigenous character.[32] This regionality of Kerala culture rooted in ancient practical knowledge traditions as evidenced by the corpus of Sangam literature extended up to the late medieval period.[33] Moreover, the construction of walls named *eyil* or *matil* and mud fortifications was also familiar to the culture narrated in these corpus.[34]

A major transition during this period is visible in the field of technology. Iron and metallic implements began to be used along with the stone. Simultaneous use of both pre-metallic and metallic implement is a key point regarding the transition. Digging wells and ploughing fields etc. were made possible with the wide usage of metallic implements. It is also evident in the specialization in the skill of labour process and emergence of a division of labour such as *thozhil* and *vinai.* While *vinai* being non-specialised physical

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and objects for constructing abodes for each category of people with the help of existing socio-political ideology. Therefore no change in the systems after the consolidation of caste seems to have been possible up to the European colonial period. Which witnessed large scale religious conversions, evoking all kinds of taboos up on converted people imposed by the caste system; reflecting its impact upon the existing unconverted sections as well.

32 Here, the term 'Kerala model' does not hold the general sense denoting the socio-economic progress that Kerala has achieved through socio-political mobilisation and planned movements since independence. Instead, it possesses only the literal meaning of the terms.

33 However, it is a fact that several changes, through the influence of migrations both temporary and permanent, have occurred in Kerala throughout its history. But the system including those mentioned here with the same terminologies continued to exist, even after the intrusion of Brahmanic and other exterior cultures, among some sections of the society, especially the lower ladder in socio-economic consideration. Thus variations in 'position', as well as 'motion' of knowledge giving way to a form of multi-culturalism, became the character of Kerala.

34 *Nedumathil*, PN 38. It is relevant here to note that the comparative lesser availability of rocks in the midland regions might have led them to the fortifications with mud, which was abundant in the region.

labour, *thozhil* was skilled labour requiring the process of acquisition and usage of various techniques.[35] Almost all labour activities and labourers were known with the instruments they used.[36] The burial sites reveal skills and specialisation of people like stonemasons to cut rocks into pieces, digging pits and prepare the graves; their skill is evident in making both passage tomb and pillared chamber. There might have been potters proficient in different types of pottery such as wheel made, finished and huge urns. The availability of beads and ornaments indicates the expertise of goldsmith, jewelers, etc. As evident from the songs mentioned above there are wide references to blacksmith who were experts in making various hunting devices and war weapons.[37] There is a reference to a potter who makes pots in the furnace in the old ur.[38] Regarding transportation there are numerous references to carts called *ozhukai* fitted with yoke (*nukai*) used for carrying salt from coastal regions to the interior hilly tracts.[39] Later these carts led to the development of *ter*, there are references to carpenters who are specialized in making *ter.40* These *ters* were drawn by cattle or horses,[41] they were fitted with wheel

35 For details see, K.N Ganesh, *op cit.*, Lived Spaces...

36 Hunters, fishermen, cattle keepers, etc. were known by the devices used by them for their respective professions eg; *kotuvil eyinar*-AN79,319, *kurnal ampin kotuvil kooliyar* PN-23, *vituvai chenkanai kotuvil atavar* AN-179, *kolavil atavar* AN-97; fishermen using boat, net etc. eg; *kotum timil paratavar* AN-70, *valai paratavar* AN -250, *innameen vettuvar* AN-270, *kolai vempuratu* AN-210 etc. Even cattle keepers who normally do not require specialised tools were identified with the type of their usual whips as their instruments eg; *kolkai kovalar* AN-54, *kolan* PN-72, *katunkol Kalla Kovalar* AN-74, etc. These are indicative of the techniques and skills getting importance in the agrarian society.

37 There are references to *vilvettuvan* PN-150, who hunt with bows and arrows and the blacksmith who make these instruments *karunkai kollan* PN-21, *irumpu chey kollenathontrum* AN-72 and their workshop *uthalai* also find mentioned. Those who made weapons for war are mentioned as *parkollan* PN-353.

38 *Chulai nananthalai muthur kalamchey kovai* PN-228.

39 *Uppoy umanar ozhukaiyodu vantha* AN-310, *umankodu nukai ozhukai* An-159, *ozhukai pakatu* AN-173.

40 *Enther cheyyum thachan* - (PN-87).

and axle.[42] While the *ter* usually carried people, *chakatu* or *chakatam* were heavy carts carrying goods and were drawn by bullocks.[43] There are references to water transportation and various vessels used for it. The common vessel was *timil*.[44] But there are other vessels such as *ampi, toni, uru, punai*, etc. in other songs.

It is quite interesting to note that the socio-economic and cultural features of ancient Kerala including terminologies continued to be remained in the society up to the modern period. Two features of the Kerala society can be derived from this possible stagnation (1) semi-sedentic character society and (2) self-sufficiency of knowledge to the practice. Both these features are interwoven and inseparably connected. The agrarian practices and forms of life traceable from the ancient corpus mentioned above continued to remain here throughout the medieval period in Kerala with slighter alterations. Even the required labour and technical assistance continued to be more or less the same along with the production relations. Therefore there can arguably be a sedentic character to society. However, the social relations and political situations including ownership of means of production underwent some historic changes that had its influence in the society in varying degrees. The knowledge and systems of practice became codified in a clear structural hierarchical order with the infiltration of the predominance of Brahmanic and other exotic cultures from the early medieval period onwards. This inter-cultural contact with the anterior skills and knowledge through the people and cultural traits arrived here and exchange process provided a kind of shift into systematised stagnation of society altogether. Moreover, being an organised hierarchical order it could filter downward slowly but permanently. Therefore the social system evolved here involves the characteristics of sedentism

41 *Pariyudai natter* AN-100

42 The wheel was called as *tikiri* AN-69,232 or *azhi* PN-99(*azhicuttiya*) and axle called *aram PN-99 (aramatu tikir*i).

43 AN-191, PN-102, 256 etc.

44 AN 65, 70, 190, 260, 330; PN-303 etc.

associated with minute motion. However, there are elements of motion regarding agrarian practices forced by the natural environment, upon which the entire process was depended. Therefore, there cannot be a completely sedentic character as these repeating character environmental changes, including seasonally repeating rain, floods, dryness necessitated the emergence of calendrical knowledge. So it can at large be called a semi-sedentic society considering the systems of knowledge, practical skills and social stratification.[45] This idea of motion in sedentism is explicitly evident from the agricultural practices and techniques existed throughout the medieval period and up to the mid-twentieth century.[46]

The absence of drastic changes in knowledge and practice of the people in pre-modern Kerala is caused by the second point mentioned above, that is the comparative self-sufficiency of the locally evolved knowledge for the day to day life of people in the particular socio-economic and geographical conditions.[47] The Geomorphological and climatic conditions directly affecting the production process continued without major shifts, apart from the above mentioned seasonal changes. Therefore, there was no sudden challenge for the people in the agrarian life leading to major discoveries than an extension of the quantity of production to wider areas with demographic growth. Moreover, the production relations also continued to be similar in changed political and social relationships. Even the changes in the land ownership and

45 Here the concepts of sedentism and nomadism simultaneously existing are borrowed from K.N.Ganesh, which he used in a different context. See, K.N.,Ganesh, *op cit*., *Lived space*.... p 164.

46 A detailed description of various agricultural practices, seeds, technology in pre-modern Kerala has been given with illustration by C.K.Sujithkumar in his free lance research work. There are multiple number of techniques used by indigenous people for a single problem, say water management. For details see, C.K., Sujithkumar, *Karshika Parambaryam Keralathil*, Thiruvananthapuram, Kerala Bhasha Institute, 2014.

47 The socio-economic conditions determined by the structural and hierarchical caste system, which predominated and codified the social practices negating the possibilities of evolution and change in them.

social hierarchy did not directly pose any intellectual challenge leading to a shift in the production system.[48] The superimposed Brahmanical and allied culture developed subsistence upon the existing production, without directly involving any production process. Therefore, there did not emerge a cumulative knowledge of two systems instead what might have happened was the absorption and formalisation of some practical knowledge into the textualised hegemonic shastra tradition.[49]

The Shastra Tradition

With the spread of Brahmanic and allied culture in Kerala, its Sanskrit literary tradition; especially the shastra traditions and their world view also got established the hegemonic status in the society. It was not merely a single-dimensional flow of knowledge in the shastra form into Kerala but allied with a complex process involving, assuming, reformulating, revising and appropriating the local knowledge in to it.[50] However, the well-established

48 However, it is necessary to take into consideration that by the time of social and political change, the new hierarchical social institution of the caste system had begun to control the intellectual and social life here, checking any furtherance in the practical and theoretical knowledge.

49 The superimposition of Brahmanic life and culture were supposed simply to be an addition to the number of people subsisting out of the labour of existing producing classes in the agricultural point of view. The difference pertaining to the ownership of land and allied cultures, which did not affect the knowledge regarding the process of production directly in the initial stage. However, the knowledge and culture were codified, modified and regulated with political authority they had assumed. These codifications and other related processes led to the discovery of a well-developed almanac, zodiac, etc. resulting in serious astro- mathematical researches and discoveries. However, such discoveries seem to have lesser influence up on the common people, the actual production, or their daily life.

50 In short this appropriation and modified reproductions in the published forms led to the future claim of the shastra origin of the indigenous culture. The pattern of life, agriculture, etc. mentioned or traceable from the earlier sangam works, including those noted above were later on claimed to be derived from the shastra textual knowledge and Brahmanic cultures as they were all found codified in such texts. It leads to the historical problem of chronology that is predating the shastra traditions to bring the agrarian social formation within its cultural domain.

shastra tradition with a wide range of literature and several branches of knowledge, though considered to have a transcendental origin, could create several treatises here. Some of them were either a copy of original works or annotated and abridged translations with the tracable influence of local society, space and episteme. There were also free works based on the methodology and world view of the shastra traditions produced here locally. Naturally many of such works included the knowledge form and understandings adopted from the indigenous people, their practical skills and knowledge found influenced in them. Most of these works were written in Sanskrit and later on, we find translations in medieval Malayalam (*Bhasha*) as well. These works were mainly on arithmetics, astro-mathematics, ayurveda, architecture, agriculture, etc.

Astrological and Mathematical Tradition

The general cosmological understandings of ancient Indians found expressed in the literary traditions were in a jumbled position of religion, ritualism, orthodox dogmatism, superstitions and theorizations. 'One of their prominent speculations about cosmology was that the heaven and the earth were the same in days of yore and later separated and they were born from the golden embryo'(*Hiranya Garbha*).[51] One of the Vedic conceptions of the universe which conceived it in the shape of a tortoise is found to be influenced among the intellectuals of medieval Kerala.[52] According to it, the lowest of the *Kapala* is the earthly world the upper one is the sky. The space between the two *Kapala* while separated is *Anthariksha*. This means visible things (iksha) in the gap or space in between (Anthara).[53] Some of the major understandings of the medieval intellectuals regarding universe are worth mentioning here for observing the complexities related to intellectual and

51 Mayaprasad Tripathi, *Development of Geographic Knowledge in Ancient India,* Varanasi, Bharatiya Vidya Prakashan, 1969, pp. 4-5. (assertion added).

52 *ibid.*

53 *ibid.*

social change during medieval period. *Vaiseshika* and *Sankhya* systems of Indian philosophy, referring to the creation of the universe on several occasions were also matters of intellectual discourse. The Vaiseshika system of Kanada, which conceive the world as a phenomenon evolved out of the conglomeration of *Kanam* (particles) had been a common idea in the discourses upto late medieval period.[54] This has been claimed to be the concept similar to the modern atomic theory of matter.[55] The *Sankhya Sutra* speculates, the cosmogony as a successive and continuous creation, out of indestructible matter.[56] Several scholars argue this concept to be identical with the theory of evolution of modern science. But this idea of one transforming into another due to the indestructibility of soul is entirely different from the modern conception of evolution.

By around the fourth century of Common Era (CE), the cosmological speculations of seers began to be reformed by the new knowledge based on the observation of scholars in some corners. It led to the re-approaching of several theories, the study of heavenly bodies including planets by applying more complicated arithmetics.[57] More accuracy in the prediction of eclipses is an indication of the interest shown to the observation of astrological phenomena by some scholars of the age. By the 5th century CE, more clear siddhanthas (hypotheses) regarding heavenly motion began to be presented and discussed by scholars.[58] Their positions at each moment were believed to

54 *ibid.* p 12.

55 However, a closer analysis of both would reveal the differences in methodology and notion.

56 This conception is more or less the birth recycle of indestructible matter or soul in different forms one after the other (like the one in *Karma Siddhantha*).

57 But these heavy mathematical formulations and debate confined to the elite scholarly communities. That seems to be the reason for the simultaneous survival of mutually opposing theories and stand points pertaining to the same culture in India.

58 But as noted above, these sophisticated *siddhanthas* did not penetrate the society in general either due to the divinity of previous notions or due to a possible delinked status of these scholars from the society and its aspirations.

have direct bindings on various events on earth including the lives of the people and other animals, fortunes and misfortunes, etc. Therefore it required exact calculations of the positions of each body at a particular time. A clear example of this process is the progress made in the prediction of solar and lunar eclipses.

There were references to 18 such *siddhanthas* in Varahamihira's *Surysiddntha.*[59] Among them, Five Hypotheses (*pancha siddhanthikas*) are found widely discussed and referred to in various kinds of literature. They are S*urya Siddhantha*, *Paitamaha Siddhantha*, *Paulisa Sidhantha*, *Romaka Siddhantha* and *Vasishta Sidhantha*. Among them, *Surya siddhantha* or *saura siddhantha* is claimed to be more accurate by the scholars of Shastra tradition.[60] The *Mahayuga* concept, a major foundation of Indian astrology embedded in the *Surya Siddhantha*, was also a frequently discussed idea in medieval Kerala.[61] It finds similarity of content on various aspects with *Aryabhatiya* including the number of planetary revolution in a Mahayuga given in the *Ardharatrika* system of Aryabhata. It had higher importance among the scholars of medieval astro-mathematical traditions in Kerala. Aryabhata is supposed to be a leading figure in the renovation of Vedic astrology and forming the *siddhantic* astrology. His works, though faced initial neglect, are considered to be the foundation of the predominant cosmological theories of India which continued even more than a millennium after his death.[62] Surya Sidhantha deals with place, motion and direction of the planets, Lunar and solar eclipses, planetary conjunctions and reckoning of

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59 They were those attributed each to Varahamihira, Pitamaha, Vasishta, Atri, Parasara, Kasyapa, Narada, Garga, Marichi, Manu, Angira, Romaka, Paulisa, Cyavana, Yavana, Bhargu and Sannaka. For details see S.N., Sen, B.V. Subbarayappa, *A Concise History of Science in India*, (II Edn.,), Hyderabad, Universities Press (India) Private Limited, 2009 (1971), p. 94.

60 *ibid.*

61 Rajesh Kochchar, Jayanth Narlikar, *Astronomy in India: A Perspective*, New Delhi, Indian National Science Academy, 1995, p. 1.

62 *ibid.*

time, etc. Like many other texts, it also is compiled in a way of memorizing for better use of astrological and prediction purposes.[63]

Kerala school of Astro-Mathematics

It was in the above mentioned socio-cultural context that these knowledge systems and Brahmanical cultural traditions found its way and spread among the upper strata of society in Kerala.[64] Historically a change in Kerala by around 9th to 11th centuries of Common Era has been marked in the social, political and cultural realms by different historians dealing with Kerala. It was connected with these changes that the aforesaid Brahmanical knowledge tradition established its sway over Kerala. Therefore, the traditions with wider acceptance in their respective cultural realms could naturally begin to attain predominance in Kerala as well. Their astrological observations and calculations gave birth to a complex system of arithmetics with calculations different characteristics of spherical objects, calculation of the exact position of heavenly bodies, accurate prediction of eclipses, etc. required well developed arithmetical calculations. This gave birth to a tradition of experts presumably in the network of disciples of Samgamagrama Madhava. This mathematical tradition is being called as Madhava School of mathematics or even Kerala School of astro-mathematics, though there is no clear evidence to prove the existence of such a school in any stage of the history of Kerala. The author of *Grahachara Nibandhana*, Haridatta, seems to have been relevant

63 It is one of the chief features of the traditional knowledge that they were all memorised and handed over to succeeding generations in the rote form as hymns leading to addition, correction and revision of this knowledge. It was later on these traditions got compiled and textualised, leading to variations in texts as well as the survival of multiple texts simultaneously.

64 Traditionally it was held as a part of the Parasurama legend found in the 15th-century works of *Keralolppathi*, created for the establishment of the supremacy of namboothiris (claimed to be Brahmins of Kerala) socially, culturally and economically. Which narrates the story of a divine character (Parasurama) who lifted the geographical territory which included modern Kerala from the ocean, through simply throwing away his axe into the ocean, made it a settlement for Brahmins.

regarding the astrologico-mathematical tradition of medieval Kerala. He is supposed to have used the *Katapayadi* numeration system in his works.[65] Govindaswami, who wrote a commentary on *Mahabhaskariya*, a text attributed to Bhaskaacharya, a medieval Indian astrologer, was a prominent figure among the astrologico-mathematical tradition of medieval Kerala, whose disciple, Sankaranarayana is believed to have been the court astrologer of Ravivarmakulasekhara, the Mahodayapuram based Chera ruler. He refers to an observation of eclipse at Mahodayapuram and had composed a commentary for *Laghubhaskariya*. He is also believed to be the first to use *Katapayadi* numeral system in the same name.[66] One of the important astrologico-mathematicians of medieval Kerala was Madhava of Samgamagrama who is believed to have lived between 1350-1425 CE. He has given immense contributions to the field of astrology and mathematics. The only work attributed to him discovered so far is *Venuaroha*, in which he tried to locate the position of the moon continuously at an interval of about 36 minutes. Madhava had determined the dimensions of the circumference. His contributions including the Madhava series, regarding (modern) sine, cosine, etc. are argued to be the earliest attempt in the field.[67] His contribution in the

65 Katapayadi system is a method of expressing numbers through letters practiced by intellectuals, which could be used to represent even bigger numbers. However, being a complicated system, possibilities of errors are high in this system.

66 N.V.P., Unithiri, *Studies in Kerala Sanskrit Literature, Calicut, Publication Division, University of Calicut, 2004, p 189.*

67 The trigonometrical calculations had greater importance among medieval astrologers because they used this to find out the exact position of the sun and other planets in their ‘revolution’ in the zodiac. It was the geocentric understanding of the universe that was prominent during the period. The movement of nine planets including Sun, Moon, Rahu, Ketu, etc. was considered as determining the fortunes and misfortunes of the people. Therefore, their exact entry in each star group (*nakshatra*) was of higher importance for beginning any 'good or important' activity. The important duty of the astrologers was to determine the exact position of planets at every now and then for determining "auspicious" time for each deed. Thus they needed calculations of the bigger numbers, trigonometrical and algebraic knowledge,

field of infinite series expansions of circular and trigonometric functions and finite series expansion to them etc. are claimed to be before similar attempts by scholar elsewhere.[68]

Vatasseri Parameswaran, known to be a disciple of Samgamagrama Madhava is famous as the founder of *Drgganita*, replacing the existing system of calculations,namely, *Parahita*. The *Drgganitha* is said to have compiled after continuous observations of eclipses and planetary conjunctions for about 55 years.[69] Through his continuous observations, Parameswara is known to have revised the planetary parameters and attempted to compare theoretically computed positions of the planet with his actual observations. He continuously attempted to bring the theoretical knowledge with the facts he had observed.[70] Kelallur Nilakanda Somayaji had contributed much to the growth of Astrology and mathematic in Kerala. He is believed to be the disciple of Damodara, who in turn understood to be the disciple of Parameswara. His important work is the *Aryabhatiya Bhashya* (an interpretation to the *Aryabhatiya*). He describes the observational experiences of two eclipses. His *Tantra Samgraha* is dealing with various aspects of Indian astrology, in which he depicts the position of sun on the celestial sphere, solar and lunar eclipses. He has *Siddhantadarpana*, *Grahananirnaya, Golasara, Chandracchaya Ganita, Grahanadigrantha*, *Sundararaja prashnothara* and *Grahaparikshakarma* to his credit as works on astrology.

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etc. such requirements derived out of their day to day practices led to the evolution of better astrological arithmetics here.

68 Several such attempts were made by the Indologists to place intellectual advancements of Pre-modern Indian societies above modern discoveries and scientific advancements (presumably for winning the unscientific race for being first). For instance, see George Gheverghese Joseph, *The Crest of the Peacock: Non-European Roots of Mathematics,* Penguin Books, 1994, p 293.

69 Kim Plofker, *Mathematics in India*, New Jersy, Princeton University Press, 2009 (1963), p 219. this is also a work of exaggerations (like some other works of the same author) with unbelievable over statements mixed with historical facts.

70 N.V.P., Unithiri, *op cit*., Studies in… p 193.

Though these works provide nothing but an extension and application of the already known idioms of Indian astrological knowledge, their importance lie in the fact that they are the results of continuous observaions by these medieval scholars in Kerala region.

Jyeshtadeva is known for his work *Yuktibhasha* or *Ganithanyaya samgraha,* also belonged to the astrologico-mathematical tradition of medieval Kerala. His work exposes the rationale of mathematical and astrological theorems. *Yuktibhasha* presents the results and formulations of Madhava's mathematical calculations.[71] He also attempts to give details and proof for the discoveries and hypotheses of Madhava and Nilakantha.[72] Trkkantiyur Achuthapisharodi is another astrologico-mathematician of medieval Kerala. His works *Rasigolasphutaneeti Goladeepika* are prominent in the field. He has *Uparagakriyakarma* and *Karanothama*, *Jatakabharana*, *Horasarochaya* and a Malayalam version of *Venuaroha* into his credit. Another important astrologer cum mathematician of the period is the author of *Kaladipakam Balasankaram*, Mazhamangalath Sankaran Namboothiri. He has commentaries on *Muhurtapadavi* of Mattur Nambudiri, named *Muhurtapadavi Balasankaram;* on *LaghubhaskariyaVyakhya* and on *Panchabodha* as well as free works like *Panchabodharthadarpana*, *Panchabodhi* and *Ganithasara*, *Chandraganithakarma*, *Bhashasamgraha*, *Prasnasara*, *Jatakakrama*, *Jatakasara* and *Karnasarakriyakrama* to his credit.[73] This incomplete survey of the literature produced in the land of Kerala by medieval scolars not only reveals the breadth of the intellectual tradition of that period but also expose the process of reproducing and spreading the hegemonic and theoretical knowledge and social system upon the aforementioned practical skill and knowledge traditions of the people.

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71 *ibid.,* p 196.

72 *ibid.*

73 *ibid.,* p 197.

Vaidyashastra –Medical Traditions

The pre-ayurvedic medical practices in India have generally been believed by various scholars as a magico-religious. The diseases were considered as the results of malevolent influences exorcised by supernatural forces and other people with the help of these forces. Natural or material interpretations for diseases were believed to be absent. "Therefore people relied much upon magic, incantation and other rituals for curing them. To ward off diseases they used to charms, amulets and talismans."[74] Nevertheless, there were very broad herbal medical practices among the people of Kerala before the arrival of the shastra based knowledge tradition itself. They were expanded with the interference of the Jain monks who supposed to have come here along with trading groups. However, these practices varied from settlement to settlement according to the availability of herbs and other minerals and the pattern of the growth of society. All sections of the people had their working knowledge in curing various ailments in varying degrees.[75]

However, there is no evidence to prove what was the philosophical, pathological or even anatomical understanding of the ancient people regarding the human body or even had there any such emulative understandings for these people at all. In the meantime it is interesting to note that there were no hesitations for both the local practitioners and the propounders of the textualised tradition for adopting and exchanging knowledge from each other. This communication, possibly through the existence and mediation of the Jain monks in the field, led to the exchange, adaptations and adoption of knowledge with each other. This led, as

74 P. Kutumbiah, *Ancient Indian Medicine*, Madras, Orient Longmans, 1969 (1962) p. iv.

75 This will be understood in a regressive understanding of the existence of medical practitioners in all castes and some specialists in different sections of lower strata of society without being trained in or allied with the Sankritised traditions during the late medieval period.

mentioned earlier to the evolution of the Kerala system of ayurveda by the medieval period itself. Thus a distinct form of ayurveda came into existence, spread and established here. It will be understood only through a brief analysis of the system, philosophy and methodology of ayurveda.

There are ritualistic and material elements in the practices of preservation of health in the Ayurvedic system. The ritualistic elements were later begun to be called as the *daivavyashrayam* of ayurveda. The Brahmanic tradition of health caring brought to Kerala presumably with the migration of the Sanskritic textual traditions concentrated mainly in this aspect. Thus the practices of various rituals in connection with maintaining health were common in pre-modern Kerala. Moreover, the textual traditions of material interpretations of health care and ritualistic understanding were said to have spread over here. The Samhitas of Charaka and Sushruta and *Ashtanga Hrdayam* (an abridged form of *Ashtanga Sangraha*) are widely used along with local medical texts of later compilation, like *Vaidyamanorama Chikilsamanjari, Sahasrayogam,* etc. Moreover, the medical practices and researches, possibly after the interference of Jain monks, in the field also led to the advancement of knowledge in the field of flora and fauna of the region.[76]The existence of medicinal and curative practices before the arrival of the shastra tradition is also evident from the achievements in curing toxicological, pediatric and ophthalmic ailments.[77] While the material part,

76 This advancement in the botanical knowledge through medical researches is evidenced from the botanical text, compiled by practicing *Vaidyas,* under the Dutch inspiration, popularly known as *Hortus Malabaricus.* It was a text of immense illustrated knowledge of different plants and their medical as well as ritual usages. It is unique of its kind produced either during or previous to its publication all over the world.

77 Such diseases were not generally been handled by the ashtangavaidya tradition for a long period. But they were in a grown-up situation here which were treated by the local practitioners who were considered lower in the caste hierarchy of the Brahminical order. There were several families specialized in toxicological treatment for poison, pediatrics and eye diseases among the lower castes people. However, the situation changed later on and even several Namboothiri families and *Moosads (Vaidys* belonging to *Ashtavaidya*

that is, the herbal and other sorts of medication and various means of preserving health, were included in the *yuktivyapashrayam* part of the ayurveda.[78] Thus the material interpretation of body and health and practical treatment involve in *yuktivyapashrayam*.

Ayurveda views human beings as an inseparable part of nature. 'Whatever concretely exists in the world, exists also in man (*Purusha*), whatever concretely exists in man, exists also in nature.'[79] According to *Charaka Samhitha*, in the foetus, "sound auditory sense, lightness, fineness and cavity are but the transformation of the matter in its *akasha* form; tangibility, cutaneous sense, roughness, holding together of the body elements and movements located within the body are but transformation of matter in its air form; colour visual sense, brightness, digestion and heat are but transformations of matter in its fire-form; taste gustatory sense, coldness, softness, unctuousness and wetness are but transformation of matter in its water form; odour, olfactory sense, weight, stability and hardness are but transformations of matter in its earth form".[80] Thus matter in human body as in nature is in five forms (*Panchabhuta*). That is in the earth form (*Parthiva*) water form (*apya*), fire form (*agneya*), air form (*Vayaviya*) and in ether form (*akasha* or *anthareeksha*). But a substance with sense organs is conscious and those without sense organs are unconscious, (*sendriyam chethanam dravyam; nirindriyam achethanam*')[81] According to the material tradition of ayurveda,

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tradition) practicing medicine began to specialise in these fields. For instance, Channazhi Kumaran Moosad had been a specialist in Vishavaidyam and published series of articles in the field for years from the beginning of the journal and up to his death in the *Dhanwanthari* monthly published by Kottakkal Aryavaidyashala.

78 The material elements in practicing understanding health and the human body are being considered as the influence of Jain and Buddhist influences upon indigenous medical knowledge.

79 Debiprasad Chattopadhyaya, *Science and Society in Ancient India*, Culcutta, Research India Publications, 1977, p 60.

80 Quoted in *ibid.*, p 61.

81 *ibid.*, P 72.

through food we consume matter in five forms, the properties of five forms of matter in the food would transform into their counterpart in the body. According to Charakasamhitha, the transformed food is converted into two kinds of substances; 1) desirable or nourishing ones (*prasada*) which is called *rasa* (organic sap) and (2) the impure ones or waste products (*Mala*) which is called excrement. From the excrement, sweat, urine, faeces, *vayu* (air/gas), *pitta* (bile), kapha (phlegm) and the excrements through eyes, ears, nose, mouth, hair follicles and genital organs, as well as hairs on the body and nail etc. are formed.[82] While the nourishing elements of food transforms into body constitutes such as *rasa,* blood, flesh, fat, bone marrow, semen as well as five substances constituting the sense organs, the body joints, ligaments, mucus etc. Thus both these nourishing elements and excrements in the proper proportion maintain the balance of the body. Therefore the consumption of wholesome food (*hithahara*) ensures health while the consumption of unwholesome food (*ahithahara*) causes diseases.[83]

According to the material tradition of Indian medical systems, the human body is a conglomeration (*Samudaya*) of the modifications of the five elements (*Panchabhutha*). These modifications, which co-operate together to uphold the body are called *dhatu*. The body functions properly so long as the *dhatus* in it are in proper proportions (*Sama-yoga-vahin*). When the *dhatus* are in their normal measure they are said to be equilibrium and this state is called *dhatur-samya*. When their normal measure is not in equilibrium (either decreases or increases) the state is called *dhatu Vaishamya*. 'Out of the excretes (*Mala*) *Vata, pitta* and *kapha* are considered primarily responsible for all the morbidities of the body. But for the production of diseases, three things are necessary, *nidana, dosha* and *dhatus*. The *nidana* (causes) cannot produce diseases directly; they first vitiate the *vata, pitta* and *kapha,* these

82 *ibid.*

83 *ibid.*

inturn vitiate the *dhatus* and produce diseases'.[84] The vitiators of *dhatus* that is *vata, pitta* and *kapha* are called *doshas* and the *dhatus* which are being vitiated are called the *dushyas*. However, unlike Charaka who derives the *doshas* from the *malas*, Vagbhata denies that *mala* can be the cause of disease. Instead, *dhatusamya* and *dhatu-vaishamya* are considered as health and disease. Vaghbata II considered *dosha samya* as health and *dosha vaishamya* as disease. As the *doshas* are independent entities from the *dhatus*, a disturbance of the former need not necessarily be a disturbance of the latter. According to *Charaka samhitha*, tridosha (*Vatha, Pitha* and *Kapha* are beneficial to the body when they are in their normal state. But when they become disordered, they afflict the body with diseases of diverse kinds. Intelligent physicians, through correct observations, can identify the disorders of *vayu, pitha* and kapha. However, there is no difference in the basic conception of *dosha* in the *Samhita*s of Charaka and Sushrutha. *Charaka Samhita* says the 'impurity of food is excreta and urine; that of *rasa* is *kapha that* of flesh is *pitha* and that of fat is sweat in another context'.[85] While *Sushrutha Samhitha* also expresses a similar opinion; according to it, kapha is the excreted form of the *rasa*, while *pitha* is that of blood, whereas Chraka derives *pitha* from flesh.

Therefore, the emphasis in the material interpretation is on the maintenance of *dhatus*. Diseases are generated when people in health conduct themselves improperly, in respect of diet and deportment, forgetting considerations of measure and season. One endued with intelligence and desirous of maintaining health should bestow great care upon everything connected with food, deportment and practices as prescribed by a trustworthy person (*apta*) and *shastra*. Regulation concerning the daily regimen of life, *dinacharya* is to be strictly followed. Which include daily ablution, meals and diet, exercise and rest, regulation of sexual intercourse, prophylactic

84 P. Kutumbiah, *op cit.*, P 59.

85 Charaka Samhitha, I, 2-3, quoted in *ibid.*, p 67.

measures etc. A person who has lost the balance of Dhatus can regain it through medicine and a regimen of life. Treatment is adopted to perpetuate the harmony of the dhatus. Diseases are divided chiefly into two categories; curable and incurable. Curable diseases are of different kinds such as easily variable and those are curable by only difficult means.

The basic principles of ancient Indian medicine were that a physician should ascertain the curability of disease before the commencements of treatment. The treatment should be provided only for curable diseases. All kinds of treatment used in ayurveda by various schools can be grouped under two categories (1) Samshodhanam or cleaning the body of the morbid diathesis with the help of emetics or purgatives (2) Samshamanam, restoring the deranged vayu, pitha or kapha to their normal condition.[86]Treatment should be commenced soon after ascertaining the diseases is being curable as it may get strengthened and become more difficult to cure or even incurable. Sushrutha describes of six *Karyakalas* (periods of treatment) they are (1) The first in which the *doshas* are increased *chaya*, (2) *Prakopa*, doshas are deranged, (3) *Prasara*, the spread of the deranged doshas through the body (4) *Purvarupa* - the period of premonitory symptoms the period of natural/developed disease (5) the period in which the disease open out a part of the body and forms a sore.[87]

Another important aspect of material aspects of *vaidyashastra* is the art of applying implements (*shastra*) in treatment carried over during the ancient period.[88]*Salya* or *shastra* were the terms used to denote this art. The

86 Sumant B.Mehta, The *Ayurvedic system of Medicine*, Navsari, Prajabandhu printing works (self-publication), 1913, p 42.

87 Sushrutha Samhitha cited in *ibid.*, p 144.

88 They were largely misrepresented as the equivalent of surgery of modern medicine. However, it is only a process of taking out non-body objects entered in the human body, with the help of different devices called 'shastra' including blunt, forceps, etc. However, with the help of modern devices, such models of the ancient periods were depicted later on from imaginations and claimed such

term *salya* is derived from the Sanskrit root *sal* which means to remove quickly. Though Sushruta had added it with the *shastra* of general medical knowledge, it required a more clear and correct understanding of anatomy for real practice. Notwithstanding it was considered as the method of removing external articles entered in the human body and treating the wound. But with the rise of the school of Rasasiddhas, sometime during the 11th and 12th centuries many of the principles of ayurveda were denied. The term *rasa* signifies mercury, sulphur, gold, etc. and in *rasa chikitsa*, mercury and mica were used to a great extent in preference to the drugs used by Charaka and Sushrutha. The *rasa siddhas* claimed that there is no need for division of diseases into curable and incurable since the *rasa* compounds are capable of curing all kinds of diseases. They even denied the basic principles of ayurvedic medicines, such as the tri-dosha theory and the hypotheses of *rasa, vipaka, veerya* and *prabhava* etc.

As described earlier, there were very broad herbal medical practices among the people of Kerala before the arrival of the shastra knowledge and cultural tradition. They had expanded with the interference of the Jain monks who came here along with trading groups. However, these practices varied from settlement to settlement according to the availability of herbs and other minerals and the pattern of the growth of society. Therefore there were no specialist groups for practicing medicine as emerged in the later periods; different groups had a working knowledge in curing various ailments in varying degrees. It had both ritualistic and material elements that began to undergo several changes affected by the interaction, appropriation, absorption and adaptations with the textualised ayurveda or *vaidyashastra.* Thus formulated, a typical Kerala system of ayurveda, which was distinct from the vaidyashastra traditions of remaining part of India. This is evident from the peculiar therapeutic practices like *dhara, pizhichil, navarakkizhi, sihrovasti,*

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sharp and sophisticated devices were commonly used by the ancient Indian 'Surgeons'.

etc. current in this region.[89] The ritualistic elements were later began to be called as the *daivavyashrayam* of ayurveda and the material part, including herbal and other sorts of medication used for treating diseases, were included in the *yuktivyapashrayam* part of the ayurveda.

The Jain and Buddhist influence in the medical knowledge of the indigenous people also became decisive in the formation of a distinct ayurvedic tradition later on, as noted earlier. Thus the ayurvedic tradition of Kerala, reflecting its hybrid evolution was altogether a new system of medicine with clear influence and adaptation from different practices, though it continued to be a methodologically inalienable part of Indian ayurvedic tradition. The textual preference also reflected this uniqueness. The Brhatrayi (the *samhita*s of Charaka, Sushruta, and *Ashtanga Sangraha* together) and the *Laghutrayi* (the texts, *Madhava Nidana*, *Sarngadhara Samhita*, and *Bhavaprakasa* together) constitute the theoretical and therapeutic corpus of ayurveda in general. While in Kerala the Samhitas of Charaka and Sushruta and an abridged form of *Ashtanga Sangraha* known as *Ashtanga Hrdayam* are widely used along with local medical texts of later period like *Vaidyamanorama Chikilsamanjari*, *Saharayogam*, etc. The medical practices and researches in the field also led to the advancement of knowledge in the field of flora and fauna of the region as it had greater binding with the tradition of Herbal medicine.[90] Well developed medicinal and curative

89 For a detailed understanding of the system of medicine practiced in Kerala see, P.V., Krishna Varrier *op cit., Aryavaidya ....* And also see, Leena Abraham. *op cit.,* Medicine....

90 This advancement in the botanical knowledge through medical researches is evidenced from the botanical text compiled by practicing *Vaidyas,* like Itty Achuthan under the Dutch inspiration, popularly known as *Horthus Malabaricus.* It was a text of immense illustrated knowledge of different plants and their medical as well as ritual usages. It is unique of its kind produced during or previous to its publication all over the world.

practices the arrival of the shastra tradition is also evident from the achievements in curing toxicological, paediatric and ophthalmic ailments.[91]

With the spread of the textualised shastra traditions and associated culture, the contradiction between the existing practice and the newly arrived system of knowledge led to the evolution of a new system of medicine with the elements of both previous local practices and newly arrived system. Many of the practical knowledge of the local people were absorbed into them and formulated a typical Kerala system of ayurveda, distinct from the vaidyashastra traditions practiced elsewhere.[92] However, the socio-political predominance of the shastra tradition caused its hegemonic status in the newly evolved ayurveda here. The practices which culminated in the mixed up form of ayurveda, peculiar to this region as evident in wide use of indigenous herbals for preparation of decoctions(*kashayam*), *ghrtham,* etc. This is also evident from the distinct therapeutic practices like *dhara*, *pizhichil*, *navarakkizhi, sirovasti*, etc. which are also uncommon to the rest of the country.[93] Almost exclusive reliance on local plant sources for medicine wide use of herbal decoctions (*Kashayam*) prepared from local

91 Such diseases were not generally been handled by the ashtangavaidya tradition for a long period. But they were in a grown up situation here which were treated by the local practitioners who were considered lower in the caste hierarchy of the Brahminical order. There were several families specialized in toxicological treatment for poison, pediatrics and eye diseases among the lower castes people. However, the situation changed later on and even several Namboothiri families and *Moosads (Vaidys* belonging to *Ashtavaidya* tradition) practicing medicine began to specialise in these fields. For instance, Chaanazhi Kumaran Moosad had been a specialist in Vishavaidyam and published series of articles in the field for years up to his death in the *Dhanwanthari* monthlypublished by Kottakkal Aryavaidyashala.

92 Different kinds and varieties of *Kashaya* (herbal decoctions) used widely among the local medical practitioners of and later adopted by the Kerala version of Ayurveda is a clear evidence for this.

93 For a detailed understanding of the system of medicine practiced in Kerala see, P.V., Krishna Varrier, *Aryavaidya Charithram*, Kottakkal, Kottakkal Aryavaidyashala, 1904. Also see, Leena Abraham. 'Medicine as Culture: Indigenous Medicine in Cosmopolitan Mumbtai', in *Economic and Political Weekly,* Vol. XLIV, No. 16, April 2009.

plants which is said to have unfound in the Ayurvedic texts of Charaka or Sushruta, extensive use of ghee (*ghrtam*) elaborated diet regimens (*Ahara-pathya*) etc. are peculiar to the ayurveda developed in Kerala, which indicate to the existence of flourished curative practices prior to the arrival of textual traditions. The medication specially used in Kerala Ayurveda such as *Vayugulika, ilaneerkuzhambu, Dhanwantharam gulika, Karutha gulika* and various oils, kuzhambu are said to be peculiar to Kerala, which indicate towards a well developed knowledge of herbal medication to the people before the arrival of vaidyashastra.[94]

The treatise on the treatment of poison, *Lakshanamrta* is another evidence for establishing the pre-shastra vaidya tradition of Kerala. The importance was given to Buddhist texts like those of Vagbhata, Nagarjuna, who is famous for the works, *Rasavaisheshikam.* Several texts composed such as *Vasoorimala, Mahasaram, Yogasaram,* etc. help to understand the difference that the earlier traditions have with the Vaidyashastra tradition. Even though a north Indian text, *Bala Samhitha,* had not been a relevant text there, while in Kerala several of yogas mentioned in it had wider acceptance such as *Balamritha Rasayanam.*[95] Almost exclusive reliance on local plant sources for medicine wide use of herbal decoctions (*Kashayam*) prepared from local plants which do not find mentioned in the Ayurvedic texts of charaka or sushruta, extensive use of ghee (*ghrtam*) elaborated diet regimens (*Ahara-pathya*) etc. are the peculiar to the ayurveda developed here which indicate to the existence of flourished curative practices prior to the arrival of textual traditions. *Arogyakalpadrumam,* a pediatric text of Kaikkulangara Rama Varrier also indicate towards the special treatment practices of Kerala. 'Sahasrayogam' is a completion of traditional medicine in Kerala contains several *yogas* (medicines) including *Kasthooradi Gulika,* Dhanwantharam

94 P.K., Varrier, *Padamudrakal: P.K. Varrierude Theranjedutha prabandhangalum Prabhashanangalum*, (Mal), (Ed., K.G., Paulose) Kottakkal, Publication Department, Kottakkal Arya Vaidhay Sala, 2002, p 118.

95 P.K., Varrier, *op cit.,* p 18.

gulika, Kombanjadi gulika, Ilaneerkuzhambu and some regional medical plants like *Karalayam, Mukkutti, cheroola,* etc. Pre-modern Kerala had a lineage of peculiar treatments like *kalarippayattu*, giving importance to *marma chikilsa*, maternity carings, *uzhichil, balachikilsa* (treatment for children), *netra chikilsa* (treatment for optic disturbances) and various treatment for other diseases which were distinct and mainly practiced by non Brahmanic vaidyas especially those of lower in caste hierarchy.[96]

Ashtangahrdaya has been the most followed and largely copied, translated and annotated work in the ayurvedic field in Kerala. This text was not merely a copy of North Indian practices, instead had regional adaptations and localized practices in it. *Pathyam* by an anonymous author, *Chikilsa Manjari* and *Kairali* by Pulamanthol Mooss, *Vakya Pradeepika by* Alathiyoor Parameswaran Namboodiri, etc. are commentaries and versions of *Ashtanga Hridayam* popular all over Kerala. Moreover there are several other works such as *Sarartha Darppanam, Bhavaprakasham, Ashtangahrdayam Bhasha* of P.M. Govindan Vaidyar, *Hrdayapriya* of Pachu Moothath, *AshtangaSaara, Yogamrtham, Sarachandrika,* an interpretation of *Madhavanidana* by Paravoor Keshavanasan, and his commentaries of '*Sarngadharam*', '*Bhavaprakasham*', 'Bhaishajyaratnavali, etc. are highly accepted and widely spread works on ayurveda by Malayali scholars. Moreover, there are several independent works such as *Rasavaisheshika Soothram* of Bhadanda Nagarjuna which deals with Philosophy of medical knowledge was translated by Nrasimhan. *Vaidya Manorama* is one of the popular Sanskrit works on ayurveda from Kerala. This work has the Panacea and other medical practices popular in Kerala. *Dharikalpam* along with *Raja Marthandam* was published with an interpretation by Attupurath Imbichan Gurukkal. *Alathur Manipravalam* is said to be a work of one of Alathur Nambi, *Sindoora Manjari* is a work of Thaikkattu Narayanan Mooss dealing with metallurgical knowledge of iron, copper, zinc, mercury,silver

96 *ibid.*, p.123.

etc. *Arogyakalpa drumam* as stated earlier is a work on child diseases. It is filled with peculiar knowledge of ancient Kerala written in Sanskrit.

It is common sense that with the advent of Brahmanic culture, eight families belonging to the newly arrived Brahmanic tradition were made specialised in medicine and their medical practice began to be called as Ashtavaidya tradition.[97] However, there is a wide range of literature, produced here during the medieval period which includes *Dharakalpa*, *Vaidyamanorama*, *Chikitsa krama*, *Sahasrayoga*, *Yogaratna*. *Alathur Manipravalam*, attributed to Ashtavaidyan Alathur Nambi is supposed to be one of the earliest works in this field. The proto-toxicological text *Lakshanamrta* had wide popularity here and it had a Malayalam translation as well. Narayana's *Tantrasarasangraha* is another work with rich popularity with its first chapter dealing with toxicology and known as *Vishanarayaneeya*. There are two commentaries for this work, one by an anonymous another and the other namely *Manthravimarshini* by Vasudeva of Svarnagrama.

There were many Malayalam works, dealing with vaidyashastra composed during and 19th centuries. Nedumpoyil Kochukrishnanasan's *Marmachikilsa Bhasha* is one among them. Pandarathu Narayana Pilla wrote his masterpiece *Vaidya samgraha* (or *Chilaitsakarama*) during the 19th century. One of the important works which dealt with almost all aspects of treatment was Vaikkathu Pachumoothath's *Hrdayapriya*. He had also produced *Shukhasadhaka* dealing with the subjects dealt in *Ashtangahrdayam*. Similarly, Perunnalli Krishnan Vaidyar produced several works in ayurveda. Apart from translating a major portion of *Ashtangahrdayam* into Malayalam he also had produced *Sarartha darpana, Suthra Sthana, Shareerasthana, Nidanasthana, Kalpasthana, Chikilsasthana,*

97 This myth of ashtavaidyas appointed to treat people of Kerala is a part of the Parashurama legend noted earlier. This myth is used for the maintenance of Brahmin (people enumerated as Namboothiri caste claimed to be Brahmins of Kerala) supremacy through out its history.

Utharasthana, etc. Another important author in Ayurveda was Kaikkulangara Rama Varrier who had composed several works on the subject like *Arogyakalpadruma, Balachikitsa, Vaidyamrta Tarangini, Netrachikitsa* and *Bhavaprakasha, a* commentary on *Ashtangahrdayam*. Uppottukannan was another litterateur on ayurveda who has two commentaries on *Ashtangahrdayam* one in Malayalam and other in Sanskrit in his credit they are Bhaskaram and Yogamrta respectively. The continued interest in the field of ayurveda resulted in the releasing of several books mainly in Malayalam and some in Sanskrit during the late 19th and early 20th century as well.

In short, the *Vaidya* traditions of pre-modern Kerala had the elements of both material aspects and the ritualistic part of medical knowledge. While the popular tradition continued to be predominantly materialistic, with clear stress on the herbal medicinal practices along with the ritualistic elements tanthric practices.[98] However, the elite tradition of medical knowledge and practices were predominantly ritualistic. However, both these traditions were not completely distant from each other, as the holistic systems of knowledge and practices. The natural philosophy and depending elements continued to be more or less the same. Therefore easy assimilation of knowledge and practices in both systems was quite possible as evident later on. By the end of the medieval period, the border between them had become invisibly scanty. It was in this context that the European and other foreign attempts to learn and translate the knowledge embedded in the traditional culture and social life.

Similarly, the herbal medical knowledge of the local people was highly extolled by different travelers and colonial and commercial visitors of Kerala in the course of its history as noted earlier. During the emerging period of various fields of modern science, the knowledge forms collected from the indigenous people along with their products have contributed much. It is

98 It might be due to this fact that the Dutch governor and scholars had selected Itty Achuthan, a practioner of the popular tradition of medicine for detailed knowledge on herbal lores.

evident from the fact that during the 16th century Garcia De Orta, the Portuguese physician had reported about the vividness of the knowledge of Indians including their herbal lore. His Colloquies on Simples drugs and medical substance quotes a conversation between himself and Ruano, a Portuguese Physician.[99] In the conversation, Ruano says that he came with a "great wish to know of the great medicinal drugs and other medical simples which are found in various languages, various curative practices of Indians using these plants".[100] He was also confident that the people and Orta himself being truthful will provide him with all relevant knowledge. One of the chief sources for this knowledge and practices of the herbal medical system is the text as well as the process and method of compilation of the frequently quoted *Hortus Malabaricus,* cited earlier. This work in 12 Volumes compiled between 1678 and 1693 by Hendrik Adrian Van Rheede Tot Drakestein and his associates including Europeans, Malayalis and some other Indians etc.[101] Apart from its historic importance, as has been widely acclaimed by different scholars and historians, this work is scientifically as well as methodologically important.[102] Unlike the previous similar works of Garcia De Orta's *Coloquios Dos Simples e Drogas Cousa Medicinas da India* (1563) (sic) and Christobel d' Acosta's *Tacardo de la Drogas y Medicine de las Inia Orientalis* (1578) (sic), published earlier, *Hortus Malabaricus* provides detailed understanding on the medical, herbal and socio-cultural conditions of Kerala during those

99 For details and conversation see, V. Ball, 'A Commentary on The Colloquies of Garcia De Orta on The Simples, Drugs, and Medicinal Substances of India-Part I', in *the Proceedings of the Royal Irish Academy* Vol.I, 1890, pp. 381-415.

100 *ibid.,* P. 388. (assertions added)

101 For a clear and better translation of this whole work in English see, K.S.Manilal, *Van Rheede's Hortus malabaricus: With Annotations and Modern Botanical Nomenclature; English Edition,* Thiruvanathapuram, University of Kerala, 2003.

102 It gives a more or less scientific description, life size illustrations, medicinal and other uses of the plants authentically. It also classified plant according to the species and gave detailed medical knowledge of the local people regarding these plants, diseases and preparation of medicines with utmost clarity and according to their belief and practices.

period.[103] *Hortus Malabaricus* was widely translated and published in various European and Indian languages reiterating the historic importance of the work in the colonial context contributing to the growth of botanical and medical sciences.

Architecture

With the spread of sedentary agriculture and downward migration of people from the hilly terrain to the slopes and valley, the need for construction of abodes increased. However, the geographical and climatic conditions led to suitable ways of construction. Being in the equatorial region and large part of the land being hill slopes people had to develop a lifestyle harnessing these geographic and geomorphological features. The style of construction of houses including mud walls, thatched with grass, etc. evolved here were suitable for the topographic features and geographical including climatic conditions of the region.[104] Though there were references to carpentry, works for construction and sculpturing is not found mentioned in them; instead, the reference is to the chariot making and such other works. The presence of carpentry indicates the existence of the knowledge of timber and wooden craft among the ancient people. Later on the knowledge regarding various trees, their durability and strength were evolved here and people began to use such products made of wood for their day to day life. Moreover, the style of house

103 *ibid.,* p. XV.

104 The absence of any material remains of fortifications or constructions of bricks or stone pieces belonging to ancient period may not necessarily be due to the absence of fortifications or skill to carve out them from the rocky regions. But the possibility of fortifications with mud wall (as evident from some ancient place names) suitable for the region may not necessarily survive for a long period say for thousands of years. The argument of, absence of some skills to extract stone pieces contradict with the evidences of megalithic burial practices. Many remnants of the megalithic grave cultures including cists, stone coverings of urn burials etc. used larger stone pieces extracted from granite and laterite rocks abundantly available in Kerala, especially in the upland regions. It was only after the arrival of the Portuguese and other European powers that fortifications with stone and constructions with bricks have started in Kerala.

building during the early period might not have required any mastery in wooden works. The styles of houses mentioned in these forms of literature are the *il, kurambai, manai, kudil*, etc. which were thatched with straw or rushes. However, with the establishment of shastra traditions doors, windows and other openings were developed indigenously combining safety and aesthetics.

However, with the establishment of the hegemony of the shastra traditions and Brahmanic culture, there were marked variations in the field of construction as well. They introduced new styles of construction along with compiling, theorizing, codifying and organising the existing knowledge and practices on house building and other constructions of the local people.[105] Thus such codifications led to the production of a wide range of literature in this field in both Sanskrit and Malayalam. The medieval *shastra* traditions indicate a well-established construction style and developments in *tachushastra* (the shastra dealing with building and other constructions). *Saivagama* texts are considered as the earliest of the works on architecture, finding influence among the *Shastraic* literature of medieval Kerala. A summary of these texts can be seen in *Prayogamanjari,* a medieval text on architecture. *Isana Saivagurudeva Padhathi* is a larger work dealing with various aspects of such knowledge traditions. *Kriyasara* an architectural treatise by Puthusseri Ravi Namboothiri and its commentary by Puliyannur Narayanan Namboothiri are widely accepted Tanthra texts or medieval Kerala. The text deals with the construction of temples, worship and festivals to various deities. *Vimarshini* and *Sheshasamuchaya,* attributed to Shankara are also works related to temples and worship of different deities including

105 However, *Ainkudy Kammalar,* the five groups of castes engaged in (1) Iron smithy (2) metal works (3) gold smithy (4) stone works (5) timber works (carpenting) evolved in ancient social formation continued to be the actual professionals of the pre-modern society. This led to a clear amalgamation of existing practices with new knowledge. However, the hegemonic caste system regulating all sorts of human life acted as a hindrance in the assimilation of the reorganised theorised and sanskritised knowledge in the actual practical experience of common people.

Brahma. *Tanthrasamuchaya,* the magnum opus of Chennas Narayanan Namboothiri is considered as the widely accepted pioneering work in the field of architecture in Kerala.[106] He is believed to have written another work called *Manavavaastu Lakshana*. *Tanthra Samuchaya* has been widely copied and several commentaries and annotations on this work have been spread among the traditional elite families. Kuzhikkattu Maheswaran Bhattathiri's Malayalam commentaries on *Tantra Samuchaya* have been widely adopted by people. Sankaram Bhattathiri's *Kriya Samgaraha,* Neelakanthan Namboothiri's *Kriyalesa Smrti,* Poonthattam Putavar's *Putayur Basha*, etc. are some of the important *tanthra* works of medieval Kerala. Apart from the constructions of houses and temples, *Tachushastra* also deals with different calculations of sculpturing and idol-making out of wood,[107] which was inseparably mixed with the Varna hierarchy of Brahmanism indicating its later origin. There were specially identified trees prescribed with clear hierarchical order for carving out idols of each deity.[108]

Sanskrit texts *Prayogamanjari,* composed by Ravi Namboothiri is believed to be the earliest work on *Tanthric* matters in Kerala. This work is also known as *Shaivagama Sidhantha Sara*. It describes various rites to be performed before and during the construction of temples. It also describes various measures of rejuvenation (*jeernodharana vidhi*) of decayed parts of a building. *Mayamatha* is a detailed description of various aspects of Indian architecture it includes house building, construction of palaces, planning of villages, towns and cities, laying of roads, construction of vehicles and

106 This work had higher influence up on the architectural knowledge of the elite sections of the society and *Vaastu* in general which penetrated to the lower sections of the society by late medieval period.

107 The Bhagavati images of Kodungallur temple, Parvathi image of Thrissur Vadakkunnatha temple and the idol of Krishna, Balarama, and Subhadra of Puri temple are made of wood, indicating towards the importance of carpentry in medieval period.

108 This gradations seems to have been based on the quality, strength, thickness, colour and usages of trees. Thus the holistic understanding extended to nature along with people is evident from such accusations.

furniture and various aspects of the installation of deities in temples. Many scholars argue this work to be South Indian in origin due to its terminologies and *Shaivite* and *agamic* connections being underlined by various usages.[109] Moreover the manuscript of this work is received only from South India. *Mayamatha* has been used as an authority in many other architectural treatises. *Eeshana Gurudeva Padhathi* also known as *Tanthra padhathi* is an elaborate treatise on different aspects of *Tanthra* including the construction of temples, other aspects of architecture, medicine, the consecration of idols etc.

Tanthra Samuchaya (of Chennas Narayanan Namboothiri) is a work in 12 chapters (*Padalam*) giving a detailed description of architecture and worship. It deals with rituals connected with seven deities it describes various processes including rituals for the selection of site, construction of temples and various other aspects and features of temples. There are two commentaries for this text *Vimarshini* and *Vivarana*. Along with *Manushyalaya Chandrika*, there is another *Develaya Chandrika* attributed to Chennas Narayanan Namboothiri based on available commentaries to this work. As *Manushyalaya Chandrika* is about the construction of human abode *Devalaya Chandrika*, as the name denote is about the construction of temples. As in many other works, this also starts with the selection of the site for the construction of a temple and the ways of consecrating the selected spot and various ways of decorating and constructing different parts of the temple are described in this work. However, *Manushyalaya Chandrika* seems to indicate a clear shift in the socio-political situation as it is the first work directly dealing with the construction of human abode. There is another name *Manava Vaastu Lakshanam* ascribed to this work by some commentators. This work is considered as the extension of the application of *Tanthra Samuchaya* to human abodes. The work deals with various topics such as qualifications of the land, orientation, traditions and position of

109 S.A.S.,Sharma, "A Survey of Works Relating to Kerala Architecture", in N.V.P., Unithiri, ed., *Indian Scientific Tradition* , ibid., pp 225-244.

houses, *grahalakshana*, the height of buildings, measurements, various types of dwellings, special features of palace, etc.

Thirumangalathu Neelakandan Namboothiri also has composed work named as *Manushyalaya Chandrika*, as mentioned earlier. This work has been found as a reference manual to traditional carpenters in Kerala. It deals with various aspects of house construction, including the boundaries of a compound, the site for building houses, the height of the basement, the pillars and their measurements, the rafters, the underground cellar, cowshed, bathroom, kitchen, the rest house, etc., are discussed in details. There are references to the method of fixing rafters, arranging tiles on the roof.[110] Placing doors and frames of windows etc. are described with clarity. Different shapes and measurements for pillars and their basements are explained with utmost clarity. The importance given for the minute levels of measurements makes this work peculiar in the history of Kerala architecture. It introduces 8 different varieties of *Kols* (a unit measurement) with slighter variations in length. All these indicate the increasing relevance of a group called *Tanthri* for prescribing architecture and construction as well as maintaining traditions.

Another important work on architecture flourished in Kerala is *Vastuvidya* by an anonymous author. Some of the different aspects were found discussed in the text such as qualification of the professionals required for the construction, characteristics of the land, orientation, doors, *Vastumandala*, gateway, description of the courtyard and it measurements, auspicious season for construction, proportion for rafters and allied measurements, etc. are found discussed in this text. Such is the utility of this text that it is being used by generations of artisans as a manual in house

110 In spite various claims of ascribing earlier date to this work, this description hints to a later origin of the work after the establishment of tile factories and the spread of such a culture here.

building. Another major work widely used and commented in Kerala in this area is *Shilparatna*, an encyclopedic work by Sreekumara.

Apart from these Sanskrit texts, there are other works on architecture in Kerala written either in Manipravalam or Malayalam. *Grhanirmanapadhathi* written by Parakkal Krishna Warrier provides a detailed sketch and plan for the construction of houses. *Kettidangal,* another work on Kerala tanthra and architecture refers to new trends and improvisation of earlier rules is successfully attempted in this work. This work is an attempt to prepare rules for the construction of different geological and geographical terrains. Free flow of natural light and air are the chief attractions of these styles

There were some other works on various technical branches composed during the medieval period. They deal with various subjects including war techniques, elephantological and oceanographic knowledge, jurisprudence, etc. For example, *Kautaleeyam Bhashagadyam, Ranadeepika, Kumaraganaka,* etc. are various works written on different subjects including war techniques. A famous work in elephantology namely *Mathangaleela* was authored by medieval scholar Tirumangalathu Neelakandan Moosad. Mazhamangalam Narayanan Namboothiri's Vyavahara Mala is a widely acclaimed work on jurisprudence. Another interesting work of medieval Kerala is 'Vetikkampavidhi' dealing with various aspects of fireworks A.R. Rajaraja Varma's *Bhoogolavistrthi* etc. extols the knowledge tradition evolved here after the migration of the Brahmanic culture into socio-cultural realms of Kerala.

In the light of the theorisations of Joseph Needham, two considerations on Indian knowledge traditions become relevant. One is regarding the social and cultural conditions and the class characteristics of these knowledge traditions and the second is the comparative reluctance of these richer and vivid traditions to progress themselves into more advanced and falsifiable

scientific knowledge.[111] There were four presumable historical reasons behind this situation like the textualised, accepting some basic texts (*Grantha*) as the foundation of all reliable knowledge during the ancient period itself, and the assumption of lineages of scholarly traditions by attributing all this knowledge and texts to some seers for asserting their authenticity. Thirdly the mechanical reproduction of knowledge and practices through kinship labour relations (*kulathozhil*) leading to the establishment of the caste system; the fourth, more important and allied to the third reason was the separateness of the predominant ideology from practice.[112] Thus these richer knowledge and intellectual traditions of ancient India owing mainly to external reasons lost its vibrancy and adaptive character by the ancient period itself.[113] Thus it was these superior characteristics that were spread and established its hegemony throughout India and abroad during the medieval period. Therefore it could establish its theoretical and practical sway over the other intellectual and practical traditions with the establishment of political and cultural hegemony.

Conclusion

The geographical and socio-economic conditions of pre-modern Kerala required its people to develop a lifestyle coping with the natural and social environment. Thus evolved, different systems of practical knowledge in accordance with the geo-morphological and social conditions with clear

111 Though some of these questions are attempted to problematise in the forthcoming chapter the question is contextually indicated here.

112 The *Varnashram Dharma* clearly divides the profession and activities along with taboos to each class, either elite or common people. Based on this a more rigid division was made among each caste groups. The knowledge instructed and derived from above thus became unchallengeable and rigorously forceful practical system. Therefore practical corrections and falsification became very much complicated later on.

113 This can be argued by tracing the track of similar traditions or those traditions rooted in ancient Indian systems advancing further in some other socio-cultural contexts. For such details see A. Rahman, Ed., *History of Indian Science, Technology and Culture: AD1000-1800,* New Delhi, Oxford University Press, 1999.

regional variations. However, all these had undergone several changes, restructuring, and redefinitions accordingly, these flexible and uncodified practical knowledge traditions were highly adaptive. With the increasing inter-cultural interactions and exchanges, there were unprecedented changes analogous to paradigm shifts in the socio-economic and political conditions. These changing conditions demanded further advancements in production, distribution and communication, etc. Thus they required much-advanced knowledge in different fields including agriculture, calendar, calculations, medications, predictions of seasonal changes, stable houses, animal husbandry, etc. Thus knowledge from all available sources and familiar cultures were adopted into the knowledge system by the ancient people. However, with the establishment of the Brahmanic predominance in the socio-economic and political life, their allied shastra knowledge system with the characteristics of unquestionable commands (*shasana*) began to be the hegemonic intellectual tradition of this region as well. Notwithstanding this knowledge had made required adaptations and redefinitions within the methodology, sufficient for getting established here. However, the allied caste system and social hierarchy distanced the common workers and practical labourers from the hegemonic system, whom these traditions were got extended through gradual infiltrations. Therefore, there existed different systems simultaneously among different sections of people. This multiplicity of socio-intellectual traditions continued more or less unquestioned until being challenged by European colonialism and capitalism after industrial revolutions. However, as a response to these challenges, a reinterpretation of tradition made revitalisation of these traditional cultures.[114]

114 During the anti-colonial nationalist movements this psyche had been interpreted and raised as a unifying factor, required for mobilising the people against the foreign power all over India. Thus by this time a national inclusive culture bringing various strata of the society together was inevitably imposed up on the nation. Thus the knowledge culture interpreted in the orientalist perspective became an umbrella system of the nation as a whole.

CHAPTER II

SCIENCE, TECHNOLOGY, COLONIALISM AND HISTORIOGRAPHY

Introduction

The search for better conditions of life led to the intercultural encounters and familiarity of different knowledge systems in different parts of the world. Thus the demand for reforms in social, religious, knowledge and politics began to emerge in different parts of the world. Thus inter-cultural exchange and translations of knowledge, redefinition of social and religious systems led to the evolution of more sophisticated knowledge and social system leading to the emergence of modern science. This process was not confined to any particular culture or continent; instead, it was a universal phenomenon taken place at different chronological times. Thus there were wider possibilities of exchange and subsequent redefinition of knowledge towards the end of the medieval period. These inter-cultural intellectual encounters and requirements of better possibilities during the growth of capitalism led the exchange, redefinition and translations of knowledge among different cultures, leading to a new social formation. This process of redefinitions and translations led to the scientific revolution. Therefore, it was not a process of knowledge flow from the core to the periphery or a superior culture to the inferiors. In India, the process of redefinition and translations of knowledge and cultures at some level had started by the medieval period itself. This gave birth to several peculiar literary, cultural and social forms. As a part of this evolution, several ancient literary and cultural forms were redefined and recreated, leading to the emergence of comprehensive knowledge. However, by the beginning of European colonialism, such possibilities of redefinition and translations had given way to transplantation of technology and culture along with the capitalistic social system here. Even

the demands from the Indian middle class for the inculcation of modern knowledge were not accepted. Thus the colonial and capitalistic mediation closed the possibilities of an intellectual encounter in India.

The European renaissance and the subsequent industrial revolution brought about revolutionary changes in socio-economic conditions of the world leading to rapid growth and spread of methodological shifts in knowledge causing the emergence of modern science. It reflected in almost all spheres of human knowledge and practice. By discarding the geocentric conception of the universe, the earth began to be understood as revolving around the sun on its axis.[1] Similarly, different conceptions of atmosphere, heavenly bodies, space, galaxies, etc. had undergone drastic changes.[2] Human position in the universe has been relocated; the ladder of racial gradation was questioned and became restructured, if not destroyed. Scientific rationality began to be considered an arbiter of accepting, believing and rejecting things. Serious questions were posed against hitherto accepted and believed phenomena. Thus continuous correction and updating of knowledge gave a new dimension to the basic idea of ultimate truth and given sacred or textual knowledge.

However, all these were not changed at a dramatic speed nor did all people accept these new phenomena. This challenging of traditional lore was

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1 Though many of the ancient astrologers including Aryabhata in India had claimed the knowledge of earth's rotation in its own axis, what make them different is the systematic character and methodological accuracy they lacked in comparing with modern science. For an understanding of the points of differentiation of modern science with previous knowledge, see Leslie Sklair, *Organised knowledge*, London, Paladin Books, 1973.

2 It has not been attempted here to argue that with the emergence and spread of modern science, people all of a sudden realised the nature, structure and motions in the universe. But the point here is that the intellectual predominance of the previous world view was destroyed. Anyhow, the traditional understandings of the universe continued, sometimes more vigorously, among a larger section of people. But their number decreased gradually though did not vanish completely.

a universal phenomenon taken over by various agencies in different chronological times.[3] When the merchant capitalism gave way to industrial capitalism this new phenomenon and its instrumentality began to spread, interact, redefine and influence various intellectual traditions of the world. The practical application of science such as various technologies and medicine, etc. as well as the humanistic outlook of the world in general and knowledge in particular accelerated the growth of scientific knowledge and its methodology.[4] The changes in socio-economic and political spheres also gave an impetus to this growth. However, counter narration and rediscovery of the lost dignity of religion, god and divine knowledge became quite common and led to a complex social formation including the elements of different cultural and social systems. Several agencies had played their respective roles in this transformation. However, scientific and instrumental rationality, as well as material outlook, began to receive predominance as an arbiter in the adoption, rejection or any other critical position towards knowledge. Therefore every standpoint including the medieval world view, religion and god had to be justified in materialistic and rational points.[5] Thus an overall change was caused by the growth of scientific rationality in the world. It reflected in almost all realms of human life including socio-cultural, political, and economic spheres.[6] Thus the attempts of democratisation and secularisation of

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3 The concept of Oecumenical Science put forth by Joseph Needham and developed later on by many other scholars provides a reliable solution to the current problem. For an understanding of the ecumenical growth of science from the experiences and needs of the people in the Indian context, see S. Irfan Habib, Dhruv Raina, (eds.,) *op cit., Situating the History of Science...* they had attempted a critical contextualisation of the concept of Oecumenical Science in Indian history.

4 Robert Mandrou, From Humanism to Science, ……..

5 As explained in the previous chapter, rationality or materialism are not new concepts special to the modern world. But scientific rationality and its systematic material view point are distinct and peculiar to the modern period, evolved after the emergence of modern science.

6 However, this dissertation is not intended to be a survey of various subjects and knowledge emerged after the scientific revolution. Instead it wishes to focus on the changes in general conscience and scientific temper.

the world were the results of the application of scientific rationality and its methodology in practical and theoretical worlds. In this process, scientific knowledge and discoveries played a crucial role, at least that of a lubricant. These changes in the history of human knowledge were more or less reflected in the writings, paintings and all other expressions of the modern period. Humanism began to be one of the leading ideas of the age accompanied by reason, as they were more or less adopted by capitalism, the hegemonic socio-political system of the period all over the world. This could challenge many of the existing dogmas and put human endeavor at the zenith and that in turn culminated in the disintegration of different kinds of knowledge systems that dominated the world until then. For instance, the Catholic Church controlled the social motions until then began to lose its sway over society and knowledge in Europe and other parts of the world. It began to be replaced by the contributions from different cultures and welding up a new and critical knowledge system. So was the case of other hegemonic institutions all over the world.

Various agencies including colonialism, capitalism, industrial and other mechanisation, anti-colonial and democratisation movements, etc. had played their respective roles in spreading the changing socio-political and intellectual culture worldwide, either intentionally or unintentionally and indirectly. Printing, publication and subsequent democratic debate culture was significant in the realisation and spreading of the changes. Thus the mobility caused by the scientific rationality was overwhelming and ecumenical. However, it was not a single-dimensional process, the growth, as well as the spreading of scientific knowledge, was a clear process of exchange, redefinition, adoption, and correction. Therefore there is no meaning in claiming Euro-centrism or west-east antagonism in the origin, growth, and affiliation of modern science and its world view. All cultures of the world have their unscientific past, similar or unequal antagonistic approach towards modern science and its rationalities and counter mobilisation against it. However, it is a fact that science, rooted in all over the world had sprouted in

the European continent due to historical reasons.[7] Several cultures including Indian and Chinese had well-developed knowledge systems before the emergence of modern science, but it was not merely a reproduction or continuation such pre-modern European knowledge or world view that led to the emergence of modern science. Anyhow all these cultural and methodological differences should not be a hindrance for accepting the ecumenical character of modern science, its rationality, and world view. However, science has also been easily used by both capitalism and colonial endeavors for expanding their cultural economic and political superiority as well as hegemony and justifying their political intrusions and subsequent exploitation. This process of appropriating science as a tool by colonial and allied capitalistic forces led to the growth of counter narration and opposition against modern science. This, in turn, led to a complex process of redefinition and democratisation of modern science and its methodology.

The curiosity to know details of the world around and people themselves is the foundation stone of any knowledge in all cultural traditions. But as attempted to brief in the previous chapter, this curiosity is not confined to the modern period, it was there among the people of ancient cultures as well. However, the curiosity assisted by a clear and well-defined methodology and process of investigation through posing questions like 'what', 'how', and 'why' to the everything around gave birth to modern science. Thus the

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7 Joseph Needham considers the presence of a universally applicable natural law, though derived out of the presupposition of a grand designer behind the creation and maintenance of the system of universe led to the growth of natural science. However, Historians of science like Dhruv Raina, S. Irfan Habib etc. though generally accepting Needham's decentring interpretation of science, doubt his own approach towards modern science as the invention of the age of revolution as against Needham's basic conception of *Oikoumene* and limiting the history of various disciplines to their European tradition of past 300 years. And thereby undermining the efforts of medieval people like Ibn Ezra or Ibn al Muthanna etc. for details see, Dhruv Raina, S. Irfan Habib, 'The Missing Picture: The Non-emegence of a Needhamian History of Science in India',in S. Irfan Habib, Dhruv Raina (eds.,) *op cit., Situating the History of Science…,* p. 283-284.

relevance of modern science lies in the clear methodology of enquiring the world around. Therefore, science can be defined as verifiable and continuously falsifiable knowledge on natural phenomena based on observation, experimentation; and distinct from all previous knowledge and systems either valid or invalid. Therefore it is a new phenomenon and a revolutionary break from all previous knowledge. However, this "revolutionary character" of scientific knowledge does not invalidate the history and process of evolution of its methodology.[8] Science have a well-spread network of roots in various Pre-modern or even ancient cultures including Greco-Roman, Indian, Chinese, Mesopotamian, Egyptian, etc. However, this knowledge and concepts of people are not scientific in themselves. Instead, they, being the results of the lived experiences of the people, had undergone several changes and corrections throughout history. Therefore many of their understanding and observations may stand valid in the scientific experiments as well. Thus the 'Euro-centric' argument of scientific emergence, held by both protagonists and critics of modern science proves to be baseless. Because every society, however, primitive it is, would develop the knowledge and myths for the subsistence of the people in suit to their geopolitical, cultural and economic circumstances. This knowledge evolves and transmits and spreads gradually through generations with historical changes and alterations in them.

Renaissance

The Catholic Church welded together their religious doctrines and some of the existing predominant philosophies and ideas on life, society, universe and formed a Christian system of knowledge in the beginning. This blended religious doctrine replaced all other systems and became the

8 The concept of revolution in science is accepted from the work of Thomas Kuhn, *op cit., Structures....* However, the present dissertation keeps a critical position towards many of the arguments raised in this book. The concept of revolution in science was later developed by I. Bernard Cohen, in his *Revolution in Science*, Cambridge, Harvard University Press, 1985.

hegemonic and unquestionable knowledge in Europe.[9] This control over human thought and knowledge began to fade after the 15th century C.E. The chaos created by socio-economic deterioration and*Black deaths* during the 13th century had shaken the European societies. It was in this situation that the Turks captured Constantinople in 1453 leading to the arrival of competent teachers from east to the Western Europe, who were not bound to the papal supremacy and influenced by different traditions of knowledge from various parts of the world in their availability then, and rediscovery of various manuscripts.[10] The political situations, commercial capitalism and competition and rivalry among European elites including rulers ended in the coming together and direct contacts of various peoples of different continents. Acquaintance among peoples of different social, religious and cultural situations brought human beings at the centre of thought. It culminated in the growth of the idea of 'humanism' which altogether changed the history of humanity. With the new means of overseas expeditions, knowledge and culture of different parts of the world were mutually exchanged.[11] Thus

9 However, such an organised religion controlling socio-political and intellectual life of people was unfamiliar to other cultures including India, where generally, predominant system of knowledge were those patronised by the ruling class.

10 The emergence of different religious reform movements in Europe was also marked during this period. Several new sects and movements within Catholic religion and outside its sway led to the decline of Papal control of socio-political life in Europe. This also provided a situation of intellectual freedom growth of critical and later on scientific thought.

11 For instance, the knowledge, especially those of herbal medical systems from different parts of the world introduced in west and northern Europe through geographical discoveries and subsequent growth of imperial capitalism, added to the understanding of man-nature relationship and led to further serious researches on plants and other animals. Thus during 16th century botanical gardens were established in various parts of Europe by including plants from different parts of world.The one established in Padua in 1545 was followed by Pisa, Leyden etc. and brought several rare plants by adventurers to Europe. Herbal medical knowledge from Kerala, availed through Henry Van Rhede, et al., *Hortus Malabaricus on Various Kinds of Trees and Podded Fruits* (popularly known as *Hortus Malabaricus*) had also added to this growth. Each society of Appothecaries had its phytological garden. For example, The garden at Chelsea owned by the Apothecaries Society of London

similar movements resulted in the growth of knowledge all over the world by accepting and exchanging and reviewing different intellectual traditions of the world. That finally led to the emergence of modern science with clear and rigorous methodological strictness.

Science and Confrontation with Religion

The scientific revolution and its rationality being broken out in Europe had to face severe setbacks from the predominant ideology there. Catholic Church as a religious social and political institution had adopted the existing predominant world view on various aspects as its officiated unquestionable knowledge. Those who attempt to question it and propose an idea against the officiated view would be regarded as heretics and will be punished accordingly.[12] The Ptolemaic conception of the universe continued to be the accepted sense of the Catholic Church for a long period. While Aristotelian philosophy of nature was brought into European intellectual purview, it became highly controversial and unacceptable.

There were a large number of translations of ancient works by various Arabic, Greek writers. This made a large number of non-religious works available by the beginning of the 13th century. These new Aristotelian works on logic came to be known as *Logica Nova* or New Logic. They engendered the growth in logic. This led to a clear division between the faculty of Arts and theology of various universities.[13] The spread of the new idea and conceptions in different European countries challenging the predominantly existing world view was quite provoking to the Catholic Church. Thus,

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established in 1676 had plants from different continents (which still survives). For details see, W.C.Dampier, *op cit., A* History *of...*

12 The experience of Bruno, mentioned above and Galileo's abjuration etc. are clear evidences for such punishments.

13 European universities taught in different faculties such as Arts, Theology, Law and Medicine which overlapped each other and were interlinked. Students of Arts Faculty could continue their higher studies in any other branch as they were all connected to each other.

several punitive and corrective actions were taken by the church against the new logic and philosophy, spreading even into the church machinery and theology that.[14] The condemnation, prohibition and inquisition by the Catholic Church are quite relevant in this situation. For instance, a condemnation proposition by Stephen Tempier, Paris Bishop and a prohibition proposed by Robert Kilwardby, Arch Bishop of Canterbury, in 1277 was crucial in the intellectual history.[15] Both the condemnations and prohibition were issued against the growing influence of Aristotelian logic, with the publication of commentaries on Aristotle's texts by a 12th-century Muslim philosopher named Averroes.[16] The Pope wrote to the Bishop Tempier to investigate the rumours spreading in Paris against the accepted notions of Christianity. The Bishop was asked, Sara quotes, "An exceedingly worrisome relations has recently disturbed our (Pope's) hearing and excited our mind, that in Paris, where hitherto the living font of salutary wisdom has been lavishly spreading its most clear streams showing the Catholic faith all the way to the ends of the earth, certain errors in judgment of the same faith are said to string forth anew. And so by the authority of these presents we wish and strictly enjoin that you should diligently cause to be inspected or inquired by which people and in which places the errors of this kind are spoken or written and whatever you may hear about or find, you should not omit to faithfully write them down, to be transmitted to us through your messenger as quickly as possible".[17]

Soon after the letter from Pope received, Bishop Stephen Tempier issued the 'condemnation of errors in theology, natural philosophy and logic',

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14 Here frequently quoted and popular experiences of Bruno and Galileo and other punitive measures are not citing examples, only for avoiding the repetitions, though all of them are valid in this context.

15 Sara L. Uckelman, "Logic and Condemnations of 1277" in *Journal of Philosophical Logic*, Vol. XXXIX, No.2, April 2010, pp 201-227. (accessed from JSTOR-www.jstor.org)

16 *ibid.*

17 Translated and Quoted in *ibid.*, pp. 203-204.

with effect from the death anniversary of St. Thomas Aquinas, on 7th March of 1277.[18] Anyone teaching, defending, upholding or even listening to any of these propositions without properly reporting them to the ecclesiastical authority within seven days would face excommunication and any other apt punishment according to the nature of the offense.[19] However, this had been disputed by various scholars that they were only a part of the continuing tug of war between the Philoponeans and the simplicians.[20] Similarly, the prohibition in Oxford by Robert Kilwardby against 30 erroneous propositions was to check the rapid departure from Augustinianism.[21] It was also to ensure that all prevalent philosophical streams either Arabian or Aristotelian should be in conciliation with the Augustine and Neo-Platonic or existing Christian philosophy in general. However, unlike the Paris condemnation, Robert Kilwardby did not issue a condemnation of heretics instead his prohibition was to discourage the teachings of such propositions. The penalties were also temporal in comparison with that of Paris like depriving masters of their chairs and checking Bachelors from getting promoted to mastership. The Oxford prohibition drew protests from the Dominicans and they appointed a committee to look into the matters. The succeeding Pope at the instigation of Peter of Conflans promoted and transferred Kilwardby as the cardinal-bishop of Porto and he was replaced by John Pecham in 1279. Pecham also did renew and strengthen the prohibition and made those propositions as condemnation.

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18 He condemned 219 propositions, two specific texts any tract dealing with necromancy, invocations of devil, incantations which may endanger lives. etc. The anniversary of Thomas Acquinas is also important because it is claimed from several corners that these acts were to delete his influence from church and society, as he had opposed many of the officiated philosophy of church.

19 *ibid.*, p. 204. They forbade the Arts Faculty from engaging in any theological questions any more. Though the sources of errors are not mentioned in the condemnation report, it is argued to be against Thomas Aquinas, Siger of Brabant and Boethius of Dacia

20 *ibid.*, p 206.

21 Out of these thirty; majority (16) were concerning natural philosophy and ten concerning logic and four concerning grammar. For details, see *ibid.*, p. 207.

Both these examples show the hegemonic position and control of the Catholic Church over intellectual life and the history of natural philosophy in Europe.[22] However, up to the thirteenth century, as mentioned above the natural philosophy of Europe including that of the Christian church was mainly dominated by the Augustine or Neo-Platonian philosophy. This was not due to the knowledge of people in these philosophies, nor did the people read or show concern to the works of these philosophers at all. But the Christian priests widely used the ideas and categories of these philosophers in preaching their doctrines.[23] But when it became adopted, widely accepted in the organized church machinery, they get transformed into an unchallengeable part of the ideology. Those who questioned it were treated as heretics. By the thirteenth century a reintroduced Aristotelian philosophy began to receive wider acceptance in Europe. It is evident from the debates of St. Thomas Aquinas, who found differences in the theory and existing philosophical dogmas. Therefore he rejected the existing way of stating doctrines in the language of philosophy and developed their implications by logical reasoning. Thomas Aquinas found differences between dogmatic theology and metaphysical philosophy due to their difference in method.[24] The theologian holds the existence of God as a premise while to the metaphysical philosophers, it is a conclusion of a process of reasoning based on reflections on the experienced world. Thus, an interlinked understanding of theology and philosophy began to be questioned by the 12th century itself. The Aristotelian demarcation between philosophy and theory was taken up by St. Thomas Aquinas to solve the historic problem of methodical insufficiency. As it is

22 However, it is not attempted here to argue that the only philosophical discourse prevalent in Europe was theological in character.

23 For a detailed discussion on this see, Frederick C. Copleston, *Medieval Philosophy*, London, Methuen and Company Ltd., 1952.

24 For examples the peculiar notions of theology such as the mystery of Trinity cannot be understood in the philosophic natural reason, while the matter and elements constituting natural bodies do not come under the spheres of dogmatic theology.

evident from the above-mentioned ban on Aristotelian philosophy, it had been achieving wider acceptance among the scholarly communities in Europe, especially in the academic circles.[25] Aristotelian physics held matter and form as the basic explanatory principle, which together composes the body. He taught that changes in the properties would bring change in the form but the matter remains constant in any change. The unchanging matter as the foundation of the universe was not acceptable to Christian theology, as it undermines the role of their god. Thus the division of philosophy and theology was made possible in Aristotelian conception. It was not accepted and those who held such views were regarded as heretics by the church as evident from the above discussions. But gradually things began to change, as the ideology was forced to accept the discoveries and knowledge with the impact of these theories and the emergence of counter ideologies and revolutionary movements.

In 1325, the the Bishop of Paris, Stephen de Bourret, proclaimed that the condemnation issued by Bishop Tempier had no canonical value' with respect to any censured Thomistic proposition.[26] However, despite the revocation, the effects of condemnation continued in the intellectual history that later the Dominican, John of Naples held it require an apology that 'the views of Thomas Aquinas were not affected by the condemnation and which can legitimately be taught in Paris without fearing excommunication or any other punitive measures'.[27] Moreover, by about 15th and 16th centuries Aristotelianism became officiated and established philosophy. The differences held between the Platonic philosophy and Aristotelian world view became very much narrow or even ceased to exist through continuous interpretations and annotations. The Aristotelian philosophy not only continued to be taught in European universities but also became the predominant logic and

25 This growing influence was cited in the letter from Pope addressing the Bishop of Paris mentioned above.

26 Sara L., Uckelman, *op cit*., p 220

27 *ibid.*, p 220.

background of the discussions and discourses in the context of new challenges.[28]

When the New and Mechanical philosophy was introduced, the church dominated ideology in Europe stood opposing it based on Aristotelian philosophy and Ptolomy's conception of the universe, which has been the foundation of the Biblical conception of the universe. According to the mechanical philosophy, the only explanatory principle in physics was size, shape and motion. Thus instead of Aristotelian formal explanation of properties, things began to be explained in terms of tiny particles and their properties which constitute larger bodies, as well as in terms of the motion of tiny particles of different sizes and shapes, which create changes in a collision. Though this notion had created far-reaching consequences in the understanding of the universe many of existing intellectuals and authority hesitated to accept it. But as soon as these arguments were accused of similarities with the ancient atomism, it began to be considered acceptable in the new interpretation and traditional epistemology. Thus the 'Epistemic Charity' provided some acceptance to new knowledge through without their revolutionary character and methodological novelties.[29]

A shift in the understanding of the universe provided by Nicolas Koppernigk (1473-1543), (popularly known by his Latinised name, Copernicus) during the predominance of geocentric theories of Hipparchus and Ptolemy. His revolutionary picture of the universe, with the sun being at the center and all six (then known) planets and stars in the outer layers, was

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28 Thus the formal logical of Aristotle which was opposed earlier by the church became the accepted notion. This is indicative of the adaptations and evolution of religious positions, (motion in position and position in motion) even in the most institutionalized form. The new challenge was raised by the mechanists against this formal logic, which was also opposed severely by the church, now from the stand point of Aristotelianism.

29 The concept of Epistemic charity is adopted from Meera Nanda, which she has used in a different context. For details, see Meera Nanda, *op cit., Prophets Facing…,* p. 67.

capable enough to challenge the Ptolemaic conception of the universe. Therefore it was not acceptable even for the church intellectuals, except for some mathematicians like John Field, John Dee, Robert Recorde, and Gemma Frisius, etc. Thomas Digges made a notable advance by replacing the immovable sphere of fixed stars with an immensity of space with stars scattered through it. But this was not accepted until Galileo inventing, with his new telescope, satellites of Jupiter and a miniature solar system. Intellectual revolutionaries like Giordano Bruno accepted Copernicus. But he believed the universe as an infinite phenomenon and the stars to be scattered all over. He was an enthusiastic pantheist and openly attacked the orthodoxy of Christianity. He was condemned by the inquisitions for his philosophy and finally burned alive in 1600.[30] The church held such a rigorously antagonistic approach towards science that in 1616 cardinal Bellarmine pronounced that the theory of Copernicus was "false and altogether opposed to holy scriptures" and his book was suspended till 'corrected'. In 1620 cardinal Gaetani revised the book with some alterations. But the suspensory edict was repealed only in 1757. It was only in 1822 that the sun received a formal sanction from the papacy to become the centre of this planetary system.

A definite mathematical conception of time and space along with motion was provided by Galileo (1564-1642). However, there was no possible imagination of the nature of force, etc. as Galileo himself has confessed that he knew nothing about the nature of force, cause of gravity, the origin of universe etc.[31] While Galileo making observations with his telescope, the hegemonic notion was the church-sanctioned Aristotelian world view, in which the celestial realm is immutable and earth is the center of all motions. When Galileo's admirer, Maffeo Barberini became the Pope in 1623, Galileo sought and received permission to prepare an impartial study of the rival Copernican and Ptolemaic systems. Thus he published 'The *Dialogue*

30 W.C., Dampier, *op cit*., p 113.

31 *ibid.*, p 133.

Concerning the Two Chief World Systems in 1632.[32] Galileo was called before the inquisition and forced to abjure his 'errors'. He had demonstrated the inadequacy of Aristotle's physics and geo-centrism. Galileo rejected the teleological explanation that state of motion takes place so that some future state may be attained.[33] Galileo believed and tried to prove that earth itself is a celestial body and bodies on its surface, participate in the circular motion.

Rene Descartes (1595-1650) held that unverified assumptions lay beneath the generally received philosophic idea and he turned away from powerful medieval thought. He based his new philosophy on human consciousness and experiences from mental apprehensions to god and the physical world. Descartes rejected the concept that animal 'spirit' is the 'soul'. To him though they fit the brain to receive the impression of the soul and also external objects and then flows from the brain through nerves to the muscles and give movements to limbs. He was the first to formulate the complete dualism that sharp distinction between soul and body; mind and matter which influenced philosophy later. Though he defined the universal forces materially, he explained God as the "first cause" who allowed the universe to run spontaneously, though in accordance with 'his will'; it was, However, depicted materially rather than spiritually.[34] Up to then the Catholic Church, being the hegemonic ideology in Europe had been rejecting the advancement of rational and empirical knowledge there. It was because all of them went rejecting the basic tenets of Abrahamic religions both as a conglomeration of

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32 To save the appearances, Galileo is said to have indicated in the preface and conclusion of the book the rival systems are mere mathematical hypotheses. The remaining part he wrote in Italian to reach to a wider audience, contained numerous arguments in support of the Copernican alternative of physical truth. He gained revenge with the publication of the *Dialogue Concerning the Two Chief World Systems.*

33 John Losee, *A Historical Introduction to the Philosophy of Science*, Oxford, Oxford University Press, 1980, (1972), p 52.

34 For a primary understanding of Cartesian philosophical and knowledge perceptions see, Rene Descartes, A Discourse on the Method, (tran.,Ian Maclean), Oxford, Oxford University Press, 2006.

knowledge emerged from different cultural contexts and as the experimental knowledge derived through continuous falsification of existing knowledge. He had been depending on a thoroughly mechanistic view of causation than the 'occult qualities' as magnetic forces and gravitational forces.[35] He had maintained that God is the ultimate cause of motion in the universe.[36] This adjustment produced a new wave in the interaction between religion and science. The notion of outright rejection of science gave way to critical interaction.

In short, the socio-economic condition in early modern Europe and political as well as cultural changes there, and subsequent transcontinental migrations necessitated larger expeditions and transactions with different cultures and intellectual traditions. This led to a process of interaction, absorption, and adaptation of different knowledge traditions. After the industrial revolution and subsequent decline in the dominance of Papacy upon socio-intellectual life in Europe provided favorable mobility, leading to the emergence of an intellectual revolution in Europe. Though there were different civilizations in different parts of the world with much advanced intellectual and cultural traditions than the Europeans, the economic mobility especially the commercial and capitalistic growth created a circumstance sufficient for the emergence of the scientific revolution in Europe. However, it was not wholly a European phenomenon. This movement though initially sprouted in Europe had spread or reflected in different parts of the world in varying chronological periods. The comparative study of cultures and the intellectual traditions including Joseph Needham's work on Chinese and European situations have traced the factors favoured the emergence of the scientific revolution in Europe.

35 John Losee, *op cit.*, p 74.

36 *ibid.*

Needham's Grand Question

Though there were various traditions of knowledge in Pre-modern India and a comparatively luminous medieval period of knowledge transmission, translation and promotion, unlike the European 'dark age', modern science or a possible scientific revolution did not break out in India. However, almost all these developments between 10th to 17th centuries have been depicted as, and reduced in to, a 'passive phase of translating Greek science into Asian languages and passing on to the European for inaugurating modern science there'.[37] In this context, the 'grand question' posed by Needham, had attracted various responses from different corners holding different positions. Scholars specialised in history, philosophy and sociology of sciences, including those dealing with Indian intellectual traditions, have responded to this question.[38] This problem redirected by Raina and Habib towards India has multiple dimensions in the realms of culture, methodology and polity. The socio-religious, altogether historical conditions of pre-modern India get problematised in this context. Science, if conceived as a systematic and organised knowledge about how the world is and how things function based on observation, experimentation and induction (or deduction of hypotheses) and passed through continuous falsification is a new phenomenon. This knowledge, though a revolutionary-progression from the comprehensive knowledge of previous generations all over the world is a transnational activity. Its roots have been stretched worldwide in different cultures, including Indian, Chinese, Greek, Persian, Arabian, etc. However, its emergence in the socio-economic domain of post-renaissance Europe cannot

37 A Rahman, *op cit.*, 'A Perspective… p. 10.(assertions added).

38 The usage of Grand question is taken here from Dhruv Raina, S. Irfan Habib, *op cit.*, '*The Missing Picture*… It denotes the doubt raised by one of Needham's students and later formulated and developed by him to why did not scientific revolution break out in China or anywhere else? and why did it emerge in the occidental culture? This added to his conception of 'Oecumenical science'. Inspiring from this question, Raina, and Habib had diverted this problem of the 'non emergence of modern science' in India towards Indian scholars. Meera Nanda had also attended this problem in Indian context.

be addressed without linking it with the historical and methodological differences among various cultures. However, several scholars have responded to this grand question and explained it as a religious, cultural and civilizational advancement of the Semitic west.[39]

Indian knowledge traditions generally said to have conceived universe including living organisms and non-living objects more or less inseparable parts of the whole. It involves the hypotheses of five entities (*bhutha* or elements, which involves both matters and qualities) and three basic characteristics (*triguna*) constitutive of all with slighter conceived variations in themselves.[40] There were larger theoretical and philosophical advancements in various fields as stated earlier. The techniques and skills necessary for their life and productions along with mechanisms for controlling nature and its various phenomena were advanced from the practical experiences of the people as explained earlier.[41] The practical knowledge including working almanac with clear seasonal changes, zodiac, astrolabe, medicine, curative practices, and all the similar technical knowledge were directly or indirectly linked with this epistemology and were made canonical.

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39 For instance see, Toby E. Huff, *op cit., The Rise of Early Modern Science…*. This work seems to be a direct response to the Needham's grand question and challenges many of his conceptions by citing other works on Chinese civilization and differentiating it with the Christian and Islamic religious cultures. To Huff, China and other oriental civilizations were politically, culturally, methodologically insufficient for the emergence of modern science and its world view.

40 However, there were differences in conception, logic and rationale regarding various phenomena including human-nature relationship, beginning and existence of universe, creation hypotheses, ritualism and above all conception of time in different schools of thought. However, there were several unifying factors albeit these differences. For a brief understanding, see A.Rahman, *op cit.*, 'A Perspective… pp. 7-31.

41 Notwithstanding, they all were naturally evolved within the intellectual and cultural milieu of the existing astrological and universal knowledge and beliefs. A working almanac, predictions of future, success and failures, calculations of timing, etc. extended the theoretical epistemology in to practical life.

It might be in this context that Al Beruni had reported that there was no distinction between natural and supernatural knowledge. They all were inseparably mixed with philosophy, mythology, religious beliefs etc.[42] Therefore, this mixture of theoretical and practical knowledge, beliefs and mythology together, which in turn blended with the socio-political system made it difficult for separating them as well as their independent growth.[43] Moreover, any conception against this perceived view would, therefore, be rejected for not being identical with the traditionally held shastra and ancestral knowledge.[44] Any possibility of practical correction and falsification of this canonised knowledge was in effect impossible. Even the increased influence of rhetoric upon philosophy did not emerge as a critical or falsifying force. Instead, the philosophical differences continued to be standpoint variations and any furtherance in understanding were knit with these epistemological positions. So they did not contribute beyond a limit to the revolutionary break in epistemological and practical knowledge traditions and therefore the intellectual conditions in India can be claimed to have possibly checked the methodological shift leading to a scientific revolution.[45]

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42 Arithmetical and astrological knowledge were inseparably united; they also should have a working knowledge in medical and ritualistic practices. For instance, Sreedharacharya, Sripati, Bhaskaracharya, etc., were well known astrologers, theoreticians and arithmeticians, simultaneously. They formulated methods for solving quadratic equations, permutations, proportions, combinations, notional places, etc. for details, see *ibid.*, p.17.

43 This was reported by various travelers and scholars visited India. For instance Al Beruni himsel has commented that it is a mixed condition of 'pearl and dung' together.

44 This was the plight of well acclaimed theses of Aryabhata and Lalla, which had been rejected for a long period in the history.

45 Though this is a vague, uncalled for and peripheral conclusion from a layman's perspective, the present dissertation is incapable of going beyond with this problem. A more detailed study concentrated on this particular problem may disprove the current conception. However, the explanations provided by Dhruv Raina, citing the evidences of the emergence of different scientists in modern India with challenging theories and their encounters with different scientists from the 'core' seems to be insufficient for answering from a socio-historical perspective.

The spread of New Knowledge

In this context, the growth of revolutionary scientific knowledge and its methodology, in different parts of the world, interacting with the existing knowledge traditions and methodologies need to be explained. In the case of modern science and its rationality, there were two major and one subsequent agency which led to the spread of this new knowledge by challenging the existing regulations and religious stigma. The most important among them was the practical applications of new knowledge including technology, medicine, etc. which gave tangible pieces of evidence to the masses for the potential scientific knowledge and eradicated many of the unnatural and transcendental forces from the day to day life. The second was the revolutionary intelligentsia including activists, philosophers and scientists, who wrote, spoke about the discoveries and their various aspects including in popular journals for reaching extensively to the society. The third being the inclusion of modern science in the curricula of education, which has been shrunk to the possible minimum by the interventions of religious and political ideology who held complete sway over education throughout history.

The French Academy (*Academie des Sciences*) contributed much to the progress of physical science. For example, the 17th-century discovery of the theory of probability by Pascal and Fermat was developed later by Laplace and used not only for physical measurement but also for rationalising human affairs and governmental problems involving larger numbers.[46] Moreover, Cuvier, who was the secretary of Academy, carried out various researches including those in the fields of comparative anatomy. The Academy did much for the popularisation of science in France, through promoting scientific researches and using exact scientific methods. Academy took greater initiative for permeating scientific knowledge into literature, which opened up a new era in the systematisation of human intellect. However, even during those periods of excellence in researches, the scientific method had not been widely

46 W.C., Dampier, *op cit.*,

accepted in the enquiry and teaching. For example, while the French Academy was using the exact scientific method, German universities were still teaching an extended form of old natural philosophy, which used to derive conclusions from untrustworthy logic and doubtful philosophic hypotheses. Thus an extended form of natural philosophy continued its predominance even during the 18th century, instead of obtaining knowledge from observation and experimentation of natural phenomena. This came to an end only by the mid-nineteenth century. With the opening of a chemical laboratory at Giessen in 1826 by Leibig and mathematical works of Gauss, a systematic and organized scientific researches were carried out in Germany until the beginning of the 1st world war. The term 'Wissenschaft' was used synonymously to modern science which included natural science, philosophy, history, philology, etc. Similarly, new scientific organisations in India including the Academy for Cultivation of Science worked seriously for the spread of modern science during the early 20th century.

The agricultural sector witnessed chiefly two types of changes with the application of modern technology. The shift was mainly from rural to urban characteristics and the mechanisation and allied changes in agricultural and connected works. By around 17th century bulls used for ploughing fields in Europe began to be replaced by horses along with new tools used for the preparation of the field.[47] The increase in production has two-dimensional effects in the history of agriculture. One was the natural opening up of the exchange and commercialisation of agriculture and the second and connected to this is the emergence of large scale industrial production based on agriculture. 19th-century developments in the transportation facilities both inland and waterways have helped the growth of agriculture and opened new ways for agrarian products to the markets. This change was evident in the growth of cash crops including cotton on a large scale and the development of

47 Guillaume De Syon, *Science and Technology in Modern European Life*, United States of America, Greenwood Press, 2008, pp 1-15.

the dye industry. Another change evident in agrarian life during this period is the separation of milk production from agriculture. Milk production and related activities became a year-round process and arose from the part-time status of agriculture. This process of animalization was reflected in the establishment of cattle farms and increased publications on animal chemistry.[48] Increasing interests in animal husbandry and specialisation upon the high yielding variety of cattle breeds is also evident from a large number of cattle exhibitions during the late eighteenth and early nineteenth century throughout Europe.[49] Along with with these changes, various studies by different scholars and scientists and application of their results in the practical life along with wider chances of publication of these results heightened the possibilities of modernisation of agriculture. Studies of scientists like Charles Darwin on the Variation of Animals and Plants under Domestication in 1868 along with the well-acclaimed theory of Natural selection in 1859 and other similar works on genetic inheritance and higher-yielding variety have added to this process of change. Crop failures and famines necessitated enquries into the fertilities and the soil conditions leading to the application of additional fertilisers and nutrients.[50] This phenomenon also drew people towards the

48 Animal Chemistry became a major field of research in Europe and America during 18th and 19th centuries. For example Jethro Tull (1674-1741) made extensive researches in this field and published several of his recommendations including *The new Horse-Houghing Husbandry: An Essay on the principles of Tillage and Nutrition* on the need for industrialising production and separating agriculture and animal husbandry. (cited in Guillaume de Syon, *op cit*.,)

49 A good example of this is the exhibition in Switzerland in 1806 which was followed up later on and resulted in excelling of Swiss cattle is international exhibitions and it became the identity of Swiss economy. This also required schooling of farmers in the process of milking, butter and cheese production etc. The systematic farming and recording variations in production and classification of stock etc. added to the process of revolutionary movement of agriculture and animal husbandry.

50 Good example for this development was the Irish famine caused by Potato crop failure, killing large number of people and causing migration of millions of people. This led to various studies by scientists in to the reasons and solutions. Subsequent application of fertilizers like Potassium, Phosphorous

applications of scientific knowledge into other aspects of human life as well. This process received wider acceptance later on and various similar discoveries capable of changing the milieu of agrarian society.[51]

Another practical movement linking scientific knowledge and peasants was the application of different technologies and mechanisation of farming. Mechanical threshing using crankshafts appeared by the mid-nineteenth century involving the inventions of similar kinds by farm owners and easing the works of labourers.[52] These manually operated mechanical threshers, later on, gave way to the steam-powered ones. Though these mechanisations of the agricultural activities were widely accepted in the society, there were increasing concerns from large corners regarding the job loss to the labourers and possible impoverishment and joblessness of the majority in the society. However, these problems were tackled and concerns were not only eradicated but it was proved that the mechanisation of agriculture could bring larger areas under cultivation and increasing products thereby increasing the opportunities of employing a large number of people.[53]

There are numerous studies on the industrial revolution, mechanisation, and their social impacts. The early wave of mechanisation and introduction of the steam engine increased production and justified colonialism and imperial competitions and rivalries. However, unprecedented growth and movements

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and nitrogen etc. were historic which led gradually to the increase in food production all over the world.

51 Such was the researches of Fritz Haber and Karl Bosch during early 20th century. They experimented the possibilities of converting the atmospheric nitrogen into liquid ammonia leading to the industrial production of nitrogen fertilizers which played a crucial role in the march towards green revolution of 20th century.

52 Guillaume De Syon, *op cit*., pp 7-11.

53 This process of resistance and adaptation could been seen throughout the history of mechanisation not only in the agricultural field but in many other areas of daily life. It is arguable that the resistance towards these novelties help to the furtherance of possibilities and avoiding large scale subjugation and bargaining of labour power along with the new social mobilisations.

were interrupted several times by socio-political events such as the imperial wars between big powers especially Britain and France and several other political crises. This checked the linear progression of industrial capitalism and new as well as challenging ideas began to be debated in the societies. Many of them emerged in connection with the new politicization movement of the French and industrial revolution. However, their debates entered wider areas including religion, authority, new knowledge, equality, liberty, humanism etc.[54] The increased production and technological advancements have brought about many structural changes in some European societies. Many of the elements of existing feudal hierarchy and authority were questioned and newer centres of power began to emerge along with the facilities and changed economic circumstances. Road rail transportation, engineering and power and steal mills contributed to the transformation of society. New varieties of jobs and services began to emerge gradually by replacing the existing ones. Many people, especially from the working class, viewed these changes very anxiously.[55] Increased production and higher working capacity required a similar workforce. The people afraid of the job loss had to adhere to the changed situations for their survival. They had to work for about 14 hours a day for lower wages and therefore had to force their children and aged people to work to meet the ends of life. They including children had to undergo rigorous punishment for even milder

54 For instance see the debates regarding the impact of French Revolution in European especially British society among the groups like that of Edmund Burke Thomas Cooper and others some of them have been cited above. Similarly there were debates on socialism, rationalism, religion, etc.

55 For example the glove makers in the Nottingham in England found the mechanisation in the industry as the one causing them job loss and displacing from their livelihood. They rose against this and opposed the mechanisation in the industry under the leadership of Ned Ludd. They came to be called as Luddites. They were viewed as arguing for the pre-industrialist orders and as people who shows severe aversion to new technology. Gradually the term 'Luddites' became synonymous with someone who show aversion to technology. For details see Guillaume De Syon, *op cit*

mistakes.[56] However, the chaotic situations caused by the economic depressions and socio-political movements led to the end of the first wave of industrialisation by around the latter half of the 19th century, which gave birth to the second wave of capitalism by entering into newer fields with better techniques and strategies.[57] All these situations began to influence scientific researches and the general view of knowledge. The breakthrough knowledge and theories which have been presented earlier renewed and reappeared in the scenario of science debates. As the interests of the socio-political and industrial situations of the era continued to influence scientific research, the characteristics of research and major inventions also followed the same way. The economic depression of the 1870s created stagnation in the world as a whole, especially the market. The technological advancements became the chief area of inventions during this period. Applied sciences rather than theoretical knowledge began to be appreciated and which resulted in the emergence of the new chemical industry, electricity, automobile industry, etc. which reached its maximum by the end of the 19th century.[58] Industrial diversification became the characteristic of this period. The railroad, steel mill industries gave way to more supply industries including transmission gear for subway cars, tires for bikes, etc. the increased production led to the frequent appearance of such mechanical and technological advancements in the society

56 Smaller agitations and movements against these exploitations could easily be suppressed by the powerful capitalist class; they could easily create break among the weaker labour collectives. Along with these the fear of severe atrocities and consequences drew the workers back from raising any voice.

57 Growing nationalism and democratisation movements in various European countries, economic depression of 1870's and increasing influence of the Benthamite Utilitarian philosophy along with several other factors created a socially and politically chaotic situation in Europe. The severe threat faced by the capitalism led to the opening up of new strategies and methods.

58 The economic depression of 1870s along with famines and epidemics etc. created a a great situation economic turmoil. The world system of capital could overcome such a situation by increasing production through large scale mechanisation and developments in automobile industry. Thus the scientific debates to a larger extent was occupied by technological advancement and allied subjects.

in varying degrees.[59] These appearances not only made them aspirants of acquiring these products but also led to the percolation of these mechanical thoughts in society.

Moreover, the increasing demands and movements for the reformulation of society and polity along with the liberal social formation and the changed industrial situation led to a democratisation of knowledge and practice during this period.[60] This was reflected in the shift in paradigms of the learning and massive acceptance of the new practical knowledge. Until then the philosophical, religious and even scientific discourses used to be dominated by the middle and upper-class people. The whole knowledge and changes in them were not affecting the mass of society especially the common people. These writings, debates, counter-arguments and changes in perceptions of knowledge, ideology among the elite sections had not been linked with the day to day life of the common people. Thus the division and gradation of the class were highly visible in the realms of knowledge as well. The common men, peasants and industrial workers were not even aware of all these debates in their neighbourhood. But industrial and technological change and shift in the socio-political system altered these situations. People and their daily life also began to be a concern of the technology and industry. Rail and public transportation, engine and automobile, Pasteurisation and agricultural industry, etc. were the chief areas of industrial development that evolved from the new knowledge during this period. Such industrial development and the knowledge system behind them in the wake of the aforesaid mobilizations

59 All these technological advancements and industrial mechanisations were regarded as the expressions of modern science. Thus their outreach to the larger society enhanced the scientific discourse to society at large.

60 Various socio-political revolutions inaugurated in France during 18th century continued in other parts throughout 19th and early 20th centuries. These movements brought common people to the fore of society and the cultural as well as political imaginations.

were not innately elite.[61] Instead, they all were connected with the daily life of common people. Therefore a kind of democratisation of knowledge became possible during this period. Thus the people who were unconcerned with the scientific and philosophic discourses also could be connected with the knowledge and industry of the new era. To know and live a changed and progressed life assisted by the new technology and industry, people no more needed to be aware of the epistemology of the new system. But all of the technologies and machines directly or indirectly affected the social life and influenced the life of the common people including peasants.

Though James Watt had discovered steam engine in 1768, it was practically tested on the rail by George Stephenson in 1804. It took still more time for carrying people and weight on railroad thereby becoming a full-fledged transportation system.[62] However, it began to replace the animal or men drawn carts and wagons. Even though there was a graded division of class in train with different fare and facilities, it could carry all classes of people in a single train though in different compartments.[63] Therefore it could symbolically carry forward the concepts of new 'humanity' and 'technology' together. The extension of the clock into 24 hours to differentiate the day time and night travel in the train did influence the people and it spread to other spheres as well. After the economic depressions of the 1870s and 80's the trains were forced to reduce the fares and it thereby began to be accessible to common people as well.[64] It is evident from various kinds of the literature of the 19th century, that representing trains and its stations as 'Volcano of life',

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61 A new middle class began to be emerged from the working class background acted as a linking factor between tradition and novelties in all sens.

62 Guillaume De Syon, *op cit.,* PP. 36-57.

63 However, unlike the birth oriented and racial hierarchy of people the gradation in the capitalist system was temporal in character. The people acquiring more money by any means could upgrade their status and enjoy better facilities. Those who lost in the market oriented competition were no more rescued by their previous aristocracy.

64 *ibid.,* p. 38.

'Cathedral of new humanity' etc. that the general society had begun to be aboard into the trains.[65] Trains became a new theme for architects in Europe.[66] Waterways and industrial centres were linked together by rail which accelerated the growth in the industrial sector. As far as common people were concerned traveling brought about new mobility connecting people and cultures of different regions. It brought people of different classes and cultures together creating a sense of unity among the commuters. Soon a new culture of train journey began to evolve as being evident in different articles.[67] It is also interesting to note that manners and etiquette have been widely changed during the modern period. Courteous manners were widely taught to the people at every nook and corners indicating the formation of more public spheres as a symbol of the modern age.[68] New lessons of socialization and market logic were also visible in the public spheres including train that 'window belongs to everybody', 'be diplomatic for traveling with pleasure', and 'pay high and Travel in the higher class and luxury cars' which made people of hopeful of getting into luxurious cars and upgrading their status in

65 For instance writers like Carlo Lorenzini, Charles Dickens, Emile Zola, Robert Louis Stevenson *et al* made train, rail road building, rail road workers etc. commonly representing in their creations.

66 For example William Turner's 'Rain', 'Steam', 'Speed', etc. like many other artists depicted and symbolised trains in their works.

67 By 1890 there were a number of articles on new etiquettes advices to commuters. For instance there is an article on how to use various facilities in train, how to aboard in to it and way for avoiding causalities and new manners such as 'do not lean out of the window', 'Don't spit' etc.

68 In thirteenth century table manners in the court included concern for poor or to eat less, minding on slurp with spoons when eating with others, not to dunk the bitten slice into the dish again, not to drink directly from the dish and use of spoons and by 18th century the etiquette to the general people for eating elsewhere were taught form the way to sit, use of spoons and serviette etc. Similarly on blowing ones nose it was taught that one should use handkerchief for blowing and not to make too much noise. On the same way it was widely taught on spitting, that do not spit too often, use handkerchief to spit into it if necessary. For details see Norbert Elias, *The Civilizing Process: The History of Manners and State Formation and Civilization,* Edmund Jephcott (trans.,) ,UK, Black Well Publishers, 1994 (1939).

the society. Thus the values and norms of capitalism were spread in society through these media. Public transportation systems gave way to private vehicles including cars and later on bikes (as an upgraded form of already existing bicycles). There were many kinds of reforms and alterations in the vehicles and making them feeling attractive and luxurious. All these in the formation of the public sphere brought about changes in the style and outlook of people themselves. In the beginning, ladies wearing pants were considered indecent and some people were punished for appearing in public in such attires. Gradually it became common and accepted. Bicycle riding became a new hobby and symbol of youth. It was included in the modern Athens Olympics in 1896. But it was common in Europe earlier itself as the first recorded Bicycle race in history was held in Paris in 1868 itself.

In short, the engines used for increasing productivity by easing the labour in the initial stage, such as oiling nuts and grinding, etc., underwent tremendous changes and replaced the labourers in various fields including fuel combustion, etc. restructuring the history of humanity itself. The knowledge of engine and mechanics outgrew from factories and industrial centres to the roads and common people. However, though the practical application of the knowledge of engine and steam power did reach to maximum number of people, the new model of capitalism alienated the people from the knowledge of what they use and engage within a day to day basis, as the finished product available to the people ready to use with a users' manual. Thereby not everyone required to know the details of the techniques and basics of the technology, they engage with.[69] Moreover no one needed to experiment with his ways of developing a new or better means transportation as the frequent updating and alterations were being done by the industrialists

69 For instance a driver though, an expert in smooth driving is not necessarily required to know the basic functioning of engine, similarly a person who works in a spare parts factory may not necessarily know the usage and the final product of his labour. This naturally separates the knowledge from practice and alienated labourer from their labour.

themselves. In 1886 Carl Benz patented a gas engine powered vehicle but they were affordable only to the royal circles.[70] Sooner people who could drive a car and knew to repair it received a higher reputation and social status. Later manufacturers began to emulate pioneering standardisation and several car shows were conducted in various parts of Europe. Sooner the car shows crossed the national boundaries and began to show the beginning of an industrial 'globalization'. From luxury, with the widening of industrial and urban centres, it became a need and later on a necessity for commuting labourers to different industrial centres. Thus it became affordable to the middle class to travel in vehicles. It changed their routine, way of life and approach towards time and social life as a whole. There witnessed a new kind of modernization of the practical knowledge brought it from the higher and educated class to the common people. Common people also began to participate in the debate circles on engine and technology. Thus the new market system and wider applications of technology expanded the public sphere to include common people, workers and peasants as well.[71]

Medicines have been playing a crucial role in bringing down scientific knowledge and modernisation to the common people throughout its history all over the world. Societal understanding of the human body and health continued to be more or less similar to the ancient systems of Greek and Indian cultures. Though there were many movements in the theoretical level in different parts of the world regarding the human body, diseases, medication, treatment, reproduction, etc., it did seldom affect the knowledge occupied by the common people or in the practical experience until the 19th

70 One of them was bought by prince Heinrich of Prussia (Brother of Emperor Wilhelm II), as it was affordable only for the people belonging to his class.

71 In such ways the market system could overcome the economic depressions, when the demand for commodities diminished to the least level and the market system fail to sell more products, it had to bring more people to the market and there by expand the reach of the product. In this way, unlike the previous system, modern market system expanded itself and crossed the traditional boundaries to reach out to the majority of people, whom they cared little so far.

century. The human body, its relationship with other organisms, etc. had undergone large scale changes in the 19th century. The spread of epidemics and the comparative incapability of traditional practices and theories in addressing or curing them along with the success of modern medicine in interpreting and tackling these diseases, especially vaccination resulted in a shift in the popular acceptance of modern medicine. The spread of cholera in Paris in 1832 and the repetition of the same with higher vigour in different parts of the world have changed the positions on the new medical knowledge of the human body, microbes, etc. Large numbers of people died and lakhs of people became ill in 1854 itself. People had been thinking of it as diarrhea and an airborne disease then. The toll of death increased and they were forced to take up new and successful medicine apart from their religious sacrifices and rituals. The success of the new medicine brought them to the understanding of another practice. It also might not have taught them about the new way of understanding nature and body. Instead, it reduced the dependence on natural and supernatural forces for curing diseases. However, a new hygienic sense began to spread all over the world; it was made possible by newly emerging public spheres including the railway station, etc. However, all these were not sufficient to assert the newer and scientific understanding of human-nature relationship which was made possible by kinds of literature and campaigns giving awareness to people on hygienic life and sanitation.

Notwithstanding, the introduction of vaccination and campaigns for its spread brought up an unprecedented result in the spread of applications of modern medicine along with the idea of spreading diseases among people. The information about discoveries like microorganisms, germs theory of diseases along with the news of successful experiments of vaccination on animals like rats, sheep, etc. spread in the society. It helped to the spread of the modern understanding of the biological relationship among animals

including human beings.[72] The successful testing of vaccination among humans was not an easy task nor does it have a non-hurdled track record. But when successfully experimented with the ill, it became widely reported and accepted. Along with these developments, the accidental discovery of the x-ray by Roentgen, a German Physicist could change the plight of modern medicine and its impression among people all over the world.

Another important aspect of changing world-view was the transformation of science as a productive force. The Industrial Revolution accelerated the movement leading to a break from the traditional agrarian-handicraft economy to one dominated by industry and mechanical manufacturing. It provided substitutes for human skills and animal power.[73] This practical adaptations of new logics produced unprecedented mobility to people belonging to different cultures and socio-political orders. This vitality gave a technological appearance to science and its knowledge forms. Therefore the popular approach towards science shifted from that of an elite intellectual tradition to practical and productive forces, familiar to them in daily life. However, in this appearance of science as a mechanical and industrial application, there were no challenges or resistance from the part of previous ideologies including the Catholic Church. Therefore, conventional lore and imaginations were replaced by new and rapid technologies. At this juncture of declining conventions and their methodology, the previously predominant ideologies, especially in Europe, faced severe threats for their existence. Many of them including the Catholic Church had to discover new means and expressions for their survival in the changing world order.[74]

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72 This does not mean that the idea of natural selection or human evolution was accepted by the people in 19th century. However, Louis Pasteur's discovery (though not in the form of theoretical knowledge) was more or less accepted by the people as it was familiar in their own lived experiences.

73 For details see, David S. Landes, *op cit., The Unbound Prometheus…..*

74 However, they had overcome these threats through discovering new means and expressions. A clear example for this was the adaptations to the ideology and

Ecumenical Science

Joseph Needham while analysing the history of science found its ecumenical character and universality of knowledge. He assumed that there is only one 'unitary science of nature, which has been approached by people of various cultures differently at different historical times. Therefore, the beginning of astronomy or medicine or any other branch of science can be traced back to ancient civilizations such as Babylonia, etc., which were advancing through natural knowledge of medieval India, China, etc. to the late renaissance Europe and there, the most effective method of discovery itself was discovered'.[75] He metaphorically explained the evolution and growth of science from various Pre-modern knowledge traditions with the rivers flowing into an ocean. To him, modern science and traditional knowledge of the medieval world is analogical to the river-ocean relationship. In his own words, 'what metaphor then can we use to describe the way in which the medieval sciences of both west and east were subsumed into modern science? The sort of image which occurs more naturally to those who work in this field is that of the rivers and the sea. There is an old Chinese expression about the 'Rivers going to pay court to the Sea', and indeed one can well consider the older streams of science in the different civilizations like the rivers flowing into the ocean of modern science. Modern science is indeed composed of contributions from all the people of old world, and each contribution has flowed continuously in it, whether the Greek or German antiquity, or from Arabic world and cultures China and India'.[76] Needham

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their historic extension through wide proselytisation movements all over the world.

75 Cited in Gregory Blue, 'Science(s), Civilization(s), Historie(s): A Continuing Dialogue with Joseph Needham', in S. Irfan Habib, Dhruv Raina (eds.,) *op cit., Situating the History …* p. 44. (assertion added)

76 Joseph Needham, *The Role of Europe and China in the Evolution of Oecumenical Science,* quoted in, Karine Chemla , 'The rivers and the Sea: Analysing Needham's Metaphor for the World History of science' in *ibid.*, p.220.

differentiates between modern science and 'Pre-modern sciences', though conceived as a cumulative continuity, as an invention of the age of revolutions with the new methodology of science. He traces the favourable conditions in Europe for originating modern science there, than elsewhere in his comparative study of Chinese and European cultures as a response to the questions posed by one of his graduate students.[77] He critiqued the generally held view that 'while the Greeks developed the way of knowing nature by postulating scientific hypotheses, the Chinese approached nature, only by direct inspection and aesthetic intuition'.[78] According to Needham, this position is contradictory to the facts he had observed in the intellectual history of China; where the theories of Yin and Yang and the conceptions of five elements are comparable to equal status with the pre-Socratic and other Greek schools of thought.[79] However, he analyses internal and external factors for the failure of adequate growth of empirical knowledge from such theories. To him, their failure in applying mathematics to the formulations of regularities in natural phenomena was aggravated by the pressures from the contemporary socio-economicc system in the history of China. This, rather than the difference in Chinese apprehension with the Europeans was the reason for the failure of evolving an empirical scientific revolution in China.[80] To him, the Chinese, contrary to the Europeans' universally applicable natural law (which might have helped the growth if natural science there) held that the natural law (*li*) is inapplicable outside human society.[81] Moreover, the European

77 Dhruv Raina, S. Irfan Habib, 'The Missing Picture: The Non-emegence of a Needhamian History of Science in India, in *ibid.*, pp.285-286.

78 Joseph Needham, 'Human laws of Nature in China and the West (II):Chinese Civilization and the Laws of Nature' in *Journal of the History of Ideas,* Vol.XII, No.2, April, 1951, pp. 194-230. (accessed from JSTOR-www.jstor.org).

79 *ibid.*, pp. 226-227.

80 *ibid.*

81 The *li,* which can be equated with natural law, was derived out of the Confucian body of ancient customs, usages and ceremonies including filial piety. All of them were more flexible than the other Chinese traditions of

positive law with its meticulous formulations was derived out of their presupposition of a supreme lawgiver or designer of the universe.[82] This presupposition helped them to search for such a law predetermined by the grand designer and the secret code behind every motion and structure of the universe. In the absence of such a conception, the Chinese, like Indians did not attempt to imagine or discover the secret behind the universe.

This formulation by Needham caused a paradigm shift in the approach towards modern science, its link with Pre-modern knowledge traditions of different cultures. This approach questioned the Euro-centric notion of scientific culture as an altered continuation of Greco-Roman classical traditions with its innate revolutionary and rejuvenative characteristics, held more or less unquestioned until then. Thus the knowledge traditions of different cultures of the world, either practical or systematically formulated began to be re-approached and seriously enquired. Therefore a connection linking modern science and Pre-modern knowledge traditions began to be traced back. Historians and philosophers of science reoriented their positions not only on science but also in various intellectual traditions as well as practices of different cultures. Responding to this ecumenical characterisation of science, Romila Thapar commented that knowledge emerges from the combination of indigenous genesis together with transmission from other coexisting cultures. This transmission involves some contestations and negotiations. This process takes the form of cultural transactions within a culture and between cultures. Knowledge either as a body of information or as a theory of explanation is part of this transaction. Science is also part of a culture.[83] To her, though knowledge traditions and changes throughout history

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positive laws, held supreme by the Legalists (*Fa Chia*). For a detailed discussion on the process of evolving natural law from people's practices see, *ibid.*

82 *ibid.*, p.227.

83 Romila Thapar, 'History of Science and *Oikoumene'* in S. Irfan habib, Dhruv Raina eds., *op cit., Situating…* p.17-18.

are universal, the difference between pre-modern and capitalistic world order is the structure of their universality. Changes in pre-modern societies with the gradual growth were 'vertical universal' whereas in the capitalistic world order change is horizontal. To Thapar, this 'horizontal universality was made possible by the historical context of capitalism and colonialism'.[84]

Colonialism And Transmission of Science

The Turkish conquest of Constantinople was an important event in intellectual history as well. This led to the encounters and confrontation of different systems of knowledge under the Arab mediation, culminating in the emergence of modern science with an entirely new methodology and world view in the changing socio-economic and political situation. Moreover, the expeditions in search of the raw materials and market for the European industry also led to the 'discoveries' of different cultures with extensively flourished knowledge systems, like India, China, etc. Thus this situation led to the exchange and growth of new knowledge and culture in different parts of the world. Europe, being the centre of the early phase of industrial capitalism had a more favourable condition for the immediate emergence of a scientific revolution. The changing situation of knowledge as discussed above had a two-dimensional growth in this period. One is the addition to the knowledge, both cultural and philosophical through interaction among people from different cultural backgrounds.[85] And the second was the spread of the new knowledge in the form of technologies and other applications through different agencies in the colonial, imperial and changed capitalistic circumstances. There are a large number of studies regarding the relationship

84 *Ibid.*, p.18.

85 There are several works on the history of modern science dealing with the origin of science searching the roots of science in various cultures. Though many of them are assertive of the existence of 'science' in pre-modern Asian-African and European cultures, there are works keeping the historical understanding of the process of evolution of modern science. For instance see A Rupert Hall, *The Scientific Revolution 1500-1800: The Formation of the Modern Scientific Attitude,* London, Longmans, 1962 (1954).

between colonialism and the growth of modern science and the transmission of this knowledge worldwide, with different perspectives and standpoints.[86] This process of transmission and interaction of modern science either in European and Non-European countries were not one dimensional. Instead, it has been a complex process, undertaking different institutions and strategies with multiple intentions as well as aims, extending from accidentality to organized-intentional actions or superimpositions.

Basalla Model

One of the prominent and seriously debated views regarding the spread of modern science worldwide was put forward by George Basalla during the 1960s. He found science disseminated from Western Europe to the rest of the world through different means including military conquests, colonization, imperial influence commercial and political relations and missionary activities.[87] He presents a three-phase model of the diffusion of modern science from Western Europe (to him, where it has emerged and grown) to different parts of the world including Eastern Europe, North and South America, India, China, Australia, Africa, Japan and elsewhere involving three phases.[88] These three phases overlap each other. In phase I, the 'nonscientific society' provide source materials for the 'scientific nations' who visit, survey and collect flora, fauna, lifestyle, physical features, etc. and take back the results to western Europe. During this phase through these process sciences such as Botany, Zoology and Geology predominated. Those who engage in the process of collecting information from these 'newfound lands' were not

86 For a brief historiographic understanding of this, see Kapil Raj, "Beyond Post-Colonialism... And Positivism: Circulations and the Global History of Science", in *ISIS*, Vol. CIV, No.2, June 2013, PP 337-3457.

87 George Basalla, "The spread of Western Science", in *Science*, Vol. CLVI, No.3775, May 5, 1967, PP 611-622.

88 He views western Europe as the core or homeland where modern science has emerged and from where it was taken over by various agencies into different parts of the world.

necessarily scientists themselves. Instead, amateur explorers, travelers, missionaries, diplomats, physicians, merchants, adventurers, etc. make their attempts in collecting, recording and observing the nature and social life here. Moreover, Basalla also accepts that these 'new worlds', may not be an uncivilized country being occupied by the European colonialism, instead, they may be ancient civilizations with clear knowledge systems such as India and China, etc. He also asserts that though European interests in Trade and exotic items explain partly the impulse behind colonialism, the explorations and investigations are ultimately related to the scientific culture.

The second phase according to Basalla is marked as 'colonial science'. In this stage of 'dependent science', scientific activity in the new land is based upon the institutions and traditions of nations with an established scientific culture.[89] This stage expands the range of science from the study of natural history and finally coincides with those nations supporting scientific researches. The colonial scientists may either be natives of the colony or a settler, but his source of education will be directly or indirectly linked with western European institutions or works. The colonial scientist seeks membership in European scientific societies and publishes his works in European Journals. Basalla argues that the colonial scientists have the handicap of relying upon the alien scientific traditions and the lack of scientific institutions. Still, they are fortunate to utilise the resources of the existing European traditions for developing their own.[90] Though they lack

89 However, he states that the 'colonial' in the second stage does not necessarily involve actual political colonization. In this stage, the dependent country may or may not be a colony of the Western European nations. He thereby extends this stage to Russia, Japan or the United States of America as well as India and China, *ibid.*, p. 613.

90 In this sense Basalla is being criticized by many scholars for not being historical in his understanding of actual political colonialism and European imperialism, their role in deindustrialising the colonies and plundering the wealth, knowledge, etc. and thereby checking any possible intellectual advancement. He also does not find the favours received by European scientists in publishing and claiming the discoveries. He also traces the

prestigious centres of scientific research, he adds, the colonial scientists, through their contact with the established scientific cultures abroad, can open up a milieu of scientific research and challenge and surpass the works of European savants.[91]

The third phase according to Basalla is that of independent scientific researches in colonies and completes the process of 'transplantation'. The phase in which the scientists would attain orientation and reliance within the country. There would be a consensus on six elements that the scientists of a country are required and attempted to attain though not completely in the third phase.[92] He also identifies the independent character of science in this period through the eradication of resistance against science on philosophical and religious grounds, which the colonial scientists had either to ignore or circumvent.[93] The teaching of science should get introduced into all levels of education in this phase. Native organisations for the promotion of science including professional associations, specialist societies, etc. are also requisites for the growth of science in the third phase. Better means of communication including journals and other publications would help to connect scientists and

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examples of numerous scientists in the colonies excelling in the fields than their counterparts in the same fields in the 'core'. For a detailed analysis of the plight of Colonial scientists and their encounter with European counterparts see, Dhruv Raina, *op cit., Images and Contexts…..*

91 George Basalla, *op cit., The spread..., op cit*., p 614.

92 They are 1) the scientist will receive most of his training at home 2) they gain some respect for their calling, or perhaps earn their living as scientists in their own country itself. 3) Scientists get intellectual stimulation within the expanding scientific community 4) Communication of ideas to the fellow scientists at home and abroad would be easy 5) would get better opportunity to open new fields of scientific endeavour and finally 6) scientists would get rewards of national prestige for their remarkable contributions. For details, see *ibid.*, p 617.

93 For the eradication of such resistance at the popular level, scientists and like-minded people will have to strain by establishing science libraries and such social educational movements etc. So that people would accept the new pattern of thinking and change their mind, which is a prerequisite for the growth of independent science.

people which would thereby ease the growth of science. Though some of the basic conceptions and classification of George Basalla has been accepted by many scholars dealing with history of science, there are some strong and valid criticisms from different corners to his explanations.[94] He basically conceives the transmission of science as a process of transaction between scientists and their community or organisations in the 'core' scientific countries to those in the cultural 'periphery'. He neglects the initiations and evolution of independent knowledge derived out of cultural and intellectual contradictions in non-European cultures throughout history. He undermines the larger socio-economic and political situation in which this process is taking place. He rejects the imperial interests behind the investigations in the first phase by the statement that ..." ultimately European investigators' work is to be related to the scientific culture he represents".[95] He also bestows the reasons for the growth of science in western European countries to their 'culture' distinct from others. This can be questioned with the examples and criticisms raised against modern science in western European countries even during the 19th century and in the wake of the French Revolution cited above in this chapter itself. Moreover, such an argument is the complete rejection of the complex process of history and especially the historic growth of modern science. Renaissance, humanism, geographical discoveries, and the industrial revolution, etc. are to be considered as path-breaking revolutionary movements in the history of

94 His Euro-centric approach towards the history of science has been widely criticised by scholars of different positions. For instance, Apart from the criticisms of Raina and others cited here; Roy Mac Leod criticise him for his conception of 'moving metropolis' and homogenisation of all societies without accepting the dynamic process of the spread of science. For details see, Roy Mac Leod, "On Visiting Metropolis: Reflections on the Architecture of Imperial Science" in *Historical Records of Australian Science*, Vol. V, No.3, Canberra, 1982. Shruti Kapila by citing several criticisms against Basalla argues that he had viewed non-European societies as passive recipients of science and the science in colonies were accepted as a mutant version of the original European ones. For details see, Shruti Kapila, "The Enchantment of Science in India" in *ISIS*, Vol. CI, No.1, March 2010, pp 120-132.

95 Basalla, *op cit*., p. 613 (assertions added).

modern science, which Basalla undermines to a certain extent in the article cited here and his book on the history of technology.[96] Another important problem in Basalla's conception is his formulation of the evolution of technology. To him, technology with its innate characteristic of progression evolves from the primitive stage and therefore he rejects the possibilities of a revolution behind innovations as it is a natural progression.[97] However, this argument is inefficient to explain the absence of any remarkable innovations for centuries in various techniques. His assertion of 'desire' instead of 'need' behind discoveries and inventions seems to be an overstatement aimed at the rejection of the concept of revolution and thereby the history of human progress. He also negates the possibility of a universal need as it may differ from region to region and among different cultures. He cites the examples of wheel desired in Europe and rejected in Africa due to the difference of geographical settings.[98] His assertion on science as the culture of the 'core' and the evolutionary aspirations of 'peripheries' to that culture is not historically provable.[99] His argument that human 'propensity for novelty' is the factor behind inventions, not necessities fails to explain the reason for various technological inventions in particular historic contexts, not in other. Finally, he also rejects the ecumenical character of science and emphasize on the local setting of society decisive in the growth of science.[100] This also might be due to his over inclination on science culture and an extended 'Euro-centrism'. Notwithstanding the shortcomings of his arguments, he rejects the chauvinistic sorts of nationalism. Though he notes from Isaac Newton that

96 George Basalla, *The Evolution of Technology*, New York, Cambridge University Press, 1988.

97 *ibid.*

98 *ibid.*

99 This is evidenced in the challenges being raised against the teaching of Darwin's theory of natural selection in European and American educational institutions and the recent rejection of the idea of 'climate change' by the president of the United States and the acceptance received for this unscientific and ahistorical debate there.

100 George Basalla, op cit., The spread of Western Science…, p 620.

'the descent of stones in Europe and America must be explained by one set of physical laws', he rejects to accept the dictum of Chekhov that 'there is no national science just as there is no national multiplication table.'[101]

The notion of one way transmission of science from the core to the peripheries has been questioned by many historians and sociologists of science. Many scholars, instead accept the Latourian conceptions of redefinition, exchange and translation as the method of the spread of modern science. The ideal 'core' from where the science and other knowledge radiate to the remaining societies has been challenged not only by the post-colonial scholars but many others, cutting across the philosophical and ideological standpoints. Dhruv Raina, Rainland Von Gizycki, Thomas Schott et al to name a few. The idea of the flow of science from the core to the peripheries has been challenged on various grounds, including the centrality of the core, passive imitation of the core by the periphery, vagueness in the phases/stages, secondary status of independent/colonial researches in the periphery. However, his interpretation has led to various discussions in the manner in which knowledge is transmitted from one society to others and different stages of exchange of knowledge, especially modern science.

Dhruv Raina, among others, has challenged the idea of one-way transmission of science from the core to periphery in general and Basalla model of three-phase transmission of science into 'non-scientific cultures' in particular. Citing the examples of some Indian scientists Raina questions many of the conceptions of Basalla. He rejects the position of central provider of knowledge of western European nations. To him "Centre was not just a source of influence but the site where attenuated knowledge from the periphery was re-appropriated".[102] He also rejects the notions of the transmission of science as a one-way process and that the colonial periphery was merely passive recipients. He, however, suggests that instead of

101 *ibid.*

102 Dhruv Raina, *op cit*., *Images and contexts*…. p 165.

'transmission' of ideas, the Latourian conception of ‘redefinition, exchange and translation' etc. would acknowledge the state of colonies as active agents surpassing the centre.[103] However, the scientists in the periphery were not completely aware of the potentials of their formulations, since they were supposed to be determined by what the centre considered relevant. Moreover, the marginality of the periphery also restricted them from proceeding further. Raina also questions the Pasteurian internationalism of the 19th century. To him, though the scientists were citizens of the world with their procedures and results being internationally valid, nowhere it was free from the nationalist prestige. The scientists from or working in the colony required to be attested and decoded by the established interlocutors at the center. He cites the examples of Yesudas Ramachandran's encounter with Augustus De Morgan.[104] Thus Raina identifies this process of 'interlocutory attestation' and acclaim for the peripheral scientists as Latourian 'translation'. Likewise, Hardy's 'discovery' of Ramanuja also indicates the dynamic centre receiving the voices surpassing it.[105] To Raina, the experience of P.C Ray and his encounter with Marcelin Berthelot was another example of the reciprocal relationship between orient and the occident.[106] P.C.Ray had claimed that the knowledge of mercury and related compounds in traditional Indian medical

103 Raina cites the example of Meghnath Saha, that scientists in the periphery could surpass the centre due to the hybrid roles it plays. Meghnath Saha worked on Nuclear physics and thermodynamics in the Calcutta University. Being in the periphery there were some sorts of isolation as well as freedom for scientists like him. They could work without the pressure from the conformists and could attempt the possibility of hybridization which redirected them towards, new problems.

104 Y.Ramachandran was a mathematician and Urdu journalist, trained in Algorithmic tradition contributed much to the growth of mathematics. He wrote his *Treatise on the Problems of Maxima and Minima* in 1883. It had to be introduced by an established mathematician from the west. Thus Demorgan wrote a' forward' to the 'Treatise'.

105 Dhruv Raina, *op cit.*, *Images*...pp 165-167.

106 Unlike many other contemporaries P.C.Ray after his study in Europe had returned to India and established the Pharmaceutical industry in Calcutta and carried his research in the 'periphery'.

systems, predated the Arab influence, which was unaccepted by Berthelot and others they found it as transmitted from Greece through Arab worlds to India and China. But finally Berthelot had to surrender his views to Ray and he claimed that Ray's book is an additional chapter in the history of sciences and the human spirit. Ray's source of inspiration being Germany instead of Edinburgh has also been claimed by Raina as a challenge to the centrality of Western Europe. Thus through these examples, Raina tried to pose a serious challenge to the Euro-centric views of modern science.

However, a transition in the approaches of Indian intellectuals towards modern science and Europeans during different stages of British colonialism in India is quite clear. The European approach towards Indians and their knowledge traditions also underwent similar but distinct changes during this period. During the eighteenth century Indians in particular and orient, in general, were viewed as spiritual and 'less material' people who render everything to god and therefore no material knowledge and understanding of the world is possible for them. Therefore, though accompanied by heating debates, the establishment of Madrassa and Vedic centers of learning were considered as requisite and sufficient means for educating them. However, with the establishment of the Asiatic Society of Bengal and commencement of Asiatic researches, it became clear to the Indologists that the Indians from ancient period onwards possessed some knowledge and which were unique to them. It is evident from exclamatory expressions of Europeans, including Edward Strachey who noted that 'every scrap of Hindu science is interesting'.[107] Likewise, Indologists like William Jones, Henry Thomas Colebrooke, etc. expressed similar opinions on "Indian scientific traditions" as impressive though inaccurate'. Jones is reported to have said that 'Hindu writings might yield some helpful hit to the European scientists' he somewhere had also said that the Asiatics were 'mere children' when

107 Deepak Kumar, "The Culture of Science and Colonial Culture: India 1820-1920" in *The British Journal of History of Science*, Vol. XXX, No.2, June 1996, P 196.

compared to the Europeans.[108] However, this was not a unanimous position among the Europeans working on Indian studies; it even varied in between two extreme positions of complete negation and whole-hearted acceptance. For instance, John Seely reported that "we (the European) are not cleverer than a Hindu, our minds are not richer or larger than his, we cannot astonish him, as we astonish the Barbarians by putting before him ideas that he never dreamt of. He can match from his poetry our sublimest thoughts; even our science perhaps has few conceptions that are altogether novel to him".[109]

Indian intellectuals in the earlier stage during the 18th century viewed Europeans as morally and culturally weaker and held them critically. For instance, Deepak Kumar cites the critical references of Itisamuddin, an envoy of the Mughal emperor to the British King, who visited England in 1767 with some gifts to King George III. The administrative and moral conduct of the Europeans was critically recorded by him.[110] But during the late 18th century Mirza Abu Talib, who spent about four years is England wrote widely on the literary societies, theatres, mills, iron foundries, hydraulic machines. It was the time of high industrialization in England and therefore, the whole admiration can seem in its wake.[111] A detailed description of the scientific institutions and practices in England has been given by Jahangir Nowrojee and Hirjeebhoy Merwanjee. The practical science and polytechnic inspired them very much. They explained the sources of employment, especially the steam culture and iron and coal industry manufacturing industry. The riches make England the envy of the world.[112] The transition in the descriptions mentioned here clearly indicates to the social and intellectual shift among the

108 *ibid.*, p 197.

109 *ibid.*

110 *ibid.*, p 196. But interestingly the gifts were taken over from him and presented to the King by Robert Clive as his own.

111 His travelogue was published as *Safarnama* and later translated to various languages during the early 19th century. For details see, *ibid.*

112 *ibid.*

Indian upper and middle class. There was another shift in British official position on India marked by the Anglicist turn from the orientalist positions. These shifts were reflected in the debate on education.

There were many antagonistic views on the previous indigenous education systems and the new system to be followed in India. Sir Henry Maine viewed native thought and literature is inaccurate and careless. The intellect needed here is truth in the stricter sense, which requires the tonic of science teaching.[113] J.W.Massie further stated that "the absurd system of Hindoo geography and astronomy and their stupid fictions in natural sciences could be easily overthrown by demonstration and experiment".[114] Lord George Curzon compared the proposed cultural change that modern education would bring in India with the grafting process; here the science of the west is grafted on to the eastern stem. Therefore, they would become happier and useful members of the body politic.[115] While one of the members of the court of Directors in a debate in 1792 had observed that "America was lost to the British through the establishment of schools and colleges, the same should not be repeated in the case of India. If they need to get educated, they must come to England for themselves for that".[116] However, the 'Adam's Report on Vernacular Education in Bengal and Behar' had documented the existence of different types of indigenous education institutions such as *Padashala, Madrassa, Mats,* etc. providing instructions on Indian medical systems, mathematics, astrology, etc. which were working upon the rent-free donations

113 Cited in Zaheer Baber, "Science, Technology and colonial power" in S.Irfan Habib and Dhruv Raina (Eds.,), *Social History of Science in India*, New Delhi, Oxford University Press, 2007, p. 102. (Assertion added).

114 J.W.Massie, *Continental India: Travelling Sketches and Historical Recollections,* cited in, *ibid.*

115 *ibid.,* pp. 102-103.

116 From the Second Report of the Select Committee of House of Lords, cited in *ibid.,* p. 104.

of feudal lords.[117] As Adam reports, in the Hugli area every head of villages employed teachers for the children.[118] However, the British officials of the late 18th century reported revenue loss through 'rent-free land for education'. They found it as the inefficiency, confusion and fraud of Government officials to collect tax from those lands. Therefore the law was enacted by the early 19th century for 'resumption of the land' or right to collect revenue from previously tax-free land grants. This led to a huge increase in revenue. In Bengal alone resumption led to an increase of five lakh rupees, in the North-Western province, the increase was Rs.2321953.[119] However, its consequence was heavy on the state of education and learning. Adam himself has reported that the destruction of indigenous education was due to the withdrawal of patronage as per the resumption of land. The district collector of Bellari in Madras reported that 'though the native education was imperfect there are a few students, out of millions of children in the district. The villages with many schools formerly have none now".[120] Lord Minto in 1811 noted that the 'state of science and literature is in decay among the natives. The number of the learned is not only diminished but those who are in the circle of learning appears to be considerably contracted. The abstract sciences are abandoned, polite literature neglected. This can be traced to the want of encouragement formerly offered by the princes and chieftains and opulent individuals under the native Government'.[121]

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117 William Adam, 'Adam's Report on Vernacular Education in Bengal and Behar, submitted to Government in 1835, 1836 and 1838 with a brief view of it's past and present conditions, Calcutta, 1868, cited in *ibid.*, p. 105.

118 *ibid.*

119 *ibid.*, p.106.

120 *ibid.*, p. 107

121 *ibid.*, pp. 106-107. This neglect of the literature and abstract knowledge is caused heavily by the increasing influence of the utilitarians in the administration. They found these traditional learning as worthless and wastage of time and effort.

The changes during the Anglicist turn will be understood more clearly in the comparison of their administrative policies with the previous governmental action. In 1781, Warren Hastings did not hesitate in establishing a Madrassa at Calcutta on the request from the 'Muhammadans of Distinction' and assigning land worth Rs.20000 following the indigenous practices, for its maintenance. Similarly, Jonathan Duncan established a 'Hindoo Sanskrit college' at Banaras. Both these institutions included natural philosophy, theology, law, astronomy, geometry, mechanics and ritual medicine including herbal lore in the curricula.[122] The utilitarians who followed these orientalists blamed their predecessors for promoting the 'Indian blunders of astrology and their mathematics including Surya Siddhantha astrology was taught in pursuit of astronomy'.[123] Mill reportedly wished to 'convert India to be the first country on earth to boast a system of law and judicature as near perfection'.[124] They wished to promote science and technology in India. William Bentinck, Thomas Malthus, T.B. Macaulay, etc. were at the helm of authority in India who, along with others held the Anglicist point of view and opposed the promotion of indigenous knowledge. In 1830, the Court of Directors informed the Governor-General that to up bring Indians as the best qualified and intelligent people they need to be familiar with the European literature, science, and civilization of Europe. In 1831, the Committee of Public Instructions submitted its report stating their 'success in teaching Euclid, European astronomy, English language and medicine in Sanskrit college and *Madrassa* without provoking the natives and without violence to the native prejudice'.[125]

It was during this period that the middle class in India especially, the *Bengali Bhadralok* raised their demand for imparting modern education in

122 *ibid.,* p. 108.

123 *ibid.,* p. 109.

124 James Mill, *Selected Economic Writings*, cited in *ibid.*, p. 109.

125 Cited in *ibid.,* p.112.

India. As it is widely discussed, the renaissance movement and its leaders like Raja Ram Mohan Roy, Ishwar Chandra Vidyasagar, etc. demanded modern education for the emancipation of Indians. Ram Mohan Roy attempted to Westernize Indian *Vedantha* traditions while Vidhyasagar stood for the Indianisation of modern sciences. Balashastri Jambhekar (1802-1846) in Bombay presidency stood for popularizing *modern* science through his publications in Urdu and English. He was the first Indian to become a professor of mathematics and astronomy at Elphinston College at Bombay. He taught science through the Marathi language for its better understanding to the pupils. Yesudas Ramachandran taught mathematics and explained modern calculus and introduced the acculturation of modern mathematics in the colonial context. He is said to have explained the problems in the Euclidean Geometry in *Sari-ul-Fahm,* his Urdu work and*Treatise on the Problems of Maxima and Minima*. He was influenced by the 12th-century Indian text, *Bijaganith* of Bhaskara. He realized the necessity of modern knowledge and stood for that. He converted to Christianity and said to have participated in the British attempt of suppressing Indian revolt.[126] So was the case of S.C.G.Chuckerbutty (1824-1874), one of the first Indians to go to England for higher studies in medicine. He observed Indians by tradition are living in ignorance and that led them to fight against the British who stand for the modern civilization and tolerance. He had opined that the 'revolt of 1857 was a war of ignorance and Fanaticism'.[127] He stood for educating Indians in modern science. To him, the light of science is producing purifying and elevating effects. Only through modern education and learning science, Indian would receive salvation'.[128]

There were several similar attempts from the part of educated Indians for popularising modern science here. Journals like *Samvad Prabhakara*,

126 Deepak Kumar, *op cit.*

127 *ibid.*

128 *ibid.*

Tatva Bodhini, *Vividharta Samgraha*, etc. proclaimed their objective as the popularization of new knowledge and Indianisation of modern science. Thus they attempted to produce a synthesis of knowledge and culture and transcend the cultural barriers imposed by colonialism. They claimed this is possible through the innate cultural pluralism of Hindoos. Their strategies included imitation, translation, assimilation, distanced appreciation and even retreat to isolation. They held science apart from colonialism and politics and took it as a means of emancipation and rationalisation of society. They held that rationalism itself is liberating conscience and can be used against the Europeans, as the notions of liberty, individual freedom, honesty, etc. are inherent in the free human conscience. It is free from cultural barriers and therefore not a European phenomenon.[129] It was this desire of the middle class which led to a wider debate on modern science in society rather than British education. Bankim Chandra wrote on several occasions on *Vijnana Rahasya* (secrets of knowledge); he cited several European scholars for establishing the necessity of modern knowledge, science and rationality in his works. For instance, in his *Banga Darshan*, he used viewpoints of T.H.Huxley, Augustes Comte, etc. He rejected many of the 'illogical' conceptions of ancient India such as the Hindu conception of 'Trinity' and aberration but later he tried to find out traces of science in ancient logic, for example Darwin's theory of Natural Selection.[130] Thus there was a debating atmosphere and positive approach towards modern science among the intellectuals of India during the 19th century who tried to problematise the past.

It was in these circumstances of increasing demand for English learning, science teaching and employment among the middle class especially the 'Bhadralok' that the Anglicists and utilitarians came to the helm of Indian administration. T.B. Macaulay, William Bentinck and the court of Directors

129 Deepak Kumar, "Reconstructing India: Disunity in the Science and Technology for Development Discourse-1900-1947", in S. Irfan Habib and Dhruv Raina (Eds.,), *op cit., Social History of Science.*. p. 353.

130 Deepak Kumar, *op cit., The culture*...

in London decided to introduce modern knowledge and English medium learning in India. Though there were serious debates, attempts on the medium of instruction whether English or vernacular to be used, the Anglicist views finally prevailed.[131] William Bentinck in a resolution called for the withdrawal of financial assistance to *Madrassa* and Sanskrit college and those funds would thenceforth be spent for teaching science and English. This interest in English teaching was a part of the project of recruiting Indians for the subordinate positions in the civil service and, not to create a community of scientists nor did they aim at the cultivation of scientific temper among Indians. The Governor-General Auckland, who succeeded Bentinck sanctioned 24000 Pounds for English teaching. The wood's dispatch of 1854 did not reduce the chance of oriental learning along with modern science and English Literature.[132] The requirement of a large number of engineers, knowing the regional languages led to the expansion of informal engineering schools. Baird Smith in 1845 established a school of Engineering at Roorkee which was expanded in 1847 as the Thomason Civil Engineering College.[133] Thus different institutions of engineering and technology were established in colonial India for meeting their requirements. They were of higher impacts in Indian life along with other technological introduction. More than education which was confined to a few numbers of people while comparing with the Indian population, technological advancement became influential in reshaping the country. Moreover, the introduction of Railways, telegraph and organized postal system, etc. by Lord Dalhousie, also a Benthamite, were of far-reaching consequences in the Indian social life. As William Thackaray had observed, the railway track is a demarcation line between past and present

131 The dispute between Anglicists and vernacularists has already been widely discussed. Therefore, the present dissertation is not going to its details.

132 Thus the process of modern education and its curricula varied according to the interests of the people in power. Any how serious science inculcation and promotion of its methodology and rationality has never been the intention of British colonialism in India.

133 Zaheer Baber, *op cit*., *"Science Technology*.... p. 117.

India.[134] Though the railway, telegraph and such other institutions were established for meeting economic and political requirements of colonialism they gradually became helpful to the masses and symbols of modernizations. This was reflected in the rebellion of 1857 which reflects the social mobility of the country. However, these devices were used by the colonial authority to suppress the masses.

Moreover, the recurring famines and fall in revenue prompted the authority to introduce modern means for improving agriculture like irrigation, better transportation, etc. Thus Science and technology began to be applied in practical life. The utilitarian interest of the authority has naturally supported this process. Thus by 1854, the public works department was created for the supervision and the implementation of the new projects and governmental works. This process of linking science and technology with the public works and utility did also provide legitimization for colonialism. As Arthur Cotton, an early enthusiastic proponent of science and technology has observed that 'increased public works and subsequent material improvements would constitute the most legitimate way of consolidating our power in India'.[135] Severe famines and subsequent decrease in revenue and construction of gigantic irrigation projects required a large supply of engineers. Moreover, canal irrigation, being not common in England, necessitated special training for those who can communicate with the Indian labourers. Thus training for educated people began in India.[136] Several such institutions were established at Calcutta, Poona and Madras. However, these educational institutions acted as models for innovations for British technical education. Until the 19th

134 *ibid.*, p. 119.

135 Arthur.T.Cotton, *Public Works in India: Their Importance Suggestions for their Extension and Improvement*, cited in *ibid.*, p 117.

136 A clear example of this process was the 'Ganga Canal Project'. For this, an informal engineering school was established in Roorkee in 1845, which was expanded to the Thomason Civil Engineering College in 1847. it was followed by some other training institutions and engineering became a fashion and it led to the infiltration of technical skills to the native people at large.

century there were no formal institutions for special training in technical education, the engineers were trained as apprentices. Thus the institutions in India became a model for replication in Britain.[137] Many public works were being carried out during this utilitarian's period in India. William Bentinck had declared that 'steamboats would revolutionize transport and communication and would serve as an engine for the moral improvement in a country cursed from one end to the other by the vice, ignorance, oppression, despotism, barbarous and cruel customs under the Asian misrule'.[138] However, the 'cotton famine' in America during 1846 was the instigating reason behind the implementation of the railway in India. The mechanised cotton mills, in Britain, were highly affected by the American Cotton famine, which necessitated immediate and speedy import from India. Thus similar to the line from Manchester to the Liver pool, the railway was introduced in Bombay connecting with cotton-producing centres of Deccan. However, the railway was extended to connect military and strategic points and commercial centres linking to the interiors. Notwithstanding it influenced Indian people and acted in their social life. It became a clear expression of practical science to the people in general. However, though it acted as an agent of modernization to a certain extent, and an eye-opener to the people as claimed by the Europeans, it did not lead to the destruction of the caste system and other existing social evils (as claimed by colonial administrations). However, such practices had transformed and extended into newer fields and forms with altered expressions.[139]

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137 Thus the colonial encounters contributed to the development of technical education in the 'core'. This itself would challenge the conception of one way transmission of knowledge from the core to the periphery.

138 Zaheer Baber, *op cit*., *Science Technology...*, p 118.

139 Though the hierarchical caste system and its divisions of people had been considered as one of the most stagnant institutions in the traditional Indian society, its practices and ceremonies evolved in the feudal order had become irrelevant and was highly threatened in the changed, industrialised colonial society. However, this contradiction also had overcome very soon through

The mobility visible in the society by various means including those mentioned above and the subsequent dissent and hope had also become expressible through the newly developed means of communication and publications which helped the consolidation of such sentiments and led to the unprecedented movements in Indian History. Such organised movements have erupted all over the country with varying natures and strength. Such mobilisations were there before and after the revolt of 1857 and during the early 20th century. However, many of the middle class and direct beneficiaries of colonial reforms did not take part in the revolt and some of them even criticized the rebellions as derogatory and uncalled for at the moment, as mentioned earlier. Notwithstanding, such movements, later on, spread to different sections and many from the middle class took the leadership of those movements and they achieved nationalistic and revolutionary character, as the socio-political system imbibed by the new leadership was not the continuation of previous generations. More specifically they were mediated by modern rationality and its socio-political conscience. They were also aware of the movements all over the world as well as the stagnancy of the previous socio-political systems. Thus the movements were led by novel ideas of liberty, equality, fraternity.

However, the colonial administration swiftly responded to the movements which were even capable of their dethronement if grown further. The British parliament interfered and took over the administration directly from the company. The changes reflected in the approach towards the implementation of scientific and technical education in India. It also gave a vindication to the orientalist view of gradual and slower introduction of modern education, science, technology to Indians and led to the centralization and government control of existing scientific and technological institutions.[140]

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newer interpretations and expansion into new forms and practices. It also absorbed new social and economic groups into its folds.

140 *ibid.*, p 124.

The engineers of the public work department were designated as 'scientific soldiers' who worked in various fields of applied sciences and technology. Such as forestry research, coal explorations, mining, manufacturing of iron rails and locomotive designs etc.[141]

Frequently recurring famines as subsequent famine commissions also led to the spread of technology and modernization of agriculture. For instance, the Strachey Commission appointed for studying the famine and its effects in 1880 reported the necessity of reforming the Indian agricultural sector. It recommended diffusion and application of scientific knowledge of agriculture in India and the creation of agricultural departments in each province with officials knowing agriculture and its practices. Meteorological researches became widespread and several research papers on climate, sunspot and rainfall were published during this period.[142] Newly formed agriculture departments required scientists specialized in astronomy, telegraphy, Chemistry, Agriculture and forestry.

Curzon, himself keen to implement scientific researches and practices arrived in this situation to the helm of Government in India. He took various measures for preventing famines and other problems. His period was marked with the establishment of the Imperial Agricultural Research Institute at Pusa in Bengal. He also founded a Board of Scientific Advice in 1902, to co-ordinate scientific researches in India. He observed in 1902 that during the past 'undue prominence has been given to pure sciences and the practical and economic applications were neglected'.[143] Thus arose the historic problem of the conflict between fundamental versus applied researches. This conflict became detrimental in the future development of science in India and has been continuing its impact even after the independence of India.

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141 *ibid.* ., p 125.

142 For instance, Norman Lockyer published a paper on *The Cycle of Sunspot, and Rainfall in South India*, cited in *ibid.*, p 126.

143 *ibid.*, p 130.

Indian Initiations and Responses

Several initiatives for the spread of modern science were made in India during the 18th and 19th centuries itself. Scientific and research societies such as the Asiatic Society of Bengal established in 1784, Botanical Garden at Calcutta (1787) (it was very much similar to the Kew Garden in London), Bombay Literary Society 1804, Madras Literary Society 1818, etc. were some examples. Several surveys were carried out under the British officials on various aspects of Indian society and nature for understanding the reproduction and natural world of the colony.[144] These surveys naturally helped the projects of British imperial expansion. However, it also added to the understanding of Indians about themselves. For Indians, science entailed at once the process of adoption, propagation, contestation and rejection of an alien system of knowledge (at different levels and groups) as well as mobilisation for an enlightened society of modern India.[145]

Ram Mohan Roy wrote to Amherst to introduce Baconian education instead of Sanskrit learning in India. To him the establishment of a Sanskrit college can only be expected to load the minds of the youth with grammatical niceties and metaphysical distinctions of little or no practical use to the possessor or society.[146] While Sir Syed Ahmed Khan reiterated that a combination of cultural and structural factors including social customs, religious beliefs, political traditions and poverty are the factors keeping the Muslims of India away from modern education. They need the philosophy in the right hand and natural science in their left hand for social mobility. Moreover, the colonialists to a larger extent believed that Indians are

144 The Great Trigonometrical Survey, Zoological Survey, Anthropological Surveys, etc. are some examples.

145 Pratik Chakrabarti, *op cit*., *Western Science*…. p 12.

146 Cited in Zaheer Baber, *op cit.*, p 136. he was stressing up on technical and practical knowledge than theoretical and epistemological intellectualism. Similar opinions were raised by several revolutionaries and reformers of the period and subsequent generations.

incapable of engaging with fundamental scientific researches. Therefore theoretical and scientific researchers were not supported in India. When science teaching was introduced in the presidency college of Calcutta, Indians were denied positions as faculty members. Though there were qualified Indians for such posts, they were imported from England. Jagadish Chandra Bose, a Cambridge trained Indian under the guidance of Ray Leigh and Francis Darwin, whose works evoked an enthusiastic response from leading scientists like Kelvin, William Ramsay and others, had a discriminatory experience in India on racial grounds. When Bose returned to India and sought a post in the Presidency College, the principal strongly objected to his appointment to the post of a Junior Professor of Physics. Later it was accepted on condition of a two-third of a regular salary. However, J.C.Bose responded to this racial discrimination by never touching his monthly cheque.[147] Similar was the experience of P.C.Ray, who had obtained his D.Sc in Chemistry at Edinburgh and returned to India in 1888 to get on appointment in the Bengal Educational service. He had to wait over a year for the post of temporary Assistant Professor. He protested and said that 'If a British Chemist of my qualification were present, he would have been appointed immediately by the Secretary of State to the imperial service.[148]

Many scholars attempted to renovate Indian society in the light of modern science. Some tried to blend the traditional knowledge with modern techniques and there were efforts to professionalisation and cultivation of modern science in India. Many scholars found science as a modulation for Indian society and it would, therefore, help them to recover from the stagnation created by both their tradition and European colonialism. Therefore nationalism and science became closely intermeshed. Mahendralal Sircar's Indian Association for Cultivation of Science (IACS) was established in 1876 as purely an organization for promoting scientific research and knowledge,

147 *ibid.,* p. 140.

148 *ibid.*

managed and supported by Indians. In 1902 Satish Chandra Mukhearjea founded 'the Dawn society' to promote the idea of national education and publication of the journal 'the Dawn' was started for this purpose. The Indian Institute of Science (IISc), The Bose Research Institute (BRI), and the Indian Science Congress Association (ISCA), etc. had a similar objective of promoting nationalism and scientific research among Indians.

According to Mahendralal Sircar science was a metaphor of nationalism, it meant liberty, enlightenment from the 'dark ages' and it was the catalyst for new political and cultural self-expression. Sircar observed that 'Physical Science did not exist in India even during the greatest days of its glory and loftiest intellectual achievements. It must be introduced from the west.[149] He asserted that 'Hindoos, Mohametans and all other peoples of India must unite in the fraternal sympathy. The only means of advancement is the cultivation of physical science'.[150] He aimed not only the diffusion of knowledge to the Indians but the promotion of original research in India. He insisted on the national character of IACS. According to Sircar west and east had different trajectories while the west had pursued the study of the laws of matter; the east had been involved with the mind. He, however, hesitated to accept various formulations in the theory of evolution natural selection put forward by Charles Darwin. He wished to revive the spirituality of western science which it had lost; he was influenced by Father Lefont who was a science teacher at St.Xavier's College. Sircar, on the one hand, held science and worked for the cultivation of science in India, on the other he found a friend in missionary to critique Darwin and reject positivism.

Prafulla Chandra Ray, held an optimistic view regarding the growth of science in India, its legitimacy within the nationalist discourse. His generation of scientists J.C.Bose, P.N.Bose, P.N.Dutta, C.V.Raman et al took similar positions.P.N.Bose believed that modern science is the motive force of

149 Pratik Chakrabarty, *op cit.*, pp. 151-155.

150 *ibid.*, p 156.

colonial expansion. 'The Physicists and chemists in their laboratories are doing research to favour the colonial masters and to fatten the capitalists.'[151] He criticized the education system which creates a generation of Indians western in their aspiration and thoughts who know everything, history, literature, culture and logic of the west but nothing about their own culture, history, philosophy and literature. The University system of modern India is capable of producing clerks and other staff of subordinate service to the Europeans and not capable of critical thinking.

While on Gandhian influence P.C.Ray, who had established the pharmaceutical industry, argued for the promotion of Charka and against the greeding affects of high industrialisation. However, he did not follow Gandhian ideas on rationality, scientific knowledge and technology. By around 1930 P.C, Ray's 'industrial secularism' had gained much acceptance in various other debates. Though Jawaharlal Nehru, a patron of P.C.Ray had rejected Gandhian views that machines are 'evil in themselves', he tried to incorporate Gandhism within the modern industrialisation. Nehru rejected his idea of 'Charka' as a feudal symbol of Indian past.[152] Nehru's relationship with scientists of modern India like Megh Nath Saha of Allahabad University and others have helped the formation of his position on modern science and his measures for the promotion of science and technology.

Conclusion

The European renaissance, allied challenges to the traditions and large scale expeditions to different parts of the world in search of better living conditions, economic opportunities and in certain cases as an escape from the existing socio-religious situations in Europe, extended the possibilities of intercultural interactions and intellectual encounters. These encounters, exchange and interactions led to the emergence of scientific knowledge

151 *ibid.*, p.262.

152 *ibid.*, p.274.

involving elements of different traditional lore and altogether new methodology and rationality. Thus the ecumenical emergence of modern science involved the process of interactions, exchange, redefinition and translations in its spread among different traditional societies. However, being a revolutionary intellectual formation scientific knowledge had to confront the existing socio-political and religious ideologies. However, in Europe, the favourable conditions provided by industrial capitalism and colonialism led to the conversion of scientific knowledge and their logic to mechanical and other forms of application. Thus the expression of modern science as a productive force made scientific applications more attractive and acceptable. Thus science became more or less completely identical to technology. In this situation, traditional institutions and ideologies had either to cope with or redefine themselves or retreat behind the curtain. Notwithstanding these, several attempts to revitalise the traditions in the contexts of emerging national movements could not produce counter narrations or strong resistance against capitalism. In India, modern education imparted in the changing colonial context either by missionaries or other agencies including state provided a technological representation to science. Thus mechanical and other technical applications and instrumental rationality represented science in popular discourses.

CHAPTER III

ENCHANTING KERALA SOCIETY: MODERN EDUCATION, NEW KNOWLEDGE AND SOCIAL FORMATION

Introduction

Different educational systems in ancient Kerala were confined to the social elites in the caste hierarchy. However, in the context of missionary activities and large scale religious conversions, Brahmanic educations restricted to the elites were forced to extend to the middle castes as well. This created contradictions in the religious philosophies and practices among people and they worked for reforming religions from within. The newly emerging public spheres and mobility forbade the lower class people roused their sentiments and they agitated for achieving their civil rights. Their means were different in different regions. However, indicating the influence of new rationality many of them raised their demands against caste and other discriminations on the rational ground. The changing socio-political circumstances of early modern Kerala with new institutions including factories, hospitals, banks, trade unions, rudimentary democratic forms, etc. contradicted with the existing social practices. Such contradictions led them to rise for social reform. There were clear conflicting interests among the middle class regarding the course and nature of social change. This conflict was reflected as community emancipation and secular social formation. Many stood for the emancipation of each community in the peculiar social setting of 19th century Kerala as one of the means for social change in Kerala. This confusion during the Kerala renaissance gave birth to different or even opposing streams as the natural progression of the early social reform movements. Rational and atheistic movements as well as community reform movements. Both these were crucial in the progress of modern Kerala society.

It has generally and vaguely been held that mobility to the 'stagnant' Pre-modern society was caused by the introduction of 'modern education', 'scientific rationality' and subsequent social reform movements. However, in the case of Kerala, there seems to have a slighter variation to the sequence of these events. Before the spread of modern education, more specifically among the people who had not undergone science education and less directly affected by its rationality and sensibilities, a wave of criticism against traditional socio-religious practices and way of life had grown. Though colonialism and religious conversion had indirect influence upon such movements they were not the immediate reason behind these movements. The predominant caste hierarchy, unprecedented accessibility of middle castes to a variant of traditional education and the subsequent realisation of practical and theoretical life along with the influence of changed colonial socio-economic and technological circumstances created a contradiction among the people. These contradictions and favourable social situations led to the emergence of wide social criticisms and reform movements among different social groups and within the existing socio-religious conditions. The socio-religious reform movements were not one dimensional. Instead it extended from mere socio-religious criticisms to agitations for civil rights of the lower class people, including right to walk through public roads, wearing clothes, ornaments, drinking water from public wells, entry in to civil and public spaces as well as temples or other centres of worship, right to nomenclature, right to construct capable houses, etc. along with religious reforms. Its philosophic position was also very wide, from clear materialism, agnosticism, atheism, rational positions, eclecticism, pure traditionalism, neo-traditionalism, etc. most of the reformers who led these movements (earlier phase completely and the latter phase partially) were unfamiliar with modern education, English and science learning in the conventional means; but many of them had undergone some variants of the traditional educations. They also might have been aware of the international movements during those periods. It was from this platform of a critical and reformative social movement, that various revolutionary and neo-

traditionalist movements have emerged later on. Thus the extension of a variant of the pre-modern education system and traditional knowledge to the people belonging to lower and middle castes and subsequent internal contradictions between practice and knowledge led to socio-religious reform movements were the progenitor of the social change in Kerala.

Forms of Education and Social Change

Almost all discussions on education in Kerala can be summed up into two broad groupings. First is the proposition of a sudden outbreak of modern education and its influence on the formation of modern Kerala. This type of discussion extends from the missionary and colonial endeavors and indigenous responses to post-independent initiatives. The second group of discussants hails the teaching-learning process starting from the ancient period as evidenced in Sangam anthologies and proceeding through the Vedic learnings,*sala, madam*and similar institutions up to the formation and services of *Kutippallikoodams* and *Ezhuthupallis*. The second group is critical on the role played by the colonialism and missionaries in the history of inculcation in Kerala and opening up a paradigm shift in the social setup. Apart from the factual analysis of events and narrating the sequential chronological order of empirical data based on source materials of different or even opposing characteristics, these two viewpoints lack the basic features of historical analysis. However, factually both these standpoints would be filled with valid and true incidents but their problem lies in the absence of historicisation. Those who stress the socio-cultural importance of the pre-modern learning centres and their achievements in those societies along with their influences, in the societies extending up to modern period would not see their roles in maintaining and reproducing the norms and values in their contemporary society which were either antagonistic to or less considering of the majority of the society from the modern perspective. Those people, who were the actual breadwinners, but still kept away from all these discourses, and remained behind the curtains, throughout history. These scholars do not mention the

extent of the role of these knowledge and education systems upon the life of the general society, apart from some intellectual curiosity and debates. While many of the protagonists of modern education were not critical towards the socio-economic, political and religious intentions behind the implementation of modern education either by the missionaries or colonial government itself. They do not even consider the colonial intention and capitalist needs of the age. Notwithstanding, the changes in education and its extension to include a larger number of people into its folds in the context of missionary activities and religious conversion created a situation of larger turmoils in Kerala. A critical approach towards the tradition and its socio-political institutions produced a group of middle-class aspirants of social change and reforms. That, in turn, became the foundation stone of modern Kerala with a complicated social formation reflecting the contradictions in the society at the dawn of the modern period.

Pre-modern Education systems

Pre-modern Kerala had different forms of education sufficient for maintaining and reproducing the socio-cultural and economic systems of those periods. There are references to educational institutions such as *Tinnappalli* in *Sangam* Literary Corpus.[1] *Kanakkayar, Karai Asan, Asiriyar, Kulapathi*, etc. were terms denoting teachers of villages in them. The survival of many of the poems, belonging to the period, also strongly indicates the importance given to learning and literature by them. Still, there is no strong and reliable evidence to comment on the subsequent changes in those systems of education. However, with the predominance of the Brahmanic system and caste oriented social hierarchical setup, there were several traces to the *Vedic* and Sanskritic learning centres. Apart from the well-acclaimed Kanthallur

1 Cited in Sreejith.E., *Keralathile Vidyabhyasam : Charithram, Varthamanam* (Mal), Kottayam, Sahithya Pravathaka Co-operative society, 2016, p. 25. A detailed description of *Tinnappalli* is also available in T.V.Venkateswaran, 'Negotiating Secular School Text Books in Colonial Madras Presidency' in *Journal of Scientific Temper*, Vol.I .No.3-4, July 2013, pp. 143-197.

Salai there were evidences of Moozhikkulam, Nedumpuram, and Thiruvalla, *Salai, etc.* where along with the Vedas, philosophy (*Anweeshiki*), administration (*Danda neethi*), etc. are said to have been taught.[2] Though *Vaidyam* (medicine), *Jyothisham* (astrology) *Ganitham* (arithmetic) and poetics were also taught, they were not in the written form. Instead, all of them were learned through the rote system. However, these Vedic centres of learning were specially intended to cater services to the youth belonging to elite Brahmin communities.[3] They were institutions, established for the reproduction of the hegemonic system of life. The knowledge inculcated there, were mainly Vedas, Philosophy, Rhetorics, Sanskrit Linguistics, Astrology, etc. All this knowledge, though directly unconcerned with the life of the common people, could yield their beneficiaries an elite social status. Therefore it was necessary to teach the children of the Brahmanic elite for the reproduction of the elitism of their caste in the succeeding generation. At the same time, it was equally relevant to ensure that this knowledge is not shared with the people of lower castes. Therefore strict caste boundaries were maintained in such Vedic institutions. By around 19th century institutions like *Kutippallikkoodams* and *Ezhuthupallis emerged* as village schools, which catered services to the students belonging to backward castes as well.[4] They were run by a single teacher called *Asan*. They were not regularly paid other than some occasional gifts in kind. They were nurtured essentially by local

2 E.Sreejith. *op cit.*, p. 17.

3 Namboothiris have been a caste claimed to be Brahmins in Kerala. However, there were clear class gradations within this caste. All who belonged to this caste were not permitted to learn Vedas, instead those with lesser social status had to depend upon temple ceremonies and other rituals for their livelihood soon after their initiation. For a brief understanding of the plight of less privileged among the elites see, V.T.Bhattathirippadu, *Kanneerum Kinavum*, Kottayam, Sahitya Pravarthaka Co-operative Scociety, 1974 (1970).

4 However, depressed classes whom later on, since inception of the Constitutional republic, began to be categorised as scheduled castes and tribes as well as other down trodden labouring groups were not considered for any kind of such engagements. They were more or less denied all their agencies than agricultural labourers allied with the land and invisible forest dwellers.

initiatives. Some rich and elite families also maintained separate institutions according to their capacity and social status. It was these *Kutippallikkoodams* under *Asan* that gave training to social reformers like Narayana Guru, Chattambi Swamikal and others. Basic arithmetic, *Vaidyam* (indigenous medicine), writings, etc. were taught in these institutions.[5] These institutions led to the formation of an elite group among the Non-Brahmin caste, especially in the backward class. Such a formation gave birth to an entirely different social reform movement in Kerala. It was very much different from the movements in Bengal where it was carried under the middle class that emerged from the upper caste people.

One noticeable thing in these learning processes is that they were all intended for maintaining and reproducing the existing elite culture and tradition. It is also arguable that those belonging to the lower caste groups also began to be given an elitist education for meeting the cultural challenges from Europeans through conversions.[6] These challenge of religious conversion of the lower-class people (upon whom they subsisted) was sufficient for threatening the existence of the elite culture which was more or less maintained through the hierarchical caste system. Therefore these initiatives of education from the richer among the lower castes were not checked by the upper castes or royalty to a greater extent. Notwithstanding the knowledge percolated through these institutions were not only unchallenging for the tradition but also provided stabilisation to it.[7] Those

5 A.Sreedharan Menon, *A Survey of Kerala History,* Kottayam, Sahitya Pravarthaka Co-operative Society, 1967.

6 It is in this context that an observation by Narayana guru, one of the prominent social reformers of modern Kerala, that it was the 'European who gave us the saint-hood'. It had been unimaginable during the Pre-modern period that a man belonging to lower strata in the caste hierarchy getting a chance to learn Sanskrit and become a learned saint.

7 As one of the aim of such education system was the acculturation and elitisation of the lower caste people with richer aspirations. There for apart from attempts of imitation they did not make any challenge to the existing system. Even more, they were capable of reproducing and maintaining it.

students who completed their education in these *pallikkoodams* were promoted to *K alari*, where they were given physical training which was an inevitable part of the feudal society of pre-modern Kerala.

These kinds of educational institutions of the pre-modern period are widely evident from several sources belonging to erstwhile Travancore and Cochin regions.[8] However, they are not confined to Southern Kerala. Malabar, being a district of the British province of Madras, the existence large number of such learning centers there, has been studied and reported by Colonial administrators and officials widely.[9] As cited earlier Madras Governor Thomas Munro had reported that throughout Madras there cannot be seen any village without an Indigenous educational institution either ru[10]n by the local elites or the *Asans* (teachers) themselves. Many of them were run under royal patronage. By the late 18th century the British officials found that these educational institutions run out of the 'rent-free land' cause heavy loss of revenue to the government. The land with millions of Rupees had been donated for running these institutions which were 'tax-free'. They found these donations and consequent loss of revenue as the result of "inefficiency, confusion and fraud" of government officials to collect tax from them.[11] Therefore, by the late 18th and early 19th century laws were enacted for the 'resumption of the land' or right to collect revenue from previously tax-free lands.[12] Subsequently, lands for supporting those institutions were reclaimed

8 A detailed discussion on the educational, institution of pre-modern Kerala is available in A.Abdul Salim,P.R.Gopinathan Nair, *Educational Development in India: The Kerala Experience since 1800*, New Delhi, Anmol publications,2002.

9 For instance see, William Logan, Malabar, Madras, Asian Education Services, 1951 (1879).

10 Zaheer Baber, "Science, Technology and Colonial Power" in S.Irfan Habib, Dhruv Raina (eds.,) *Social History of Science in Colonial India*, New Delhi, Orford University press, 2007.p 105.

11 *ibid.,* p 106

12 *ibid.*

and collection of revenue resumed. These resumptions led to a higher increase in the British revenue indicating the number of institutions and land set for their expenses.[13] However, as Lord Minto reported in 1811, the numbers of learned people have diminished to a large scale. Those who belong to the circles of learned people themselves have abandoned knowledge and literature for some other occupation.[14] He traces the reason in the diminished patronage. But it was actually due to the law of resumption and consequent reclamation of land revenue. The sourceless institutions had to close immediately. Those who actively participated in the process of inculcation had to rely upon some other occupation for their livelihood.

However, these *Kutippallikoodams* had significant roles in preparing the cultural context of the movement which was crucial in the formation of modern Kerala. They were quite different from the Vedic learning institutions of Medieval Kerala mentioned above. The kind of institutions had no prescribed texts or structures of curriculum and schedule. They were determined by the *asan* according to the taste and skills of the pupil. Though these institutions were non-Brahmanic in character there is no evidence for women getting an entry into them. The subjects of learning included *jyothisha* (astrology), *ganitha* (arithmetics), *ayurvedya* (one of the traditional medicines) Sanskrit language and classical texts. Most of the *Kutippallikoodams* were either run by the village elites or personally by the teachers. (*Asans*). As they were not well paid, they had to depend upon occasional gifts provided by the people and pupils in kind. However, such institutions were quite common all over Kerala in its three erstwhile divisions of Malabar, Travancore and Cochin. These institutions had some unique features which distinguished them from the *Sala* type Vedic learning centres

13 Joseph, Di Bona (Ed.,)'*One Teacher, One School: The Adams Report on Indigenous Education in Nineteenth Century India*', New Delhi,1983, p 71; also cited in Zaheer Baber, *op cit*., p. 106.

14 *ibid.*, pp. 106-107.

and modern concept of schooling. However, it is quite doubtful to call them secular institutions.[15]

As mentioned above these *Kutippallikoodams* or similar institutions were non-Vedic learning centers, though they taught Sanskrit language and classical literature them. This extended from reading and writing to recitation and by-hearting of *slokas* (hymns) in a rote system of learning. In many cases, full texts were by-hearted in the way. Moreover, elder students also engaged in teaching the juniors. Soon after the coming of *Asan*, he would check the level of learning of the senior students. If he is satisfied with them, *Asan* would check the juniors in the line. By that time the senior students will engage in teaching the junior most students.[16] Such senior students will have to live as a model for junior students in all respects. They were called *Chattambis*.[17] This kind of mutual learning has influenced Scottish missionary Dr. Andrew Bell; who is said to have attempted to develop and practice this system in various places, he worked later on[18].

These institutions taught various aspects regarding the practical life of people in the traditional social order. It did not provide a theoretical understanding of human life but catered practical knowledge required for a middle-class life during late medieval and early modern Kerala. It included astrology, traditional medicine, arithmetics classical texts, etc. These knowledge traditions were inseparably linked with the day to day life of a middle class Malayali social life in medieval Kerala. However, these teachings were not to provide any theoretical understanding of the common people but for providing practical knowledge necessary to meet the needs of

15 T.V. Venkiteswaran, op cit., Negotiating Secular...

16 A detailed narration of this process in given in E.Sreejith, op cit., pp 40-43.

17 Kunjan pilla was such a chattambi in Raman pilla *Asan's pallikkoodam* at Petta, near Thiruvananthapuram and received his popular name 'Chattambi' from there. He actively participated in the social reform movement of Kerala and is known by the name 'Chattambi Swamikal' in th history.

18 *ibid.* pp 37-43.

daily life.[19] However, these teaching-learning processes played a historical role in linking the common people of middle castes with the intellectual and elite life of the age, either intentionally or unintentionally. Thus they provided a distant link between the elite and lower-class life. However, these processes did not upgrade the life of the people due to the hierarchical stigma of the caste system. Notwithstanding the opening up of a distant link was either a response to the increasing religious conversion or for coping with the changed social situation with the interference of European colonialism. It was evident from Narayana Guru's incidental statement that, it was 'these *mlecchas* (here Europeans) who provided us with Saint-hood'.[20]

Education and Kerala Renaissance

The Kerala renaissance, have been a matter of serious debate among intellectuals. There is no consensus regarding the characteristics, nature and process of the social reform movements evolved in Kerala and laid the foundation of modern Kerala society. However, the present study is not going to such details of the process except those relevant for substantiating the arguments attempted to raise here.[21] However, regarding the question of whether these movements were 'scriptualising' and 'Sanskritising' people or 'reforming' the society with new ideals need to be addressed for the better expression of the standpoints of the present dissertation. These movements should be analysed in the socio-cultural situations of the 19th century. There

19 This expansion of inculcation in such traditional knowledge was necessary for reproducing and maintaining the traditional cultural life in that context, which was highly threatened by religious conversions of Christian missionaries, especially in southern and central Kerala.

20 K.Surendran,'*Guru*' (Mal),Kottayam, D.C.Books, 2013 (1992) pp. 224-225.

21 A detailed understanding of various movements constituted the Kerala Renaissance is available in four volumed works of P. Govindappilla. For details of different movements and reformers this dissertation is also committed to him. For details see, P.Govindapillai, *Kerala Navothanam* (IV volumes), Thiruvananthapuram, Chintha publishers 2016 (2003).

were no 'human beings' or 'public sphere' in Kerala during this period.[22] People, therefore, had no civil rights. Their social life from beginning to end was determined by unquestionable caste-based regulations and ritualisms. It was in this circumstance that a critical sensibility was emerging out of the existing socio-cultural and political circumstances and the extension of traditional education to lower class people. Thus there were serious movements under the leadership of social reformers hailing mainly from the oppressed caste groups and some middle castes. They raised their voices against all kinds of discriminations and dehumanising social institutions. They tried to break conventions on dressing, walking, worshiping, education, using ornaments, appearing in public space...etc. all these were regarded as the basic requirements of civil life.

However, these movements were not suddenly emerging from the vacuum. Instead, they had a gradual development form movements against direct oppressions to the appearance in public space to challenging beliefs, etc. based on new rationality and world views.[23] These movements included breaking customs in the public spaces, labour strikes, violation of dress and ornament codes, along with entering the existing or building new temples and call for renouncing temple building and replacing them with educational

22 What was common here during this period was people belonging to different caste groups. No common law, public space or general conscience was seen there. All these people were bound to separate caste regulations or *Maryadas*, and *vazhakkams.* The concept of human being pertaining to all people belonging to different caste, clan and community groupings were entirely a new phenomenon of modern period.

23 The movements under the leadership of Arattupuzha Velayudhappanikkar, and others during 19th century shows this. Though he also had built temples, it was not out of the absence or insufficiency of centres of worship, as there were different kinds of gods to each community with their own rituals and sacrifices. Therefore, people need not go to the temples of elite castes for meeting their gods. But this move was to challenge the notion of rejecting people entry into such spaces which were one of the chief gathering centres of the period. As he himself had shown in breaking the customs of temple entry including at Vaikkom temple and informing the authority of the breach along with giving the money to meet the expenses of rituals of penance.

institutions, etc. As a part of these movements, earlier attempts were to appear in public spaces and demanding their civil rights of worshiping god.[24] In short, all these movements were intended to provide an opening and challenge the customs and regulations based on castes. They were not an end in themselves.[25] They were not an end in themselves as shown by all these reformers of modern Kerala society. Therefore, being attempts to rebuild the society based on new ideals of equality, fraternity and social justice and attempts to generate social conscience to the conceptions of humanism, etc. these movements can be characterised as Renaissance movements leading to the organisation of people and creation of modern Kerala society.[26]

It is evident that many of the socio-religious reformers directly or indirectly were the beneficiaries of and influenced by the extended traditional education. They including Narayana Guru in his early life stood for reforming the downtrodden through introducing them to elite textual and cultural traditions through its idioms and literature. Though they stood against the social evils of traditional society, including caste system and untouchability, they worked for the up-gradation of common people and even adopting the Gods and worshiping in the manner of contemporary elites. Narayana Guru in the initial stage asked his admirers to get rid of necromancy and traditional furious deities like *Gulikan, Kuttichattan, Chutalamadan, Marutha,*

24 As a part of these many of them including Narayana Guru in the early stage of his reform movements insisted on learning, reciting and propagating the elite conceptions of god, their texts, and philosophy among people belonging to lower castes. Unfortunately these earlier mobilisations and initiations are used to characterise all these movements as attempts of Sanskritisation.

25 As they found these movements as opening the basic rights to the people, many of them renounced the temple constructions and demanded establishing educational institutions, factories and other business ventures later on.

26 In short the present dissertation, by analysing these factors holds these movements of building new social order as Kerala Renaissance. These movements were distinct from similar movements in the other parts of India. They were not attempt by the elites to bring people to their fold. Instead they were movements emerged from the lower strata of the society demanding their civil rights based on new conceptions of humanity, equality etc.

Karuppan, Irulan, Isakkimadan, Karinkali, Bhairavi, Chandi etc. by replacing them with more cultured gods like *Sivan, Bhagavathi,* etc.[27] Therefore it can be claimed that this education had a role of elitisation and acculturation of the middle caste people who were until then kept away from the mainstream Brahmanic culture and practices.

However, these learners were living in a social situation mediated by colonialism and religious conversions by missionaries. The technology and viewpoint raised by European capitalism had also influenced them. Thus there emerged a critical social conscience among the middle class formed out of this education themselves. Therefore the process of acculturation through education was not similar to the traditional elites. This process was due to the complicated social formation that the practical knowledge and world view upheld by this education was the one evolved in medieval Kerala in connection with the contemporary elite knowledge and practical understanding. However, the present situation (of the period under discussion) was the one undergoing tremendous changes due to the external influence in practical and intellectual life. Thus the changes in society naturally had to reflect in the world view and education. However, the system formulated earlier was inefficient to undergo such an adaption. Therefore the doubt and complication in the minds of the learners were reflected in their approach towards knowledge and society. Therefore they kept a critical approach towards the knowledge, system and practice. This criticality varied from person to person and regionally. However, there arose a general conscience that the society in its practice needs some corrections and such corrective

27 *ibid., p.209.* A debate on this matter has occurred between Guru and one his disciple Vengasseril Velayudhan Chattambi during the installation of Mannanthala Devi in 1889 (It was there he wrote the famous *Mannanthala Devisthavam* later). However, this stand point of Guru itself transformed later and the proclaim stopping of temple construction and called for establishment of modern educational institutions. He explains that he had mistook temples being divine centres would eradicate untouchability, if people of all castes began to gather there; but realised that they have become chief centres promoting casteism.

measures were reflected in various stages among people of different strata of society. They held different points and approaches extending from destroying and restructuring the social, cultural and practical life to leading people towards the 'real', 'textual' and elite life which were held to be decayed in chronic practices. These mobilisations were the forerunners of the social reform movements in Kerala, generally called as the Kerala Renaissance. This determined the structural and cultural life of later Kerala Society.[28] Thus, unlike the Vedic educational institutions like *salai* or *madam,* the *Kutippallikoodams* type education was capable of recreating a social sensibility among the middle class and in the non-Brahmanic culture.

Notwithstanding all these positive elements of social mobility, this system of education also faced several challenges. There were several resistances and counter mobilisations from the traditional caste oriented society against these attempts. They were not confined to the socially depressed classes but against the 'middle castes' as well.[29] For instances in late medieval and early modern Kerala, many people belonging to the *avarna* classes especially those belonging to castes like *Channar*, *Ezhava*, or *Thiyya* could amass much wealth through the extension of production, commercialisation of agriculture, engaging into the industrial and profitable professions and association with colonial interventions, etc. However, economically elevated status could not remove their barriers based on caste

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28 However, this is not an attempt to minimise the whole process of social reform movements, (which made a structural and moral criticisms leading to a shift from the medieval social formations) in to a simple criticism of traditions and social evils or mere textualisation of common people. But the roots of social reformers and political or social revolutionaries can be found in these earlier reformers and critics of tradition.

29 By the term middle castes it is meant that those caste groups who were not traditionally *Savarnas*- (the four caste groups claiming status in Chathurvarnya ie; Brahmana, Kshatriya, Vaisya and Shudras) but were considered themselves and by others as superiors among the *Avarnas.* The caste system is held not only as a dichotomical opposing group of upper castes and lower castes; instead it is a complicated and hierarchical system within each sub divisions of gradation of people merely based on birth.

which resisted them from using public infrastructure, roads and education; especially in central and southern Kerala.[30] The example of Arattupuzha Velayudhappanikkar has been very much indicative of these complexities. These people being capable of modern life, education and status were still forbid from any access to them all. Thus broke out contradictions leading to several clashes between them and the traditional*Savarna*groups (especially the lowest in the *Savarna* ladder).[31] Similarly, these contradictions of actual and virtual elevation led many of these middle class to emphasis their superior position from the class lower to them. Thus many of them hardened their antagonism, distancing and oppressive behaviour to the people lower to them in the same caste regulations which they were opposing.[32] But they could not last long due to massive resistances and agitations of different kinds during the late 19th and early twentieth centuries. Finally, in the contexts of large scale religious conversions, the government was also forced to interfere in these matters and legalised the provision for education to all classes of people irrespective of their castes.

But the case of Malabar was quite different. It was directly ruled by the British colonialism after being annexed from Tipu Sultan. Unlike Travancore where the state had been appropriating revenue collection directly, in Malabar, the erstwhile *Janmis* continued to be in socio-economic privileges. Therefore, this intermediary class created a clear class division between

30 In short people became economically stable but continued to be untouchables in the caste oriented social hierarchy especially in the princely states of southern Kerala, where the nominal rule still continued to be in the feudal system, though defacto power had been wrested by the British colonialism.

31 For a detailed understanding of the modernisation of resistances in Kerala see P.Govindappillai, *op cit*., *Kerala Navothanam* ….

32 It was these ambiguous positions of the middle castes that were vigorously opposed by rational revolutionaries like K. Ayyappan and his comrades (*Sahodara Samgham*) . They questioned it and organised a *Panthibhojanam* an intercaste dining by serving food to the people of middle castes like Ezhavas and Thiyyas by children from oppressed castes. For details of his criticisms and similar revolutionary deeds, see various editions of the monthly publication *Sahodaran*

landlords and the working class. Thus the clash between the two received a class character as evident in various mobilisations during the 19th and 20th centuries. Whereas in Travancore the clashes created by the complex and contradicting social situations were more ideological as the savarnas being the beneficiaries of the oppressive state machinery supported it. Thus there were frequent clashes between the *avarnas* and the *savarnas* during the early phase of social reform movements itself. While in Malabar though exposed to many technological and various applications of instrumental rationality including railway, road, electricity, etc. before the southern regions did not create such a situation of inter-community clash and mobilisations.

However, by breaking all these barriers and utilising the facilities of the changing social system at the dawn of the modern era many protagonists from the lower caste groups were emerged who worked for reforming the society and religions. They extended their activities from problematising social inequalities, restructuring rituals and ceremonies (that creates the hurdles in the path of social progress) as well as popularising education and modernizing the society. There are several reasons for the outbreak of such movements on large scale during the 19th and 20th centuries. Though education, mentioned above, was the primary factor in the realisation of the difference between knowledge and practice, it was not the sole reason, as it may be substantiated in the following discussions. The changed social situation drew the people much towards the realisation of the drawbacks of their social life. Among those who realised the social evils and responded against them and stood for the creation of a better society before the spread of modern education; Palakkunnath Abraham Malpan, Ayya Vaikundar, Arattupuzha Velayudhapanikkar, Brahmananda Swami Sivayogi, Chattambi Swamikal, Vakkom Maulavi, Vaghbatanandan, V.T.Bhattathirippad, Kurumban Daivathan, K.P.Vallon, Poykayil Appachan, etc. are to number a few. They not only criticised and attempted to reform religions and social practices but also worked for the achievement of civil rights to the oppressed people, the creation of a modern society based on education and economic

progress. However, the reformers of this category seem to have not been familiar with modern science and its rationality.[33]

Representations of Early Social Reformers

Palakkunnath Abraham Malpan (1796-1845) belonged to the Syrian Christian Community of Kerala; they stood against the Latinisation attempts by the Portuguese forces and lived religious life with localised practices and rituals. Malpan learned Malayalam, Sanskrit and arithmetics from traditional sources and religions education from Puthuppalliyil Padinjarekuttu Kora Malpan. Though he was against the catholic missionaries he was attracted to Anglicists. The Anglican Church which established its sway over Travancore administration with the defeat and death of Veluthambi Dalawa had started educational services under the banner of the London Mission Society (LMS) by 1809 itself. Therefore, Mr.Malpan was naturally attracted to them. He started various reform movements within the church and started prayers in the Malayalam language. He reformed the liturgy (*taksa*) and stopped several religious ceremonies including the death anniversary (*sradham*). Later on, his followers formed their faction and became the Mar Thoma Sabha.[34] They started educational institutions both religious and material. Thus the reform movements started by Malpan and his followers in the Christian religion was one of the earliest of this kind in Kerala. These movements cannot be attributes to modern education and therefore it had a localised foundation. Notwithstanding, the changed social situation and LMS missionary had influenced them and created a circumstance sufficient for the emergence of such movements here.

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33 Though some of them might have heard about the new scientific inventions and theories somewhere, as many of them were discussed in Kerala by 19th century itself, they were not in acquaintance with its methodology and rational social criticisms.

34 P.Govindapillai, *Kerala Navothanam: Mathacharyar Mathanishedhikkal* (Mal), vol.II, Thiruvananthapuram, Chintha publishers, 2014 (2003), pp 10.24.

Ayya Vaikundar (1809-1851) was one of the earliest to mobilise people against caste-based atrocities and exploitations on two fronts. The caste Hindus especially Nair folks in the shade of Travancore kingdom exploited people without giving remuneration for compulsory labour (*oozhiyam*). People were prohibited from taking water from the wells, constructing better houses, entering public places and centres of worship, etc. They were not even allowed to name their children as they wish; Vaikundar himself was prey for this injustice. His parents called him by the name 'Mudichoodum Perumal' but this was unacceptable for the landlords and they questioned it and threatened them. Finally, the parents were forced to rename their son as 'Muthukkutty.[35] He organised people against caste-based discrimination and was arrested and imprisoned. He is said to be the first in the history of Kerala to install a mirror for worshipping. This was later on followed by Narayanaguru to instill self-esteem among his followers and to problematise the concept of god among people.[36] In the *Channar* community, there were some rich families but they did not get due respect and acceptance. Therefore realising this ill-treat and injustice and putting an end to them; many from these groups became the followers of Ayya very soon. The lion's share of the cultivable land in Travancore belonged to the Nair Lords connected to the royalty; they squeezed unbearable rent from the cultivators as *Pattom*. People under the leadership of Ayya agitated against this and he was arrested and kept in the sub-jail near Kizhakkekotta. One of the important revolutionary activities of Ayya was digging a large number of wells from which everybody irrespective of their caste and class can draw and drink

35 *idem, Kerala Navothanam Oru Marxist Veekshanam*, (Mal), vol.I, Thiruvanathapuram, Chintha publishers, 2017 (2003), pp 127-132.

36 There are several instances in the life of Narayanaguru reflecting his inspiration possibly received from Ayya Vaikundar. Apart from the similarities of many of his verses, his wandering and sojourn in different parts of Tamil country and the aforesaid mirror installation are to name a few.

water.[37] He also organised 'Panthibhojanam' very often in which people to wear head turban always to reiterate their esteem and integrity before the upper caste people. He was well versed with classical Tamil texts and he interpreted them by linking with contemporary situations. By accepting life models from those kinds of literature like*Tirukkural,* he formulated morale and tradition suitable for modern life. His teachings were textualised in *Ucchipadippu* (higher knowledge), *Tiru Arul Nool* (Text of sacred verses) which extols the idea of social justice and includes new spiritual ideas. He raised the slogan that 'No labour without wage' and 'justifiable rent'. The British especially the LMS missionaries found him as an enemy and an 'Incarnation of the devil' as he opposed their proselytisation attempts.

Arattupuzha Velayudhapanikkar (1825-1874) has been one of the prominent revolutionaries creating a social circumstance leading to the emergence of modern Kerala. He was born in a rich family at Arattupuzha (now in Alappuzha district). Therefore he did not have to face many injustices and exploitations faced by his contemporaries belonging to his own and other inferior castes. He received better education, in the traditional way by inviting traditional teachers (*asan*) into their home. He was well versed in Tamil and Sanskrit literature, astrology, traditional medicine. Though modern educational institutions had already been established in Travancore by the LMS, he had not undergone education in this system. The *avarnas* (people belonging to caste other than fourfold groups of savarna castes) how much rich they might have been, were not even permitted to use the common roads frequented by the elites, go near the temples or the houses of feudal lords, etc. they were not been allowed to wear ornaments and were prohibited from wearing clothes beneath the knee and above navel. This injustice reached the extent that, it regulated even simple movement of the human body above or below the set regulations of castes in which their parents and thereby

37 The well near the Vaikunda temple of *Swamithope*, the chief centre of the movement called 'Munthirikkinar' (grape well).

themselves belonged to. Arattupuzha Velayudhapanikkar openly challenged many of these inhuman regulations. He planned to establish a Siva temple and question the negation of the right to worship. He visited several temples, especially prominent Siva temples of Gokarnam, Tamilnadu and Karnataka, along with some of his selected followers. On their way back to the home they also visited the famous Vaikkom Siva Temple.[38] As it was unable for the temple managers to identify the castes of the trespassers from their body language and attire, he informed them of his caste and the violation he made to the customs.[39] He also voluntarily gave them the amount to meet the expense of the compensatory 'purification' rituals for violating the tradition. He then founded a Siva temple at Mamgalam in 1852.[40] This was the first known Siva temple in the history of South India founded by an *avarna*. However, this incident was repeated at Thanneermukkom, Cheruvaranamkara in Cherthala Taluk. Thus Velayudhapanikkar was making history. He also established a *Kathakali yogam* (a centre for teaching *Kathakali,* a traditional art performed and enjoyed by the traditional elites belonging to upper castes) near the Mamgalam temple. As this was against the custom, the *savarnas* complained to the Diwan against these 'ill deeds' of an *avarna,* but in vain. He taught several children belonging to the Ezhava castes, including his four sons with a *Kathakali* exponent, Ambalappuzha Madhavakkurupp. The upper-caste Hindu questioned the *avarnas* performing the roles of Brahmins, Gods and Puranic heroes. But they could not stop it.

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38 It was in this temple that the famous agitation and Satyagraha was organised in the succeeding century. This Satyagraha was to get permission for people of avarna castes to use the road near the temple. It increases the relevance of the movement of such a temple by the avarna people decades before.

39 The common way of identifying caste of unknown people during those time was their body language, attire and appearance in general, as each caste had distinct ways, to avoid pollution unknowingly. However, revolutionaries and honest people attempted to break these notions and therefore became difficult for identifying their castes at first sight.

40 It was three and a half decades later that Narayanaguru made his historic installation of Siva at Aruvippuram himself. Thus this revolutionary movement by Velayudhappanikkar is very much important in the history modern Kerala.

The restrictions on wearing clothes had been a matter of several strikes and agitations both known and lesser popular in the history of Kerala. One of such was organised by Velayudhappanikkar. It was emerged out of the attack by some *Savarnas* up on a lady belonging to *avarna* caste for wearing *Achipudava* (dress mainly worn by upper caste ladies) beneath the knee and up to the ankle. They forcefully unclothed her and beaten down in the field. Panikkar by knowing this asked ladies of *avarna* castes to wear such clothes and march in the field. However, this problem was not confined to this region, therefore wider acceptance was needed. He asked the elites of the nearby region to sit in and discuss the problems. But they rejected the call. He, therefore, asked people to strike and stop working. This had a tremendous impact. When the strike continued more than a week he gave food and necessary materials to the workers. Therefore the elites were forced to accept the demands. Another movement of similar kind organised by Panikkar was against the ban on wearing nose-ring at the Panthalam market. Those who can wear gold were also banned from wearing them by the traditions. A lady belonging to Ezhava caste, wearing the golden nose-ring was attacked by the *Savarna* goons at the market (*Chanda*). They plucked the ornament along with the tip of the nose. Panikkar by knowing this 'came to the market the next day along with a basket of golden nose rings. He made several *avarna* women wearing this from the market itself'.[41] Thus among the social revolutionaries of early modern Kerala modern education, Arattupuzha Velayudhappanikkar has a distinguished position. While many of the reformers of the period worked for enchanting people to the upper class religious and ceremonial rights and customs, he worked mainly for the civil rights of the people. Though he erected temple and Kathakali institutions, he was challenging the negation of the civil right to the people, such as

41 *ibid.* Even if the exaggerations in the narrations were avoided these movements marked a great transition as the response from the lower class against the historic oppressions as well as giving voice to the voiceless people. It was through these movements that many of the oppressed people were realising the depth of the subjugation they were undergoing through out history.

mentioned above. Thus he deserves special notice among the social reformers of Kerala and the history of Kerala renaissance. At the same time, he was not the one received modern education and had never become part of colonial administration. He also was not concerned with the discourse on modern science and its rationality and world view.

Another unique critic of religions, caste and other social institutions of medieval Kerala was Brahmananda Swami Sivayogi (1852-1929), born in a well to do family of Kollengode, near Palakkad. His father Kunhikrishna Menon and mother Karattu Naniyamma named him Govindan Kutty to be popular later as Karattu Govinda Menon. There were several eminent personalities in his family including litterateur Karattu Achuthamenon and possessed such cultural capital. He received education in the traditional way from the Alathur and Palakkad. He later learned English through private tuition at Ernakulam. He got the job of *Amsam Menon,* a powerful office then, but he rejected this and joined the teaching profession (a lesser attractive profession at that time) as a Sanskrit teacher at various schools in Calicut and Alathur. From Calicut, he got acquainted with several social reformers and movements like the Brahma *Samajam*, Theosophical society, etc. But he did not indulge in them completely. Instead, he kept a distant relationship and dialogical friendship with all these movements; especially Brahma Samajam.[42] While working as a teacher he was highly involved in his studies on spiritual and material aspects of the world. Thus he formulated his principles which are known by the name *Ananda Matham.* He resigned from the post of teacher and founded his *ashram* near Alathur by the name *Siddhashramam*. Soon his principles received wider acceptance and opened branches of Siddhashramam in various parts of Malabar, Cochin and Travancore. He taught the idea of happiness through renouncing religious, caste-based and other divisions and rejecting superstitions and idolatry. He

42 P.Govindapillai,op cit., *Kerala Navothanam: Oru Marxist Veekshanam ...* pp 153-164.

wrote several works including his magnum opus *Mokshapradeepam* published in 1905, *Sivayoga Rahasyam*, *Sthree Vidya Poshini*, *Siddhanubhoothi*, *Mokshadeepam*, *Anandakalpa Khandanan*, *Anandasoothram*, *Rajayoga Parasyam*, *Vigraharadhana Khandanam*, *Ananda Vimanam*, *Anada Matha Parasyam*, *Anandakkummi*, *Ananda Ganam*, *Anandaadarsan*, *Ananda Gurugeetha*, *Anandadarsaamsam* are his works.[43]

His ideas can be summed through his direction to the disciples and other writings. He opposed aggressive religious practices, tried to promote the knowledge and education, to reduce the expense of the funeral and other ceremonies, renounced sacrifices, pilgrimage, begging, idol worship, etc. which cause sorrow. He rejected the idea of heaven and hell and told that all of them are in the human mind and they are possible to be created in the word itself. He renounced any form of caste or socio-religious division of human beings. One of the most important aspects of his philosophy is his reliance on the human mind and intellect. He says the creation of aeroplane, train, the steam engine, ship, boat, the motor car, camera, binoculars, telescope, telegram, radio and other modern inventions, as well as scientific discoveries are made by human intellect. Neither the god nor the saints could ever create such a thing so far. All these were not the result of prayer, instead, all of them were made possible through human effort and intellect. No saint who had been praised for several abilities in the literature could extend his life and live up to our period, how do they all die. The religious literature and texts are ridiculing the god. He also exposed the contradictions within the texts. He rejected the rationales of god and all religious beliefs on the god. However, he criticised those who call him atheist by saying that they do not know what God is and his God is not similar to the concept of god in any religion. Thus the spiritualism extolled by Brahmananda Swami Sivayogi is a unique type and it was the one moderated by modern concepts of reasons and humanity. At the same time, he relied upon the ancient notions of life though with a

43 *ibid.,p 161.*

critical approach. This is another wave of reform which had influence and acceptance in Kerala and was instrumental in the formation of modern Kerala.

Chattambi Swamikal (1853-1924) mentioned above, is another representation of the age of the social reform movement of Kerala. He was born at Kannamoola near Thiruvananthapuram to a temple priest Vasudeva Sharma and Nanga Amma. He was educated by the traditional way under Vativeeswara Veluppilla Asan in his *Kutippallikoodam*. He was also inspired by the system of education in the nearby *Madam*, teaching the Brahmin students, where he did not have entry. By observing his interests in learning Sanskrit, the '*Shastri* (teacher) of the *Madam* taught him the basics of Sanskrit literature. But his education at the *Gurukula* type institution of Pettayil Raman Pilla Asan was transformative both physically and intellectually. Therefore Asan made him the Chattambi for teaching the juniors.[44] He learned much more from *asan* and his intellectual association *Vijnhana Prajagaram*, in which serious debates on various subjects have been carried out under eminent local intellectuals of the day. Moreover, he got deeper knowledge in Indian Philosophy from a Tamil Scholar Subbajatapathikal, who got impressed in his curiosity to learn things from a scholarly meeting and took him to Tamilnadu where Chattambi got wider chances of learning from the large collections of books and other resources of Jatapathikal. Then he wandered all over South India and returned home on the news of his mother's ailment. With the death of his mother, he relieved from all kinship bondage and became a complete ascetic.

His major contributions are in relation to his staunch opposition towards caste-based discrimination, Brahmanic supremacy and various discriminatory practices on the one side and opposition to the large scale religious conversion by the Christian missionaries on the other. Himself being

44 This Monitorial system was very much influential and lesser expensive as the mutual teaching would help the senior students to get thorough in that knowledge and the risk of the teacher could considerably be reduced. For a discussion on this system see E.Sreejith; *op cit*, pp 37-43.

a prey for the *sambandham* and related discrimination stood strongly against such evils and neglect. He strongly criticised the myths relating to the formation of Kerala like Parasurama legend and others which were used to reiterate the Brahmin superiority in the socio-political realm of Kerala. He resisted the view that only the Brahmins have the right to use, recite and interpret Vedas, through his scholarly debates and satirical and logical criticism. He also strongly criticised the large scale conversion to Christianity among the lower caste people and the colonial administration providing help for such activities. He engaged in serious debates with the missionaries in this matter.[45] He had written many works on various aspects but many of them have not yet been discovered. They include *Advaitha Chinthapaddathi, Christhumatha Niroopanam, Jeevakarunya Niroopanam, Devarcha Paddhathiyude Upothghatham, Devee Manasa Poojasthothra vyakhyanam, Pranavavumm Samkhya Darsanavum, Prapanjathil Sthree Purushanmarkkulla Sthanam, Pracheena Malayalam, Bhashapadma puranabhiprayam, Malayalathile Chila Sthala Namangal, Keralathile Desanamangal, Vedadhikara Niroopanam,* etc.

Narayanaguru (1856-1928) has been considered more or less synonymous with 'Kerala renaissance' or 'social reform movement'. Though there is a methodological fallacy in such consideration, his life, activities and practices were the unique and massive character of his mobilisations were quite indispensable in Kerala renaissance and the formation of modern Kerala. Narayanaguru's contribution, both spiritual and material had been well studied either critically or admiringly by several scholars, both indigenous and foreign; and almost all aspects of his philosophies, practices and mobilisation of people have been brought to light. Therefore, here only brief peep is required and attempted, which is inevitable for the present study. As it is very popular Nanu (Narayana Guru had been widely known by the name Nanu and Nanu Asan during his childhood and youth) is said to have been

45 *ibid.*,p 150.

very much fond of knowing things around him including the secret of birth, death, sorrow, piety, god, etc. that helped him in formulating a critical sense towards society. He was also interested in sitting alone with his thought and imagination.[46] He learned Sanskrit, traditional medicine and all the basics of the traditional education system of Kerala from the Kalari of Kummanpalli Ramanpilla Asan. It is interesting to note that, though Guru himself was the forerunner of Kerala renaissance he had not undergone modern education and its system of knowledge, modern science and its rationality in the conventional means. he also did not undergo modern education and modern system of knowledge as those who have been discussed here. He later began to teach children of his native place Chempazhanthi by rebuilding an already existing small *Kalari* there and acquired his popular name Nanu Asan. He was critical towards social evils and traditions to a certain extent from his youth itself. This made him one of the 'founders of modern Kerala', as have been widely acclaimed.

Life and activities of Narayanaguru represent three major features of the social reform movements of modern Kerala; they are the elements of spirituality and piety with a resemblance to ancient India, especially *Vedantha* and *Upanishads*. The second important feature of Guru's activities is the challenges of tradition and the third being his revolutionary will of creating a new society based on the principles of equality and new morales which is distinct from the traditional societies in all respects. Though these categorisations, especially the second and third stage overlap each other the first kind of spiritual and completely divine aspects of enquiry of truth, related activities and writings confine to the early life of Narayanaguru. Though there were elements of piety in the succeeding stages of Guru's life which was

46 K.Surendran has given a detailed picture of the events of the earlier life of Narayana guru in his biographic novel on Guru; he is elequent on the devine element in Guru from early life onwards. For details, see K.Surendran, *Guru*, Kottayam, D.C.Books, 2013 (1992).

completely different from his earlier positions through a clear transformation of a revolutionary and philosopher in him.

The early stage of the formation of a seer in Narayanaguru itself was unprecedented in the caste-regulated society of 19th century Kerala. The traditional occupation of his family was *Vaidya*, the practice of traditional medicine and teaching some sorts of basic lessons to the neighbouring children and some of them have been engaged in trade. He became ascetic and very much fond of piety and philosophy. His early works were a reflection of this piety as evident from their titles themselves. He has been reported to repeatedly say that 'Lord Krishna used to incarnate' before him several times in the boyhood.[47] He felt the presence of God, through continuous meditation, in his own words 'resembling the rising of thousands of Suns together'.[48] It has depicted the presence of holiness in similar narrations.[49] After the continuous meditation, some people began to see divinity in him and responded to him in such a manner. Many of his poems are prayers to Hindu Gods like*Vinayakashtakam, Guhashtakam, Bahuleyashtakam, Shanmukhastothram, Shanmukha Dasakam, Shanmathura staram, Sivapasada panchakam, Subramanya keerthanam, Deveestavam, Mannanthala Deveestavam, Bhadrakalyashtakam, Sadasiva Darsanam Sivasatakam, Sree Vasudevashtakam*, etc.[50]

Along with his practices of installation of deities including that the revolutionary installation at Aruvippuram he replaced many 'lower' and 'uncivilised' deities like Kali, Marutha, Chamundi etc., with 'civilised' and

47 M.K. Sanoo, *Sree Narayana Darshanam*, (Mal), Kottayam, Sahitya Pravarthaka Co-operative Society, 2013, p. 52.

48 *ibid.*, (translation mine).

49 For instance see his, *Atmopadesa Sathakam*, (35), in T.Bhaskaran (compiler and ed.,), *Sree Narayanaguruvinte Sampoorna Kritikal*', Kozhikode, Mathrubhumi Books, 2015 (1985), p 341-414

50 All those works of Narayanaguru have been collected and compiled by different authors with interpretations; for instance see *ibid.*

'Hindu' gods like Siva and Bhagavathi.[51] All these, though a process of arguable Sanskritisation in a peripheral reading, were of revolutionary character because the people like him born to parents to lower or middle castes and thereby *avarnas* by birth were always forbidden from entering upper caste and Hindu temples or walking on the roads near those temples. Therefore, to break such customs and establishing temples and performing ceremonies themselves is quite provocative and attempts to beak and cross those customs imposed by the hegemonic class. Moreover, the age-old stagnancy of the society associated with the ritualistic and culturally bound life was assumed to get relieved only through such cultural breaks. Therefore his attempts were not only a 'cultural up-gradation' but a cultural break from the existing systems. It is evident from the fact that he did not accept all the ritualistic and ceremonial aspects of Brahmanism, instead, he broke them several times during the process of these idol installations itself and kept a critical and satirical approach towards them all. It is observable in his act of picking up a rough stone from the river and installing it as the idol of Siva and arguing with the upper caste goons that he installed an *Ezhava Siva*. But these revolutionary acts contained elements of piety, which were the preliminary steps in the formation of a revolutionary Narayana Guru while comparing with his later actions.

The second aspect of Narayana Guru was his criticality towards traditions. He criticised the institution of caste in all sense of the term. It was interestingly evident in his severe criticisms towards Sankaracharya, the primogenitor of *Advaita Vedantha* which he also had accepted as his philosophic position at the early stage itself, though with slighter interpretative alterations. He argued that human beings themselves constitute the Brahma and is not distinct from it, therefore how can there be differences

51 However, these iconoclastic programmes, though in th early stage of his social actions were done to avoid violent rituals and beliefs allied with these 'lower class gods'. Which he found as the reason not as a reflection of the backwardness of the lower class people.

of caste in them.[52] This interpretation of humanism is relevant because he had not undergone any formal modern education and was unaware of the scientific and empirical discourses on humanism. Still a rational interpretation of humanness can be understood as an evidence of the ecumenical rationality and contextual evolution of knowledge.[53] Therefore to him all caste differences are created by deteriorations in the Hindu Philosophy and he does not accept them as internal to the Hindu philosophy which, he held, see all forms of life (human, animals, plants etc. together) involve the universal soul (Brahma). He views, religions philosophically as mere opinions of the beholders.[54] He, therefore, finds no problems in two people of different religious backgrounds getting married. He also performed the marriage of K.C.Karunakaran with a German lady of Christian religious background named Marget (by transcending religious, geographic and cultural boundaries among people and in tune with his conception of the human being).[55] He challenged the notion of God in the Hindu religion by using the scriptures themselves. His, above mentioned installation of the deity, was against all Brahmanic traditions; Moreover which shook the foundation of Brahmanism and their cultural hegemony as they were held as the only people with the right to install and worship God or mediating prayers and all other rituals. But

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52 His famous and frequently quoted verses says,*Manushyanam Manushyatvam, Jatir Gotwam Gawam Yatha, Na Brhamanadi Rasaivyam, Ha Thatvam Veti Ko Pi Na* which can roughly be translated as the humanity in the caste of humans so is the cowness to the cow. There is no Brahminic order, but no one knows it. In his poem 'Jatinirnayam',(1-4) for the original see, T.Bhaskaran, *op cit,* Sree narayana … p. 490.

53 However, this is not an attempt to stretch the idea in to inapplicable extent and thereby a fallacy of composition. But an attempt to interpret the process of the emergence of revolutionaries in the transitional context to question historic burden of inequality and injustice from their own experiences without any visible exposition to modern scientific rationality and its world view.

54 The Malayalam term '*Matham*' denoting religion has only the meaning of 'opinion'. Which can be used interchangably. Therefore, according to Guru the only meaning of the term is opinion, which therefore do not give birth to clash or confrontation in itself. *Sree Narayanadharmam* (46) in *ibid.*, p. 624.

55 M.K.Sanoo, *op cit*., *Sree Narayana…* p. 23.

he stood with his act and repeated it several times at different places; all of them got high mass support and could create a movement all over Kerala. His disciples like K.Ayyappan went to the extent that there is no god and no use to worship, which was also acceptable to Guru when he was told of it.[56] Another theistic disciple of Guru, Swami Ananda Theerthan pledged that he 'would never go to any temple in search of God, as they are the chief centres, promoting the principles of untouchability and casteism'.[57] He also renounced establishing temples after a stage and asked his followers to build modern educational institutions and civilise the people. The change in this direction in Guru is unique and impressing (which marks the changes in the society in general), he starts to install lamps to lighten the lives and conscience of people and then move towards installing mirrors at different sites in order to rouse personal esteem among the people and to feel them that God is themselves and not someone outside. It was only after that he renounced setting up temples and had said that there should not be any more temples and those already set up would once be destroyed by people in the passage of age and spread of modern knowledge.[58] He also stated that he was ready to establish mosques or churches if somebody had invited him.

Both these aspects of Narayanaguru discussed above have been present in many other reformers of the age before the spread of modern education. But the third aspect in the succeeding discussion is supposed to be a rare feature at least among his contemporary social reformers. That is planning and working for a 'new society, completely distinct from previous ones, based on principles of equality and commitment. Such vision and mobilisation of people towards that objective were crucial in the formation of modern Kerala

56 P.Govindapilla, *op cit, Kerala Navothanam oru Marxist*… pp. 135-136.

57 M.K.Sanoo, *op cit., Sree Narayana*... p 23.

58 This progress in Narayana Guru's life is explained by M.C.Joseph, "Mathavirodhathinte Matham", in P.K.Balakrishnan, (ed.,) *Narayana Guru*, Thrissur, Kerala Sahithya Academy, 2000 (1954) pp. 322-325. But that has become a rare unbecoming prediction by guru at least in the case of Kerala, even more the opposite has been the effect.

and crucial in history. This point can be explained by recollecting certain events in the life of Narayana Guru. Narayana Guru envisioned a modern society in which every child irrespective of economic conditions and castes or religious background of the parents should get 'modern education: However, he was critical of the 'exam-oriented' education in which children learn for exams and not for life. Which he thought would not bring any social change than creating some clerks to the colonial administration.[59] He, therefore, asks his able followers to set up schools in their capacity and appoint teachers there and teach children from the depressed section by giving them free education.[60] Such education should create children critically minded as well as compassionate. Another important context revealing his vision was the contribution towards the organisation of workers and given them strength for achieving their right which also can be explained through an event in his life which is unequivocally foundational in the history of labour movements in Kerala. The coir factories in Alappuzha run both by indigenous owners and foreigners were notorious for their exploitation of labourers. Vatappuram Bava (who later became Bava Mooppan) one of the employees along with some of his co-workers met Narayana Guru when he visited Kidanganparambu near Alappuzha. Guru, after hearing the explanations of torture and the fearful condition of the labourers asked Bava to organise the workers of the factory and to free the labourers. Bava could act according to the direction of the Guru and succeed in his attempt. On 21st March 1922, the organisation of factory workers was formally inaugurated. Narayana Guru had sent his representative Swami Satyavrata for the inaugural function.[61] Thus he envisioned possible future Kerala with liberal social outlook and based on the principles of equality and social justice.

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59 M.K.Sanoo, *op cit., Sree Narayana* …. pp 25-26

60 *ibid.,* pp 148-149.

61 *ibid.* pp 19-21.

Guru called for voluntary and irreciprocal social services. The only aim of the social worker should be an egalitarian society and thereby salvation (*moksha*). Social work should be altruistic based on Dharma which includes love and compassion to fellow beings and deserving people. It should be in the form of medicine for patients, education for poor children, and such other basic requirements. He asks the volunteers of Dharma to cultivate compassion and humanity and a feeling of togetherness among stranded people for the creation of a better world based on Dharma and equality. Another advice given by Narayanaguru to his disciples is to adopt some villages and to convert them to model villages; with educational and cultural institutions, public spaces such as convention centres, prayer halls common for all religions and caste etc.[62] This vision of formation of public sphere and modern institutions along with commercial and other economic activities such as agricultural self sufficiency etc. make Narayana Guru's conceptions and practices very much distinct from all other reformers contemporary to him and revolutionaries of forthcoming generations. Moreover, his formation of an association Sree Narayana Dharma Paripalana Yogam (SNDP Yogam) and later Sree Narayana Dharma Sanghom irrespective of caste and religious division at least in principle make him different.[63]

Narayanaguru, like many of his contemporary social reformers was not a product of modern education nor was he directly exposed to scientific rationality and viewpoints. However, many of his arguments and mobilising activities were aimed at the formation of a secular society. His assertion on modern education and call for setting up factories and enterprises, the establishment of model villages, call for and setting up educational institutions instead of temple building, etc. were few in this regard. Another

62 *ibid.* pp 148-149.

63 However, the association (SNDPY) very soon proven to be contrary to his principle of extra religious and caste organisation. By realising this he wrote a letter to Dr.Palpu and later released a press note renouncing his association with the organisation and its activities. For details see *ibid.* p 136.

important contribution of Narayana Guru exceptional from all his contemporaries is the massive character of his programmes. In various capacities either as a Bhakti saint, social reformers, renunciation of tradition through itself and setting up of modern society Guru could gather a large number of people towards his path. It was this activity of massive programmes which shaped public spheres in modern Kerala which will be discussed later.

Ayyankali (1863-1941) has been a true representation of the early phase of social reformers discussing here. He had received neither modern nor traditional education; instead, his surroundings gave him wider knowledge of human problems and social inequality. The experiences of practical life including the oppression and exploitation based on the caste in which people were born or their parents belonged to. It was a situation when people had to work from dawn to dusk to receive the paddy strictly sufficient for preparing their *Kanji* (gruel) for the night. The downtrodden people especially those belonging to the castes of *Pulaya*, *Paraya*, etc. had to keep in a distance of more or less 72 feet away from the caste Hindu.[64] They should not come in the near visibilities of caste Hindus in any case. They had to wear a dirty loincloth extending only from their waist to the knee, either above or below it were punishable for both men and women. Women had to wear ear drops of

64 Though, there are regional variation to the distance to be kept, from 64 to 72 feets; there existed hierarchical distances among those unapproachable castes themselves. Nayadis were the lowest among them who were unapproachable to the pulayas and other castes. Their homes had such specialties as in their construction, that they cannot be referred to common names like *Veedu* (houses of Nairs which later became common name for houses in Malayalam) or such; the houses of people belonging to *Pulaya* caste was *chala* for *Paraya* it was *kudil*, for *Nayadis* it was *chetta,* for *Thiyya* it was *pura*, among Nair castes it varied from *veedu*, *taravad*, etc. according to grade, for namboothiris it was *illam, mana* according to their status. These traditions could not have been violated in any case. There were also regulations on the food, dressing, ornaments, language etc. for details see, William Logan, *Malabar,*Vol.I, Madras, Asian Education Services, 1951 (1879).

the stone piece and had to wear on their breast numerous chains made of cheap stones, etc. called (*Kallum Malayum*) as a symbol of their caste for the speedy identification for others. Likewise, there were discrimination and torture; not mere exploitation, upon almost all aspects of human life from birth to the crematory rituals. It was in such social circumstances that Ayyankali was born and brought up. Therefore there is no relevance in discussing the possible education he had received. It was this situation that continued for a long period and the changing social circumstances and movements for change among other communities that created a reformer in Ayyankali.

Unlike most of other people belonging to his caste, Ayyankali's father Ayyan had received some land from his *janmis* for some reason which made them earn a better life and a childhood. By the age of 30 in 1893, Ayyankali had grown to challenge the tradition at its root that he bought a *Villuvandi*, a cart and rode it on the public road in a situation that people belonging to his caste were forbidden from walking on that road. Though people resisted and tried to stop him he took out his knife and sworn to stab those who approach him. So they withdrew for the moment and he completed the journey in an intended way. On another occasion, he along with some of his friends belonging to different oppressed castes decided to walk through the public road in the manner of a march towards the Aralumoode Market (Puthenkada) in 1898. They were stopped by the elites at the Chaliya Street near Balaramapuram. It culminated in a violent clash between them and became the first violent struggle in his life and possibly in the history of Kerala against caste oppressions.[65] However, it was an inspiration for the youth

65 These movements were clearly an assertion of the civil right of the individuals and reiterating the values of the people as human beings, which were not imprinted up on them so far. Thus a variant of Humanism can be found influenced among the people before being familiar with scientific temper and associated cultural changes. These struggles reiterates the emerging consciousness among oppressed people before the advent scientific rationality in their discourses.

among the oppressed classes and they organised similar agitations at Manakkad, Kazhakkoottam, and Kaniyapuram etc. They all were suppressed by both the *avarna* groups and state forces together. But it had repeated at several places throughout Travancore. He said to have established a school in the traditional pattern at Venganur in 1904 despite severe opposition from the *savarna* groups, it was, however, demolished by them very soon.[66]

Ayyankali's acquaintance with Swami Sadanandaguru became a turning point in his life, who was a staunch opposer of religious conversion as well as the caste-based exploitation and untouchability.[67] Thomas Vadhyar, a maternal cousin of Ayyankali who had converted to Christianity in the inspiration of the salvation army who heard Swami's speech and informed Ayyankali of it and took him to a speech.[68] They both invited Swami to Venganur. This Thomas Vadhyar himself was a reformer who along with his comrades Nandankottu Henry, Moolekkonath Haris, Karutha Thomas, etc. worked against untouchability and unapproachability. Ayyankali was inspired by Swami's speech in which he had vehemently criticised missionary activities of the London Missionary Society (LMS), Church Mission Society (CMS) and Salvation Army which were major missionaries engaged in preaching Christianity and providing moral, material and educational assistance to the untouchables in Travancore. In the meeting attended by Sadananda Swami, he asserted forming an organisation for coordinating their programmes of emancipation under an able and educated leader. Thus they

66 T.H.P.Chentharasseri, *Ayyankali : Jeevacharithram (Mal)*, Thiruvanathapuram, Prabhath Book House, 1979, p 52.

67 *ibid.*, pp 53-62.

68 Such speeches on various aspects including religious reforms and social changes, cultural and literary subjects etc. were quite common during the emergence of modern conscience among people. They not only created Public spheres for assembling large number of people, but also instilled social consciousness and novel ideas and approaches to the world along with providing knowledge on the changing world around.

made Thaivilakathu Kali as the leader, who was the only participant capable of reading and writing and Ayyankali as Deputy leader.

Ayyankali then began to oppose religious conversions which did not bring many changes to the conditions of people. With the assistance of Sadanandaguru, Ayyankali prepared a memorandum to the king against forceful religious conversion by the Christian Missionaries.[69] They prepared a plan to invite the attention of the king, Sree Moolam Thiruvnal Maharaja of Travancore. It was to present them before the Raja on his ritual day of *Poojayuduppu* at the Sree Padmanabha Temple. But by fearing the attack of the *savarnas* they decided to March with a photograph of the Rajah in the front. So any attack would be considered against the Rajah and will thereby be treated as treason. However, on the way, they had to face severe attacks and stone pelting but the march continued and they presented themselves before the Rajah. He was exclaimed to witness these 'black and dirty people' whom he was seeing for the first time in his life.[70] Notwithstanding on their way back to Venganoor through Manakkad they were attacked by the *savarnas* for polluting the king. But they retaliated severely at the sight itself. By assuming inspiration from all these events they began to organise both converted and non-converted oppressed groups irrespective of caste difference under the leadership of Thomas Vadhyar and Haris Vadhyar and formed the Sadhu Jana Paripalana Sangham in 1907 against inequality and injustice.[71] Ayyankali was made the leader and General Secretary of the

69 *ibid.*

70 *ibid.* As the caste system prevented the 'untouchable and unapproachable' people from entering on the way and other spaces used by the elite castes. Therefore it was quite common that upper class people may not see an untouchable in his whole life. A similar experience was narrated by social reformer V. T Bhattathirippadu that a Namboothiri asks his manager whether the 'Pana , Pulaya people look like human beings with legs, hands and face etc.' for details see, V.T Bhattathirippadu, *Ente Mannu*, Thiruvananthapuram, Chintha Publishers, 2014, pp. 71-75.

71 This sanghom as revealed from the name itself, had received inspiration from Narayana Guru's Sree Narayana Dharma Paripalam Yogam which was formed

Sangham. They also formulated a by-law for the organisation. Its priorities were fixed as education to the depressed class right to mobility and commutation through public roads, cleanliness of the people, etc. They also decided that they should work only six days a week. Sunday should be a holiday and to be set for organising people and conventions for discussing the problems of the community. They collected ½ chakram from males and ¼ chakram from ladies as membership fee. This was not only to raise funds but for instilling self-esteem among the oppressed and rousing seriousness among them regarding the programmes of the organisation.[72]

Through the efforts of Thomas Vadhyar and others, Diwan P.Rajagopalachari of Travancore issued an order permitting the oppressed classes entry into schools in 1907. However, this order did not come into effect due to the upper caste predominance in the bureaucracy. Ayyankali and his comrades approached every school managers seeking admission of the depressed students into schools, but all of them rejected their demand vehemently. Thus they organised and took a pledge that no one will work for the janmis either in the fields or somewhere else until their children get admitted to schools. This was the first Labour strike in the History of Kerala, possibly India, against caste oppression and seeking education. They also demanded an increase in wages, stopping caste-based atrocities, withdrawal of fake cases charged against them, entry into public places, permit mobility and commutation on public roads, etc. This strike was met with mockery and ridicule by the Janmis on the initial stage. However, there were calamities at both sides on the passages of time. Many people (without any other means to live) began to go for works but the strike continued. Janmis began to seek other means. Many peasants themselves began to enter the field, but that did

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in 1903 and has been proving its success through various emancipatory programmes and organising people from different walks of life. It was also formed as an organisation of Sadhu Janam meaning poor people and was above the caste distinctions.

72 T.H.P., Chentharasseri*, op cit., Ayyankali….* p. 65.

not make a big change. Finally, due to the heavy starvation of people, Ayyankali made collaboration with the fisherman who themselves were oppressed class and was quite sympathetic at the strikers. They agreed to accept many labourers to the fishing and this could make the situation change. Thus it can be called the first known working-class alliance in the history of labour movements in Kerala.[73] Thus the janmis came down and informed their willingness for discussion with Ayyankali. He made them come to his availability.[74] However, all of their demands were not accepted but an increase in wage was accepted to consider loyally. Thus the strike which lasted for a year came to an end by 1908. Notwithstanding the attack on the labourers and their children by the janmis continued, though with a marginal decrease.

Ayyankali met education Director Mitchell, who like Diwan P.Rajagopalachari expressed sympathy towards the oppressed people. Ayyankali submitted a memorandum and Diwan stated that he was unknown of the fate of his previous order until then. He issued a fresh order permitting the oppressed class entry into all schools. But it was also not wholeheartedly accepted. There were multi-dimensional criticisms against this decision. While the upper caste traditionalist stood against teaching the lower caste and 'elevating' them along with their children.[75] However, radicalists and critics of

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73 It resembling the slogans of the 'unity of labouring class all over the world', the understanding or union of the workers in Kerala produced good results. This could yield them a greater success in satisfying their demands of education to their children and increase in wage.

74 Though this feel to be irrelevant today it was not the same during those days. A person belonging to such a class like him had received a consideration even below the rank of animals as evident in the previous discussions of their plight. Therefore it becomes historically relevant that they got considered as the human beings with rights and honours and dignity.

75 He asked to differentiate between socio-ritualistic discrimination or exploitations and pedagogic skills. He says The acquisition of pedagogic skill is clearly depending up on the social and intellectual capacities of a person. Therefor people from socially and intellectually backward condition would not be grasping things as the others hailing from richer and well to do

state like 'Swadeshabhimani' Ramakrishnapilla, who had been a severe critic of state for its injustice and the administrative faults through his 'Swadeshabhimani' also stood against the order for pedagogic reasons. He stated that the students with higher cultural capital like those hailing from the upper strata will digest teachings very easily. The teachers without much time and social concern would treat the students, deserving additional care as unqualified and less interested. It will end in their failures and natural drop out. He opined that the students hailing from poor, low caste backgrounds should be taught separately without mixing them with the upper-class students. He compared such a situation of teaching the *savarna,* enjoying all the benefits of socio-cultural advancements for long periods along with *avarnas,* who had been working in the fields for centuries, together to the situation of 'locking a horse and a buffalo together in a yoke to plough the field' in his mouthpiece *Swadeshabhimani* on 2nd march 1910 titled *Vidyabhyasakkuzhappam*.[76] During the succeeding re-opening of schools Ayyankali along with the daughter of Poojari Ayyan, Panjami went to enroll her in the school at Uroottambalam near Balaramapuram. They were resisted by a group of elite goons and it culminated in a clash at Uroottambalam market. Severe attacks and counter-attacks were held and spread to different parts of Travancore. The school where Panjami was admitted was set to fire as pledged earlier by Kochappi Pillai, the leader of the *savarna* goons. But the

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backgrounds, therefore they should be given additional consideration and special training. So the mixing up would create opposite results. For details see, K. Ramakrishnapillai, *Bhayakautaliya Lobhangalkkethire: Swadeshabhimaniyude Sampoorna Mukhaprasamgangal* (Mal), Vol.I (Comp., T. Venugopal) Thiruvananthapuram, Kerala Grantha Sala Samgham, 2009, pp. 415-416.

76 This has attracted wider and severe criticisms from various corners that he was standing with the traditional *savarnas* against the lower class entry in to educational institutions. Therefore, he had to issue an explanatory editorial in Swadeshabhimani in the succeeding issue on4th March 1910 entitled *Vidyabhyasapramanam.* In which he clarified his positions on cultural and intellectual formation and their link with existing social situations and conditions of life. For details see, *ibid.*, pp 417-419.

cases were charged against the oppressed people alone as the creators of the problem by the state.

Though there were differences of opinion between Swadeshabimani K.Ramakrishnapilla and Ayyankali especially regarding educational order they had maintained a democratic and cordial relationship.[77] Ayyankali always sought suggestions and opinions from Swadeshabhimani on different matters on various occasions. For instance, Ayyankali wrote a letter to Swadeshabimani asking him some help and to enquire means for sponsoring some students or about some charitable institution at Madras where he has been living in exile. It was to assist three students who were dropouts from schools in Travancore for failing to remit tuition fees in time. Mr. Pilla, by considering the seriousness of the issue published this letter in the *Swadeshabimani* with a note highlighting the importance of the issue. He also considered the demand for direct representation to Pulayas in the Sree Moolam Praja Sabha quite serious fundamental to the principles of representative administration.

The Sreemoolan Praja Sabha was the popular Assembly of Travancore to which people were elected from among the tax payers. When it was decided to nominate the representatives of non-tax paying communities people like Kumaran Asan, were got nominated. For Pulaya castes it was made that P. K.Govinda Pillai, editor of *Subhashini* who do not belong to that community were made representative for them. However, he spoke for them in the Assembly and raised several demands for Pulayas and other downtrodden classes including livable land, right to education, scholarship for their students, enhancing salary to those who teach Pulaya students, access to roads, other facilities and other public institutions, prohibition of untouchability, appointment of qualified people from these committees to the

77 Differences of opinion between Ayyankali and Swadeshabimani extende from education to religious conversions. They argued on several occasions on various subjects especially Ayyankali's stand against conversions, etc. But that did not hinder a cordial and democratic relationship between them.

government services like health care, sanitation, excise etc. He was directed by the Diwan P.Rajagopalachari to prepare a list of land assignable to the Pulayas. Thus he demanded in his maiden speech in the Praja Sabha the *Puthuval bhoomi* (new made lands) to be distributed to the Pulayas and plead for the concession to the Pulaya students (at least the concessions given to Mohammedan students), service entry to the untouchables, etc.[78]

Another important aspect of the life and activities of Ayyankali was his staunch oppositions towards religious conversion by the Christian missionaries. It can be explained with an incident during the above mentioned Perinattu Lahala (Perinattu rebellion). Large scale conversions were carried out in different regions in Travancore. At Cherthala, in Muhamma Taluk it was carried out under the auspices of Parayi Tharakan, a Christian janmi, who distributed clothes and money to people who were willing to religious conversion. People came forward expecting better life and against caste based exploitation and oppressions as well as seeking education for their children which are all possible through their conversion.[79] Therefore many of the reformers find in severe opposition not only to the traditions and its severities but also they had to raise their voices against the lobbies of conversion. Thus many of the reformers of the early stage get a characterisation of anti conversionists and conventionalists. Like Ayyankali many stood against the dubious activities of missionaries especially in Travancore, which do not

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78 Thus it can be observed here that, though not educated in modern systems his demands were democratic , representational and rational in modern sense of the term. Moreover he was very much keen on providing modern education and its benefits including professional opportunities to the people. For details, see T.H.P., Chentharasseri *op cit, Ayyankali* …. pp 78-84.

79 It was this situation that tempted Swami Vivekananda to vehemently criticise Malabar during his visit to Madras. He said as frequently being quoted that in Malabar people are mad; that 'a person belonging to *Paraya* community has no right to walk in the public road but if he convert in to Christianity and accept European name he will get all the rights and be treated accordingly'. He ridicule therefore 'people of Malabar are lunatics and their homes so many lunatic asylums'. For details see Swami Vivekananda *Lectures from Colombo to Almora*, Calcutta, Advaita Ashramma, 1970, pp. 192-193.

make them conventionalists as they severely opposed the exploitative aspects of the traditional society and stood for social change. But they all had to limitations of the age as well as their making.

Reform Movements Sui-Generis?

From the discussions above naturally emerge the question that if the reform movements were not the product of modern education and its allied rationalities what led to such a formation? Whether they were the natural progression of the previous social order or sui-generis with the birth of reformers? All these questions are valid and require explanations. Therefore the present study puts up the following hypotheses as an attempt to address such questions. The emergence of numerous reform movements during the 19th century, as represented above were the products of the complexities and contradictions created by the paradigmatic shift between the elements and characteristics of feudalism and colonial capitalism in 19th century Kerala society. The technological and administrative changes brought about by colonialism for its convenience, either directly (in the case of Malabar region) or indirectly and under its strong influence (in Travancore and Cochin regions) were quite unprecedented and were almost in opposition to the feudal notions practiced here. These changes accelerated social mobility to a certain extent. They were sufficient for creating inner contradictions in society and thereby giving birth to criticisms and counter-movements. It was in the context of large scale religious conversion under the auspices of Christian missionaries that the traditional systems of education were extended to the classes hitherto unapproachable to such realms. These educations which began to be received by the lower class people, in the changing socio-political circumstance, could produce the contradiction among them in both the practices and the system they understood. These contradictions aroused doubts and energy for reform among them. They were both reforms in religious and social practices as well as the socio-political system as they all

were in an intermeshed condition in the traditional society.[80] Therefore to create any change in such a complex social structure severe thrash was required; which was provided by the restructuring of authority by British colonialism in all three divisions.[81] This process of evolution made the subsequent twentieth century yet more complex and problematic. A favourable condition for scientific and philosophic debates had evolved here by then. However, even those slighter changes produced by these debates were proactive in the formation of a secular society in Kerala which otherwise could have counterfactually gone backward to the strong and historically evolved traditional social systems.

All these early reformers, represented above had undergone a variant of traditional education or were being influenced by them. For instance, they have learned traditional knowledge like astrology, medicine (Ayurveda), arithmetics and classical Sanskrit literature.[82] This recently extended the traditional educational system for the lower caste people who had been performing the functions of maintaining the elite culture away. Because, it had become necessary for the Brahmanic religion and its philosophy, to get the consent and acceptance of the lower class people, for the survival of the traditional system in the changing colonial circumstances. For instance in Travancore, Rani Gauri Parvati Bai issued an order in 1817 for taking up the

80 In the medieval Kerala society, due to its particular feudal characteristics, political authority itself was regulated by caste-based social hierarchy and it was the protector of such social systems that was inseparably allied with religious beliefs. Therefore, the socio-political authority could not have been distinguished from other aspects of human life. Thus the holistic character of their knowledge system was applicable to socio-political and cultural life as well. Thus all these provided a stagnant character to medieval Kerala.

81 Though Malabar was the only part directly administered by the British colonialism, it had clear political sway over Travancore and Cochin still nominally ruled by the feudal princes.

82 However, they were not the same as the existing Brahmanic system of education imparted particularly for 'Brahmin' students through different *Madams* and *Salas* mentioned earlier, where they were taught classical literature, Vedas, Vedic astrology, rituals and ceremonies, etc.

expenses for meeting education at Mavelikkara, Karthikappalli and Kottarakkara Taluk. In which it was stated that the subjects to the taught are mathematics, writing and reading.[83] This was intended to make people competent to the government services.[84] The above-discussed role of education, that is to maintain the tradition and survival of feudal order will be more clear from another order issued by the same ruler, Gauri Parvati Bai in the next year (1818 ie; *Kollavarsham* 993) which can roughly be abstracted as: 'it is learned that after appointing teachers with salary from State treasury (as per order cited above) many more students have come forward to learn. However, it is necessary to teach them from their early ages the differentiation of virtues and evils; the relevance of education in the character formation, etc. for which lacks a textbook in Malayalam. Therefore in order to teach them how to behave with and care parents and elders, good deeds for achieving salvation, the methods of worshiping and propitiating prayables including 'food giver', parents, teachers, cows etc. and the ways of living in accordance with royal orders as well as the consequences of disobeying them etc. it is necessary to create textbooks based on fundamental work such as *Bhagavata*, 18 *Puranas*, etc. in Malayalam. These textbooks should include 'principles and values of our tradition' that would help the learners to live a life in 'respect to the *itihasas'* and would make them efficient to differentiate between good and bad in life. Therefore in order to fulfill this, due things should be done to invite Panthalam Subramanya Shastrikal and Ayyaswami Shastrikal to Thiruvananthapuram. Necessary services to them should be

83 The order issued by Rani Gauri Parvati Bai, in 1817 cited in P.Bhaskaranunni, *Pathonpatham Noottandile Keralam* (Mal), Thrissur, Kerala Sahitya Akademi, 2012 (1988), pp. 1062-1063.

84 However, it is to be stated that this extension of education was intended for people belonging to the higher strata of society; the lowest among them were different categories of *Nairs*. This was extended to the castes like *Ezhava* later. But the rest did not come under its purview anyway.

proved for doing their responsibility well'.[85] Thus the intention of the survival of the feudal social system in education is quite clear from all these.

However, by learning traditional literature and classical Sanskrit texts many of them could amass a clear knowledge in Hindu tradition, beliefs and practices. They could also attain a level of 'cultural emancipation' from these educations, which was highly sophisticated and without barrier. Many lower-caste characters appear in those classical stories; those who belong to *Chandala* and fisherman castes become writers and critics. Divine heroes become role models and get human characteristics and teach values etc. As intended in the Royal order mentioned above these learning had a higher cultural impact upon the learners. It provided a new version of the religion familiar to the people in their lived experiences. They gave them a chance to become saints, as the case of Narayanaguru.[86]They also taught them moral values and cultures similar to the elite cultural tradition of India. By and large, this education was sufficient for inculcating a Brahmanic culture, traditions and ways of life derivable from these literary traditions of classical and *Puranic* Sanskrit texts among the middle class.

Though this education was intended to recreate the tradition and maintain the existing social system, it had a counter effect as well. There were people who came forward with a critical approach towards society and traditions; as mentioned above. They all roused several questions and demanded the renovation of society. Thus the conflicts created by the traditional education among the learners can be grouped into two; 1).

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85 The royal order (*Neettu*) issued by Rani Gauri Parvati Bai for making a Malayalam textbook in 1818 (Kollavarsham 993) cited in *ibid.* pp 1068-1069.(translation mine).

86 It was not usual in pre-modern Kerala that a person belonging to lower castes learn *Sanskrit* philosophic and similar kinds of literature. What they could learn and reproduce was the knowledge and practices of their ancestors, which was necessary for the maintenance and reproduction of the caste system and its social order. Narayanaguru himself has reiterated that he could not have received saint-hood unless there was no European (*Mlecha*) interference.

knowledge in conflict with the practices 2). social discrimination. Thus these conflicts led many of them to think seriously and solve the issues identified by them within these traditions. In reality gods, rituals and ways of life along with the morale and values they learned were different from those found in practice among the people. This roused the instinct of reforming the practices and their conceptions in accordance with what they learned to be real in those texts. There was another variant of conceiving the local practices external to what is learned as the Hindu system and traditions derived from the textual religion. However, a general conclusion was that they were a variation of the Hindu religion with chronic deteriorations in practice and morales leading to the *Avidya* and evil practices being crept into their life.[87] Thus they found problems in the practices and realised that the solution is to bring people back to the 'original tradition' of Hindus and thereby to the 'cultured' life. Thus they began to work for reinstating the 'culture' to the practical life. This was evident from several instances of criticism, from the part of Sreenarayana guru, Ayyankali, etc. and the installation of Brahminic deities by Arattupuzha Velayudha Panikkar, Narayanaguru etc. Guru went to the extent that he held all those uncivilized 'meat-eating' deities worshipped so far were primitive forms of the same god and in order to attain the progress people have to worship God in pleasant mood like *Bhagavati, Sivan*, and others by replacing furious incarnations like *Kali, Kooli, Marutha, Chamundi* etc. widely

87 However, there were differences of opinion among the people and scholars of the 19th century regarding the tradition. For instance Swami Vivekananda in his famous Madras speech, which had been widely discussed here, severely criticised people and anthropologists who hold that people of South India except the Brahmins belong to the Dravidian groups which are different and distinct from the Aryans of North India culturally and anthropologically. He instead holds that "there may have been a Dravidian people who vanished from here and the few who remained lived in the forests and other places. It is quite possible the language may have taken up, but all these are Aryans who came from the north. The whole of India is Aryan, nothing else". (sic), For details, see Swami Vivekananda, *op cit*, pp 190-191.

worshipped among lower caste people.[88] This was one of the major activities in the practices of Narayana Guru in the initial stage of his social reform movements. Thus many of them stood for the acculturation of the lower class people and reforming the society in the light of the knowledge and practices learned by them.

The other contradictions that emerged out of the differences in the knowledge and practice were social discrimination, caste hierarchy, untouchability, unapproachability, etc. which were unfound in the literature and culture they learned. They realized them as practices crept in to tradition later and therefore, without any scriptural basis.[89] If every soul is the inalienable part of the universal soul (*paramatma*) what makes the souls of the untouchables and unapproachable different and unequal.[90] Thus they vehemently criticised the caste-based discrimination of people and untouchability existing not only between the dichotomic *savarna* and *avarna* but among various caste groups and subgroups themselves. For instances Narayanaguru and K. Ayyappan along with others criticise people of Ezhava castes (Many of guru's disciples and admirers belong to this caste groups and later on his SNDP Yogam itself turned to be an organisation peculiar to this caste) for not entering the people of castes considered lower to them including Pulaya and Paraya etc. He even takes a stand that if they do not cooperate with people of such lower castes and invite them to the functions organised by

88 For details see, M.K., Sanoo, *op cit.*, *Sree Narayana….* And also see, K. Surendran, *op cit.*, *Guru.*.

89 By this time the new Hindu religion had become very much similar and competent with the Semitic religions with powerful Gods, scriptures, pilgrimage, etc. which was the influence of Christian Missionaries and colonialism upon them.

90 People like Narayanaguru were clearly patrons of Advaita Vedantha which hold that nothing is distinct. Everything including human life, nature, wild animals etc. are the unequivocally the same. Nothing has a distinct and unique entity. A variant of Sankara's *Advaita*.

them, he would no more associate with them.[91] Thus the social reformers of the early modern period especially the first wave of reformers who did not undergo modern education kept a reformative stand based on the knowledge and training they received and their critical approach towards the traditions.[92] But almost all of them and many of their disciples change their position later on according to the changes in the socio-economic and cultural life of modern Kerala, especially with the spread of modern education which is intended to discuss later on. However, this does not mean that they were all inviting people to the path of sanskritised scriptural life. But it only meant that they were working for reforming the society based on the knowledge achieved through traditional education. In other words, education in the traditional way was capable of revealing some of the problems of traditional society, differences in the knowledge and practice in the changing socio-economic and cultural scenario. It, therefore, created internal conflict and ambiguity in them which led to the emergence of many social reformers among them in that particular context.

The practical changes in the society, especially socio-economic technological and political changes that occurred in Kerala during the late 18th and early 19th centuries created an atmosphere sufficient for challenging the beliefs and tradition. The spread of colonial capitalism and its allied world views, technologies, social conceptions in different parts of Kerala either directly or indirectly administered by British colonialism accelerated socio-

91 This was the context in which he released his circular that he do not belong to any caste or religion and is not part of any caste or religious organisations and he had left SNDP Yogam from words and deeds and mind completely.

92 However, in such criticism, the basic conception and arbiter had been humanism, equality, etc. as mentioned above. They adopted the traditional literature and texts which were not extolling discrimination and exploitation, in short acceptable for their rationale. This was the base for their critical stance towards some traditions and texts as evident in the debate between Chattambi Swamikal and Narayanaguru. In this debates Guru questions many of the logic regarding god in certain traditions. For details see, M.K., Sanoo, *op cit*, Narayana Guru...and also see, K.Surendran *op cit.*, Guru...

intellectual changes. Changes in Politico-juridical and revenue administration had begun to reflect on the socio-economic aspects along with the living pattern of people all over Kerala either directly or indirectly administered by the British colonialism.[93] Colonial administration and missionaries their lifestyle, viewpoints, tastes, religion, manners and etiquettes, etc. had begun to influence the lives of people along with the educational and economic opportunities offered by them. Moreover, the imposition of colonial revenue system and other administrative changes necessitated and brought up some changes in the life and activities of people reflecting their influences in various aspects of human life in Kerala.

Malabar, as mentioned above became a part of British administration by 1792, with the fall of Tipu Sultan, who had conquered it earlier.[94] At the outset, they changed the revenue system in Malabar which had been prevalent here for centuries. It brought changes in the ownership of land and the pattern of distribution of rent. They also necessitated changes in the crops through implementing revenue collection in cash affecting the entire life of Malabar and which inverted the whole system of agriculture.[95] The British factory at Thalasseri (Tellichery) and missionary activities brought the visibility of the Europeans in Malabar. The educational institutions established by the Basel Evangelical Mission (BEM) and later on by several other visionaries along with the already prevailing *Kutippallikkoodams* provided the educational

93 Though Malabar was the only province in the three geopolitical division of Kerala directly rules by the British after the defeat of Tipu Sultan and subsequent treaty of Sringapattom (Sree Rangapattanam) other princely states also were practically dominated by the British. For example Travancore in 1795, accepted British suzerainty and Macaulay became its resident. So was Cochin.

94 It was annexed to the Bombay presidency and by the beginning of the 19th century (1800 CE) Malabar was made a district of Madras presidency, directly ruled by the British government under the administrative control of collector.

95 As the changes brought about in the political-economic life of Malabar had already been studied and analysed widely, the present dissertation does not go into its details. Instead, a peep into changes in approach and intellectual life of Malabar associated with economic changes is attempted here.

background of Malabar. Later on, the Government itself started establishing educational institutions in different parts of the district. Through these institutions, Arithmetics, English Literature, History of Britain, and Basic Sciences along with some indigenous literature were taught. The Biblical stories and Bible teaching was an elementary aspect of missionary schools. However, they play a crucial role in the cultural history of Malabar.[96] Though the mission established schools in different parts of Malabar, their contribution cannot be confined to this field. They had also established factories and brought about a factory and industrial culture in Malabar. They founded the factories at Puthiyara, Feroke, Kodakkad and Olavakkode which were started for giving jobs for those who were converted to Christianity, as they had to face severe neglect from the rest of the society along with losing their castes.[97] Then they moved to spinning and weaving sector and mills were established at Calicut and Cannanore (Kannur) which were also provided employment to a large number of people, directly and indirectly.[98] The most important contribution of the mission in the literal transformation of Malabar was the establishment of printing press and publication of journals and books from there. It is to be noted here that the first missionary school established by Basel Evangelical Mission in 1839 at Tellichery (Thalasseri) had only 12 students in the initial stage, where Herman Gundert taught Malayalam, English, Basic Sciences, Geography and Basic arithmetics to the

96 The Role of the Basel mission in educating Malabar has been well acclaimed by various scholars. A detailed analysis of the Basel Evangelical Mission and its contribution to Malabar is done by Fedrick Sunil Kumar.N.I, 'The Basel Mission and social change – Malabar and South Canara. A case study (1830-1956)', unpublished Ph.D. Thesis in the Department of History, University of Calicut, 2006.

97 *ibid.*

98 More than providing employment and subsequent economic emancipation of some people their relevance in the cultural change of Malabar is the spread of their products like roof tiles, clothes, printing, etc. These products and their allied culture made a larger break in life, habits, etc. from the tradition and routine, with clear cultural and intellectual impacts.

students himself.[99] Later Vernacular and English schools were set up at different parts of Malabar.

In the context of the new revenue policy and taxation by the British, trade in agricultural and other products enhanced in Malabar.[100] Along with with it the establishment of various estates by the colonial and subsequently indigenous people has also become face lifting for Malabar. All these changes brought about a shift in not only the appearance of Malabar but also among the mentalities of people towards life, nature and society. Moreover, the increased revenue collection and shift into the monetary economy led many landlords to the forceful redemption of land leased to tenants and ordinary cultivators alike. This led to large scale violent struggles in different parts of Malabar during the second half of the 19th century. They got a communal depiction mainly from the colonial officials and later on by following them several scholars who depended on the official records for reconstructing the history of Malabar.[101] Thus the agrarian unrest and subsequent community consolidations also were significant in restructuring Malabar. It was in these changing social scenario social reform movements and political formation of the society in Malabar was taking shape.

This situation of turbulence was not only the problem of Malabar but in Cochin and Travancore, similar changes were evolving during the 19th

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99 *ibid.,* p 181.

100 When revenue began to be collected in cash, people had to produce more cash crops that had to be sold and those who stuck on paddy cultivation had to sell them for living in the monetary economic system.

101 This was true that many of the tenants who rose against this injustice belonged to the Mappila community but their issues were not related to community or religion instead of agricultural and existential. These events had no communal colour until they were being utilised to cultivate communal sentiments and tensions, both by the colonial and indigenous narrators. For a detailed understanding and various narrations on the Malabar, rebellions see, K.N.Panikkar, Ed., Peasant Protests and Revolutions in Malabar, New Delhi, Indian Council of Historical Research (ICHR) in collaborations with The People's Publishing House, 1990.

century. In Travancore, as described above, by the beginning of 19th -century education institutions were opened to all classes through an order.[102] The C.M.S press founded at Kottayam by Benjamin Bayley, the missionary priest, was one of the landmarking incidents in the history of Travancore. The press established in 1821 and released its first Magazine *Jnhana Nikshepam* (Treasure/investment of Knowledge) which was first of its kind in Travancore.[103] Another major event that brought about changes in Kerala was the establishment of agricultural estates throughout Kerala especially the hilly regions of Wayanad, Idukki, Palakkad, Kottayam, etc. It brought about several cultural changes among the people. The Bungalows of estate officers and their kins and assistants provided a new vision of lifestyle to the people. The Labourers of the estates due to their affiliation with the Europeans were influenced by the lifestyles and entertainments. This led to a marked change in the living styles and habits of the people both directly and indirectly connected to these estates. Moreover, the estate culture brought changes in the native approach towards agriculture as well. Many of them joined with them and founded estates in different parts. Coffee, tea and rubber replaced several other and largely cultivated crops and dense forests here.

In Malabar, several networks of roads were paved during the conquest of Tipu Sultan for his military purpose which was developed and extended by the British for their administrative and economic purpose. Though this had influenced the life of the people in Malabar as a whole, the case of Travancore was more impressive. As the rigidity of the caste system was more complex and severe in the Travancore region probably due to the continuity of feudal socio-political order comparative absence of a break to the cultural and

102 But the order was brought into effect after labour strike and subsequent interferences by several social reformers including Ayyankali, Kumaran Asan, etc.

103 However, it was not the first in Kerala as wrongly mentioned by several authors on Travancore as Herman Gundert's *Rajya Samacharam* had begun its publication one year before which seems to be the first publication in Malayalam.

political system. It was with the arrival of the British that several roads linking waterways and markets were constructed It was Marthandavarma who laid the foundation of road works in Travancore. But during the period of Karthika Tirunal, a road from Kanyakumari to Kodungallur was founded, as the European trade necessitated the establishment of roads. However, in Cochin from the period of Sakthan Thampuran, itself roads were constructed and trees for shade were planted across the road which was continued by Sankara Varrier with utmost importance.[104] In Malabar the efforts of Tipu were continued by the British especially during the period of Conolly as the collector who gave importance to both road and waterways through the creation of canal system linking interior regions with the port towns.[105] This was later on enhanced by the introduction of the railway and its extension to the southern regions. However, these transport facilities did not reduce the severity of the caste system as claimed by some scholars.[106] As the ideology of the caste system and its diverse forms had not been eradicated its expressions were diverted into some other means and expressions. Therefore what has happened was that caste-based revolts and struggles became

104 Malayineezhu Gopalakrishnan, *Keralam Loka Charitrathilude* (Mal), Thiruvananthapuram, Kerala Bhasha Institute (State Institute of Language), 2003, pp. 277-279.

105 However, in the present context, along with the utility or development of infrastructure, the cultural change allied with this transportation leading to socio-intellectual and conceptual change is more important.

106 This is a formal logic held by some scholars that the people forced to sit together in a compartment or even in a seat irrespective of their caste difference would naturally forgo the caste. However, caste and its hierarchy are not merely the physical distancing of people, instead, it is a deep rooted ideology that is reflected in various expressions like untouchability, as well as theses physical and cultural distancing. This is an ideological and practical de-humanisation of people deeply instilled in the brains of both practitioners and preys historically. This is expressed and reproduced in various forms with clear adaptation according to socio-political and cultural changes with its own institutions and practices for maintaining them. Therefore they are not easily removable from society with mere changes in form. Instead, it requires massive programmes sufficient for changes in popular mentalities and serious challenge to the ideologies maintaining and justifying it.

common in different parts of Travancore and Cochin. It was these circumstances that the attempts to challenge its ideologies received wide impetus among the people of different parts of Kerala especially Southern Kerala.

Though Dharmashastras and Smriti traditions are claimed to be the basis for the adjudication of disputes and legal code of the region in general, it did not have an all-pervasive character. Because each caste group, including Mappilas and Nasranis, had their own traditions and proprieties called *Maryada* and *Vazhakkam,* etc. They were determined by the elders of the caste or feudal lord of the village and issues were settled accordingly. However, there were instances of artisanal and passive determination. But no one dared to question any of them. However, this system was brought to an end at least recordically with the establishment of the colonial judicial system. It was the Dutch in Cochin, who established civil courts for the first time in Kerala.[107] In Travancore Diwan Ummini Thampi had established four courts before the arrival of Col. Munroe.[108] With the arrival of Munroe, the judicial rights of king's officials like *Sarvadhi Karyakkar*, *Melvicharippu*, *Diwan*, *Thadassar,* etc. were removed and he began to hear the cases himself and adjudicate with the help of 'Shastrikal', an expert in the Hindu religions codes. He establishes courts at Mavelikkara, Aluva, Vaikkom, Padmanabhapuram, Thiruvananthapuram, Kollam, etc.[109] Two judges were appointed to each court along with a 'Sasthrikal' to assist in Hindu religious codes. However, the influence of Hindu Dharmashastras, etc. continued in these courts as well.[110]

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107 P. Bhaskaranunni, *op cit.*, pp. 1248-1249.

108 *ibid.*

109 *ibid.*

110 The cases were determined only after hearing the explanation of Shastrikal, who was well versed in Sanskrit language and ancient literature along with *Dharmashastras*. Hindu Dharmashastras, traditions, customs and caste rules along with Hukumnamas considered the legal foundation for determining cases until modern system and rules were enacted. Thus judiciary had bureaucratised but the predominant legal system continued to be the traditional

During the reign of Swati Thirunal, Munsiff Courts were established to hear civil cases. In Malabar after the establishment of British administration, two superintendents were appointed in North and South to determine civil and criminal cases. With the code of Cornwallis coming into force appeal system was begun. The provincial court was established at Tellichery (Thalasseri) and two District courts at Tellichery and Calicut. Provincial Foujdari courts were soon founded at Thalassery, Cherpulasseri which heard criminal cases of serious offenses. In 1827 the system of courts was renovated and juries were appointed to hear criminal cases. In 1843 District courts were replaced with circuit courts. In Cochin, the special privileges given to Kongini and Jews were withdrawn by 1814. They were also brought under the jurisdiction of the court. Courts were established at Thrippunithara and Thrissur. Court fee and advocate for clients were started in Cochin by 1853 the system of Cochin was made similar to be the judicial system of British India. In Travancore, the system of appeal courts with a *Shastri* and four Judges among them one should be a Christian and the remaining three Hindus were determined. The regulation of advocates was established in 1865. After reforming the *Sadr* court, it was made the High Court with five judges including the chief justice and a *Shastri* was appointed. However, gradually offenses and cases determining in the *Dharma shastra* way were transformed and new regulations and penal codes replaced them by the second half of the 19th century. This system had also brought about far-reaching consequences in the history of Kerala. However, everything did not come under the purview of modern courts and law but the legal system became renovated.

Medical practices as discussed in the previous chapter was vivid and well developed many of the treatments, practices, and medicines were unique to Kerala. It might be due to the stringent caste system and practices of untouchability and unapproachability among various castes either higher or

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one until legislation in modern sense came into prominence in Travancore. While in Malabar it was naturally the colonial legal system and their sense of justice as the code for adjudication.

lower castes and in between them, that there were practitioners of indigenous medicines among different caste groups who catered services to their caste and equivalent castes. However, these practices were mixed with ritualism and superstitions from top to bottom, among them dreams of both the patient and *Vaidya; sakuna* of patient, *vaidya* and even those who went to bring the *Vaidya* were determining factors in the treatment.[111] The medicines prescribed by the Vaidya had to be prepared by the relatives of the patient by searching and fetching rare herbs and minerals from forests etc. However, many of them were found effective. Birth and Death being considered as Divine decisions and pre-determined there were no problems in the immature death or failure of treatment, all of them were blamed upon fate and other supernatural forces. However, with the dawn of 19th-century things began to change. The outbreak of several epidemics and communicable diseases including smallpox, cholera, leprosy, etc. caused thousands of deaths each day. When the indigenous medicine could not bring any change and the modern medicine called 'allopathy' or 'English medicine' and its vaccination could bring a stop to such diseases, people began to accept them and subsequently, faith in Indigenous medicine diminished rapidly.

In Malabar health was under the sanitation department of the government and hospitals were established by the second half of the 19th century. However, a Leprosy hospital was functioning there at Palliport in the early 19th century in 1844 a hospital was set up at the district headquarters, Calicut followed by one at Palakkad and subsequently at different parts of the district. Initially, there were no takers for the hospitals as mentioned above but gradually in the wake of spreading epidemics modern medicine began to attract people towards it. With the establishment of Municipalities in Malabar, each Municipality got its hospitals which treated patients free of costs. Basel Evangelical Mission also established hospitals and dispensaries at Calicut, Chevayur, Vaniyamkulam and Kodakkallu. Total number of hospitals and

111 *ibid.* pp 1255-1258.

dispensaries in the district in 1881 was only 12.[112] However, the rural Malabar continued to depend on *vaidyas*, rituals and scarifies as the means for curing diseases up to the latter half of 20th century, as the number of modern medical practitioners as well as hospitals were very few even during early twentieth century. For instance, during 1921 in the whole Madras presidency there were only 2272 doctors and 578 hospitals. That means one health centre for 40000 people.[113] At the same time, there were about 21000 indigenous medical practitioners. It has been reported that each village had at least one practitioner in traditional medicine.[114] Many scholars including K.N.Panikkar view the spread of modern medicine as the channel through which British colonialism found its way to Kerala.[115] To them it was only through the patronage of colonial administration that modern medicine could receive acceptance among the people. Moreover, they also suggest that the major reason for the declining stature of traditional medicine was the absence of governmental patronage during the modern period. Both these agreements are partially correct as they undermine the efficiency of vaccination and other features of modern medicine and the comparative inefficiency of traditional medicine before the spread of epidemics during the late 19th and early 20th centuries. This practical effect attracted people towards this. Contextually it was due to the intervention of modern medicine that the average life

112 *ibid.*, p 1267.

113 K.N.Pannikkar, *Samskaravum Desiyathayum*, (Trans.,) P.S.Manoj Kumar and P.N.Gopikrishnan, Thrissur, Current Books, 2002, p. 143. and also see K.N., Panikkar, *Culture, Ideology and Hegemony: Intellectuals and Social Consciousness in Colonial India*, New Delhi, Tulika, 1995.

114 *ibid.*

115 Many scholars have analysed modern science as one of the channels through which colonialism and its ideology infiltrated among non-European cultures. David Arnold has produced an entire work on this problem. This is a historical analysis of the issue, unlike many other works on a similar topic. For details see, David Arnold, *Colonizing the Body: State, Medicine and Epidemic Diseases in Nineteenth Century India*, New Delhi, Oxford University Press,1993.

expectancy of people increased from 25 during the late 19th century to 65 by the middle of the 20th century.

In Travancore, during the reign of Rani Gauri Lakshmibai, a doctor was appointed to the palace for the up keeping of the health of its members. She issued an order in this regard towards the permanent appointment of a doctor to the palace who is familiar with the health conditions of herself and the members of the royal household.[116] It is also interesting to note that during the second decades of 19th century in the context of spreading epidemics like smallpox, vaccination was taken by the members of the royal households before giving it to other people for enhancing awareness among the people.[117] In 1839 (in some documents 1837) Swathi Tirunal founded a charity hospital at Thaikkattu.[118] Utram Tirunal, the succeeding prince himself learned medicine and practiced it to a small extent. It was through the efforts of the British officials that the hospitals of modern medicine spread in Travancore to a large extent. The renovated style of functioning of the hospital could attract several people towards it by about 1869 itself. In 1871 a modern hospital was established at Kollam with the capacity of treating inpatient admissions. However, this hospital could not reduce the severity of the caste system; people belong to castes like *Pulaya*, etc. were to be treated in a separate building and two youths from the same community were trained to make injections for them.[119] In 1870 a mental hospital was also established. In connection with the jubilee celebrations of Queen Victoria, a maternity hospital was founded in 1887 which was opened to the public in 1888 at Kollam. In the same year, a veterinary hospital was established at Thiruvananthapuram. A maternity hospital run by lady doctor was also opened and the labour department of the General hospital was separated to

116 cited in P.Bhaskaranunni. *op cit.*, p. 1259.

117 *ibid.;* also cited in Malayinkeezhu gopalakrishnan, *op cit,* p. 279.

118 *ibid.*

119 P.Bhaskaranunni, po cit., p. 1261.

form a separate maternity hospital.[120] By 1849 several dispensaries were converted to hospitals with facilities for admitting in patients. By 1901 special classes were given to midwife in the general hospital. By 1913 a unit of X-Ray investigation was established in connection with the general hospital which was known as the*Theja Prayoga Vibhagam* (Light applying department).[121] A midwifery and nursing school was established at Kollam in 1887 called the Victoria Jubilee Medical School. A mental hospital at Oolampara was founded during 1903-04 and a leprosy hospital in a temporary shed at Nooranad in 1934.[122]

Similarly in Cochin, a hospital was founded by a priest, Rev.J.Darsan, who established a hospital at Mattanchery in 1818. The first government hospital was founded by Diwan Sankara Varrier at Ernakulam in1848. There were no attempts of progress in the health department thenceforth, until the establishment of a hospital at Thrissur in 1875. Then there were several hospitals established in different parts of the state. For instance a hospital at Chittur was established in 1885, one at Iringalakkuda 1888, Thrippunithura 1888, Kunnamkulam 1888, Mattanchery 1899, a dispensary at Vadakkanchery 1891, Nenmara hospital 1892, Kodungallur dispensary 1893, Chalakkudy hospital 1893, Dispensary at Nelliyampathy 1898, Tramway 1901 etc.[123] A lunatic asylum was opened at Thrissur in 1892 with a capacity of 14 patients at a time.

All these statistics show the relevance that medical science had achieved in the 19th century Kerala. People had widely shifted to modern medicine and depended on it for dangerous diseases and epidemics. However, as mentioned above the number of hospitals and facilities available was very much insufficient in comparison with the demand and requirement of people.

120 *ibid.*

121 *ibid.,* p. 1262.

122 *ibid.*

123 *ibid.,* p.*1263.*

Therefore people, especially the villagers had to depend still on vaidyas and their treatment. However, with the increase in demand, the government was forced to appoint doctors and establish dispensaries at Taluk level. With the failure of traditional practitioners in front of spreading epidemics, people began to lose impression in those systems. But it was understood and claimed by the propounders of those practices as due to the governmental support to modern medicine. Such arguments were widely raised by the people participating in the debates in various publications. However, they supposed to have realised the failures of their system as is evident from the call and movements for renovating and reforming the system by accepting facilities and knowledge from modern medicine. Such reformist attempts were successfully carried over by the Kottakkal Arya vaidyashala under the leadership of PS Varrier.[124] What is relevant in the present context was the changes in the attitude of people towards medication and subsequent changes in society and its common sense.

Among publications, Father Clement's *Samkshepavedartham* published in 1772 was the first one published in Malayalam. In 1820 Rev. Meed founded a press at Nagarcoil. With the establishment of the C.M.S press at Kottayam in 1821, things began to change.[125] This press founded by Benjamin Bayley was the first printing press in Malayalam which became a source of inspiration for Swathi Thirunal, who founded government press at Thiruvananthapuram in 1836, which was later expanded with imported machinery from England. The press at Thalasseri founded by Hermann Gundert was inaugurating a new printing culture in Kerala through its publication of *Rajya Samacharam* in 1847 and later *Paschimodayam*. Several

124 The changes and reforms carried over by the Kottakkal Aryavaidyashala by adopting knowledge and technology from modern medicine are discussed in another context in this dissertation itself. For details of the present discussion see, K.N., Panikkar, *op cit, Culture, Ideology and Hegemony…..*

125 With the beginning of a publication culture, large scale debates among the middle class were uncovered which was the foundation stone for the birth of modern Kerala. Thus a public sphere began to be evolved in Kerala gradually.

books and magazines including religious, material and scientific in character were begun to be published from various centers in Kerala which paved the way for a debating, argumentative and democratic cultural formation in Kerala.

These changes in the social setting of Kerala and the conventional education extended to people from lower and middle castes seems to be the real progenitor of Kerala Renaissance, as evident from the characteristics and types of the earlier wave of social reformers represented through some protagonists above.[126] As mentioned earlier these changes within the existing socio-political circumstances were sufficient for evolving a critical senses among the people who turned out to be reformers and revolutionaries of different characteristics and positions. It is interesting to note that the early wave of social reform movement among various sections of people represented through some examples above was concentrated mainly on spiritualism as a path for relieving from the social inequalities and building a just and egalitarian society. All of them including those mentioned above aimed reforms within the existing religious settings with the rationales of humanism and equality. However, their epistemologies were more or less similar to a spiritual tone. In short, this stage was characterised by the process of humanisation of tradition. This characteristic might have been evolved due to two reasons one being their recent exposure to the spiritual and its philosophic world views through the extension of *kutippallikkoodam* type variant of traditional education to the middle castes. The second reason seems to be the existing socio-economic conditions without much change and predominated by the above mentioned feudal socio-political order, where only the possible relief for the people might be spiritualism and cultural up-

126 However, Ayyankali was personally an exception for this categorisation as there is no evidence to prove that he had received such kind of education. Still, he was influenced by this education through his friends and allies, all of them had undergone this variety of education. Therefore he can truly be included in this category. Moreover, through out his movements, these people had accompanied him.

gradation to the elite socio-cultural situations. Moreover, they were more or less unfamiliar with modern scientific rationality and its possibilities of social revolutions as the technological, educational or colonial situation available for them was insufficient or unintended to such a social formation in this stage.

However, their sensibilities were determined by the changed socio-political circumstances and education, though traditional in character, were sufficient for the evolution of critical consciousness among them. Thus their multifarious activities represented in the traditional epistemology had a clear imprint of the changed socio-economic situations. That was reflected in their programmes which were not merely the revival of the traditions but an extension of education to still lower social orders, establishment of factories and industrial centers, questioning the restrictions and capturing civil rights including rights for dressing, ornamenting, walking on the public road. They also questioned the ideological foundation of the caste system, socio-cultural distancing, and restrictions on worshipping from within the traditional epistemology. Thus all kinds of reforms required for the foundation of a modern civil society based on reason and democracy were opened up by the reformers on earlier stage in the late 19th and early 20th century, who had not only undergone modern education as discussed above but had received traditional education intended to recreate traditional values and social system. However, their reformative and revolutionary activities continued and taken to different directions by their successors and disciples including their late contemporaries. This, in turn, had influenced them and many of them including Narayanaguru changed their approaches later on. This reflected the actual process of social change in Kerala, with clear multi-faceted characteristics.

As mentioned above, by getting inspiration from the first phase of reform movements there were some marked changes in the whole society as the movements led by them were massive. For example, Narayana guru could drag people towards his movement through speaking their own language

without challenging the basics of their socio-religious conceptions. He spoke the epistemology of a saint but what was preached were purely material aspects of daily life including social evils, education to children, the establishment of schools, starting industrial and commercial ventures, organisation of people, labour movements all these were the chief concerns of his audience in the changing circumstances. Therefore he got wider acceptance among the lower class people all over Kerala. Similar was the case of Ayyankali his call for labour strike for education, the entry in educational institutions, rejection of the symbols of suppression and caste identities reached far and wide up to northern Travancore. Moreover, his works were strong enough to reach the centers of power and royalty that led to nominate him to the Sree Moolam Praja Sabha. Similar was the cases of other revolutionaries and reformers of the early age. It had another impact that many rose and came forward by recognising the backward conditions of particular castes and communities. They also struggled, preached and published for the emancipation of concerned communities and make them progressive in their approach by realising the depth of their ignorance and oppressed conditions. However, these reformers could teach the people that what they have been upholding so far by imagining their tradition and responsibility was something superimposed upon them by the elite groups of their own communities and others with forces for the maintenance and survival of the tradition which recreated the unequal and unjust system for centuries. This realisation led many radicals to work for the emancipation of society in different ways. They tried to convince people of their particular communities about their conditions and the actual progress in the world, which culminated, in the formation of community consciousness resulting in the division of societies along with the emergence of revolutionary movements in modern Kerala.

Community Reformers and Revolutionaries

It was in this circumstance created by the colonial administration,

modern education, and social reformers together that a new wave of revolutionary movement emerged. It was both a continuation of the first wave of reform movements discussed above and a new mobilisation with simultaneous adaptations and break with the early reform movement. Most of the revolutionaries of this stage had directly or indirectly received modern education. There were two clear waves in this stage, one is the community reform movement and the other was the revolutionaries who stood for a completely modern society based on scientific reason and secularism. However, all of them had realised the problems in the existing social systems and backwardness of the society, the difference was that many stood for changes with the socio-cultural milieu and others challenged the social system itself.

Among the communities which were late entrants to either social reform movements and critical public domain, due to several historic reasons, reforms within the community were required to make them capable or aware of moving forward with other communities. The uppermost and the lowest in the ladder of caste hierarchy and the Catholic as well as Mappila communities were these late entrants to the movements. However, there were two divisions among these latecomers that the communities in which major forms of oppression were from within and those who were being oppressed by the external forces. Among the first group that oppressive forces and oppressed were within the community like Namboothiris, Mappilas and Catholics where reform movements inaugurated by progressives of the community themselves, more powerful counter-reform movements were started they turned out to be communitarian forces. Such mobilisations were easily converted to sectarian and communal consolidations as to divert these movements. Whereas the second case of community reform movements especially the erstwhile untouchable and distanced caste groups were concerned the belated movements though could prove their effectiveness in the improvements of the conditions of the communities, they also could not be linked with the mainstream renaissance movements due to different reasons including the

general distancing approach of the other communities towards them, internal divisions and hierarchies within these communities, etc. In short many of the community reform movements turned to be movements of consolidation of these communities and produced opposite effects, intentionally or otherwise. These consolidations, later on, resulted in the formation of community consciousness and led to the growth of communalism of different kinds in succeeding generations. However, the aim of the reformers all categories was to take out the society from the deplorable condition, inequality and subjugations from different sources and lead them in the march forward towards progress and liberation anyway.

Among Muslims Sayyid Sanaulla Makti Thangal (1847-1912) Chalilakath Kumhahammed Haji (1856-1919), Shaikh Muhammed Maheen Hamdani Thangal (d.1922) Vakkom Muhammed Abdul Khader Maulavi (1868-1932) among others deserve special mentioning. Makti Thangal born in a rich and prominent family and had received formal education and was well versed in Malayalam, English, Persian, Arabic and Urdu languages. He entered the British colonial service and resigned it by 1882 for extending his community services and social reform movements.[127] He strongly opposed the evil practices and wrong interpretations of texts and traditions among local Muslims. He questioned the basis of various ritual and ceremonies practiced by the Muslims in Malabar like *chadanakkudam nercha*, prayers at tombs, necromancy, restrictions on Malayalam as well as English learning, etc.[128] He published periodicals in Malayalam, Arabic and Arabi-Malayalam.[129] He

127 P.Govidapillai, *op cit., Kerala Novathanan Oru Marxist*..... p. 167.

128 For a detailed reading of Makti Thangal's social criticism see, Makthi Thangal, *Makthi Thangalude Sampoorna Krithikal* (comp., K.K.,Muhammed Kareem), Calicut, Vachanam Books, 1981.

129 Arabi-Malayalam is a writing method that evolved in Malabar when Malayalam had been considered as the devil's language by the 'priesthood'. This is a method of writing Malayalam words in Arabic script. Those sounds in Malayalam without usage in Arabic were created by giving altering existing letters.

criticised these practices and rituals as un-Islamic or even anti-Islamic and thereby attracted several severe oppositions from the priestly class, *ulemas* and other traditionalists. He issued pamphlets along with publishing books and articles. *Fatwas* were issued against Makti Thangal accusing him to be *Kafir* (heretics). He made thought-provoking speeches at different parts of Kerala like the one at Kayamkulam titled *Muhyudheen Shaikhum Adum* (Muhyudheen Shaikh and goat). He actively participated in the formation and initial works of *Kerala Muslim Aikya Sangham* at Kodungallur.[130] He published several works including frequently quoted *Makti Manaklesham, Muslim Janavum Vidyabhyasavum* and *La Maujoodin La point*' etc. in Malayalam. His journal *Thuhfatul Akhyar Va Hidayatul Ashrar* frequently criticised the situation and backwardness of the Muslims. He criticised and attempted reforms in Quranic learning and pedagogy. He argued for reforms in the Arabi-Malayalam script. He had to face attacks from two fronts; one, of course, the aforesaid Muslim 'conventionalists' and the second was from the Christian missionaries and priests as he had been strongly criticising the attempts of Christian missionaries tarnishing Muslims and their beliefs. However, he did not go for a direct confrontation with the British officials. His works *Christu Matha Khandanam*, *Kadora Kudaram*, etc. were widely acclaimed in these circumstances. He openly challenged several beliefs of Christianity. However, he could create a wave for future mobilisation among the members of his community. He, along with others worked for organising and educating people so as to face the challenges and lead the community forward from the stagnant backward conditions created by themselves.[131]

130 This association was one of the forerunners of several organisations founded among different sections of Muslims. Which became a platform of the critics of traditional Muslim beliefs and their mixed culture particularly evolved here, probably due to the historic spread of the belief system among the local people.

131 Notwithstanding these, the reformative movements inaugurated by people like him have been widely criticised by several recent scholarships as the movement of mere textualisation, as mentioned earlier. It denied the characteristic of several indigenous practices evolved here. This textualised reading of Islam led to an interpretation encircling the community from the rest

However, in spite of his being highly educated, Makti Thangal and his world views were not been determined by scientific rationality. But he was influenced by modern technologies and changed socio-economic as well as cultural situations.

Vakkom Abdul Khader Maulavi was born in a rich and prosperous family at Chirayinkeezhu. His father was a prominent merchant with superior social status. His father and uncle were directly connected with Sree Narayanaguru, who was a frequent visitor in their home and serious debates were carried over on various social and religious subjects during his younger days and he used to get chances to involve in them all. Father Samuel Daniel, a Christian priest was also a frequent participant in such debates. These debates and extra-religious knowledge along with his broader education played crucial role in the character formation of young Abdul Khader.[132] Teachers of various fields, experts in their learning were appointed for his tuition which extended from logic by a Kunhippokkar Musliar from Malabar, Kesavapilla of Ambalappuzha for teaching Malayalam and Sanskrit, Tamil scholars from Kayalpattanam and Keezhakkara for teaching Tamil language and classical Tamil Literature along with Quran and Hadith from aforementioned scholars in the field. Thus by the time of entering into his youth he had become a scholar of high genius in various fields.[133] He came across the life and experiences of various Muslim reformers in the world like

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of society. This proved to be fatal leading to the community consolidation and subsequent communal sentiments among Muslims as evident in other community formations as mentioned above. However, they could lead the community in the educational path which was denied to the people so far by the clergy with their interpretations of Malayalam and English education as Un-Islamic.

132 However, recent scholarship in the field of community studies among Muslims in the influence of orientalism and post-modernism reject the possibilities of cumulative growth of reform movements among Muslims. Instead, they claim the self reformative and 'innate revolutionary' character of Islam as a religion. This argument seems to be quite ahistorical.

133 P.Govinda Pillai, *op cit., Kerala Navothanam : Mathacharyar….*, pp. 48-49.

Muhammed Abdu of Egypt, Rasheed Ridah, Shaikh Ahammed Sirhindi, Jamaluddin-Al Afghani, Muhammed Ibn Abdul Wahab, Sir Syed Ahmad Khan, etc. He called for educational reforms among Muslims. He raised his arguments for forming an association of progressive Muslims. In this regard, several attempts were made before the formation of Kerala Muslim Aikya Samgham like Chirayinkeezhu Jamaath-e-Irshad, Lajnathul Muhammadeeya at Alappuzha, Thiruvithamkur Muslim Sabha, all of them were associated with him. He sought governmental intervention for the promotion of education among Muslims. However, Vakkom Maulavi is popular, above all, for the establishment of different publications and rousing the people all over Kerala through them. He published the popular *Swadeshabhimani* (1905) by managing, publishing, and editing it for the first time.[134] This journal played a crucial role in rousing civil sense and socio-political awareness among Malayalis to a larger extent. Several criticisms aimed against the state, bureaucracies, etc. were continuously published in it, leading to its confiscation. Another periodical published by Maulavi was *The Muslim* (1906 January) which was, though, short-lived, able to pierce several arrows into the backwardness of Muslims. He made severe criticisms against the indifferent and antagonistic approach held by the community towards modern education and progress. He also attacked the attitude of the clergy towards common people and the divine status assumed and maintained by them for their personal, material gains. He also started an Arabi-Malayalam journal *Al Islam* for reaching to common people, but it also was short-lived. Later towards the end of his life, he began to publish another journal called *Deepika*. He authored, translated and published several books apart from several articles in the journals. His books include *Quran Vyakhyanam*, *Nabimar*, *Thaleemul*

134 Moulavi appointing K.Ramakrishnapilla, as the independent editor of the journal and who became popular in his pen-name associated with this journal *Swadeshabhimani Ramakrishnapilla* (mentioned above). Through this journal various political and social interventions were made. It opened severe criticisms against the state which led to the confiscation of the journal and expulsion of the editor from the state, he was sent in exile to Madras.

Qira, *Ilmuthajveed*', (all intended to Madrasa students); *Islam Matha Siddhantha Samgraham, Dau Swabah;* translations like *Ahlussunnathi Val Jamaha* of Syed Sulaimain Nadvi, *Islaminate Sandesham* also of Nadvi and *Keemiya Sahada* of Imam Gazali from Persian, etc. He started a publication house named Islamic publishing house at Vakkom in 1917. He depended on the Quran and Hadith for his criticism against superstitions.

Similarly, Chalilakath Kunhammad Haji and Shaikh Muhammed Maheen Hamdani Thangal were also reformers who stood for educating and renovating the Muslim community. Chalikkath is known for his attempt for propagating female education among Muslims. He sent his daughters to schools amid severe opposition from different corners of the community. He reformed the Arabi-Malayalam script and interfered in the pedagogy of Madrasa education. Hamdani Thangal criticised the rote system of education followed in Madrasa in which students have to recite Arabic verses from *the Quran* without knowing their meanings. He was active in newly formed 'Kerala Muslim Aikya Sangham'. However, the attempts to reform the beliefs and practices among Muslims did not confine to these leaders, instead, it spread to a different section of the society. But it also had unintended progress towards the latter half of the 20th century. They got bifurcated and a majority of them moved towards the adamant policies of scripturalism and community polarisation which led to sectarianism and communalism to a large extent.

Similarly, Pandit Karuppan, Kurumban Daivathan, K.P.Vallon and others emerged for the emancipation and education of the oppressed class. They tried to give people of eternal subjugation and historic oppression, a sense of honesty and pride. They not only worked for the education of the people but also getting them regarded as human beings. Until then they were counted with the land and easily transacted as the property of the landlord.[135]

135 For details of the plight of labouring class during the late medieval and early modern period see, P. Sanal Mohan, *Modernity of Slavery: Struggles Against Caste Inequality in Colonial Kerala*, NewDelhi, Oxford University Press, 2015.

Among them Pandit Karuppan was working for the emancipation of the Araya community, generally outlaying from the society and living an uncertain life. The downtrodden condition of these fishing communities was exacerbated by internal hierarchical systems among themselves. He organised people with various organisations like*Vala Samudaya Parishkarini Sabha* at Thevara, *Kalyana Dayini sabha* at Anappuzha, *Vala Seva Samithi* at Vaikkom, *Samudaya Sevini* at Paravur etc.[136] His play *Balakalesam* produced a wide range of waves against the caste system and oppressions, which reflected among other sections of the society as well. He along with Velukkutti Arayan tried to organise the community on all Kerala basis and convened on all Kerala convention of fishermen at Alappuzha in 1918. But it could not produce many results. An All Kerala Araya Maha Sabha was organized but it also became very weak immaturely. By 1927 a movement for modernising fishing with new technologies and methods by mixing with the traditional knowledge of the community became prominent. Along with Pandit Karuppan many experts in the field also attended the function which provided detailed training for the people. These organisational movements among the fishermen lying on the outskirts of the society became very crucial in the upliftment of the community, which later progressed towards political mobilisation and trade union activities.

Kurumban Daivathan was also a leader who organised downtrodden people belonging to the Pulaya community who were suffering the severity of slavery even after it was banned legally. He had to suffer much during his childhood to getting educated. Though the teacher, Kochu Kunhasan, a converted Christian, was willing and interested to teach him, the elites the society resisted him. However, they overcame the issue through night classes and covert teaching by hiding themselves from others. He transformed people from natural slaves of the landlords to estate workers. His movement in the particular socio-economic context has the historical importance of changing

136 P.Govinda Pillai, *op cit., Kerala Navothanam, Oru Marxist*..... p 106

popular conscience that these people historically allied with fields have the similar potential of being human and owners of labour power. He acted as a middle man by coordinating labourers and estate workers to which gave them a sense of unity and bargaining capacity being the sellers of their own labour power. Daivatham, before any form of organised labour movement, begins in Kerala raised slogans and wrote them on the walls of land lord's households. Most of them reflected that labourers won't hesitate to strike if the wage-less forced labour continued.[137] He met with Ayyankali and began to accompany him in his march towards the emancipation of the downtrodden working class.

K.P.Vallon belongs to the second wave of reformers among the untouchable castes. His education had to be stopped soon after conceiving the capacity to read and write, due to the social and economic conditions of his family. His work along with his comrades near the town through the newly started boundary construction near the Kochi backwaters was a turning point in their life, where they had to work with Tamil people who had easy access to urban spaces. This situation of themselves being forbidden from entering the town while the Tamil people of their own status had no such restrictions roused these sentiments. They met with K.P.Karuppan and who convinced them of the necessity of getting organised for achieving their rights. As they were not permitted to enter the land they organised a meeting of the pulaya people on a platform made by tying several ferries together. This marked a huge transition in their life. They prepared and submitted several memoranda seeking permission to enter the town.[138] They found the Pulaya Maha Sabha in 1914. A meeting of the Pulaya Maha Sabha at St. Alberts College is said to

137 P.Govindapillai, *op cit., Kerala Navothanam : Yuga Santhathikal*.... pp 116-117.

138 It is important and interesting to note that they first sought (in 1913) entry not to temples but public spheres and urban space. This is a clear indication of the socio-cultural situation of early modern Kerala. Their material and day to day requirements and consciousness of civil rights made them agitators and revolutionaries.

have attended by about 1500 people.[139] Vallon played a crucial role in all these movements. He later came to the leadership of Kochi Pulayar Maha Sabha and started publication of a magazine named *Adhakrthan* which later by assuming inspirations nationalism and Gandhian ideas renamed as *Harijan.* He worked not only for the community and Pulayas but also included other downtrodden people in his programmes. He was an atheist and rejected the attempt for religious conversion as many of his contemporaries including his comrade Krishnathi Asan had done.

The Namboothiris, claimed to be Brahmins of Kerala, were one of the late entrants into the social reform movements, mainly because as stated above they claimed to be the Brahmin castes and appropriated and enjoyed the highest status in the caste hierarchy of traditional Kerala. Being a community majority of them appropriated the benefits of all social evils prevalent in society. The elites in this community enjoyed the richness and cultural authority of not only the community but the whole society. However, there was a large number of oppressed groups within their community like *Apfans* (younger sons of parents) and women. The Apfans never got a chance to express themselves nor even to marry and reproduce their own generations. It was made a rule that the eldest son can only marry from the community and maintain the family, in order to protect the wealth and status of the family. The younger ones had to approach women from the Nair community for their biological needs and romance. They could not even touch their children in fear of polluting the caste. Such children had no right in the property and family of their fathers. As the elder males only could marry legally the womenfolk of the community in their childhood had either to marry oldies as husbands or to live as lifelong spinsters. This was not merely the case of marriage and reproduction but this discrimination extended to all spheres of human life. It was against these deplorable lives among the plenty that there arose some movements among them by the twentieth century. *Namboothiri*

139 *ibid.*

Yuvajaja Sangham under the leadership of V.T.Bhattathirippad, M.R.Bhattathirippad, E.M.S.Namboothirippad, Parvathi Nenmini Mangalam, Aryapallam, etc.[140] They stood for younger's marriage (*Kanishta Vivaham*), widow remarriage, modern education, right to inheritance of property, etc. It was not so easy to raise voice against and capture rights from those who traditionally enjoyed the whole riches and honours and cultural predominance not only their families but in the whole society. However, it met with success, though gradually.

Thus, this wave being the continuation of the earlier phase of social reform movements was characterised by the mobilisation of various communities by the intellectuals rose mainly out of themselves. It is to be noted that all these movements, as evident from their activities had the intention of emancipating the society towards the progress in the changed socio-economic and political circumstances. They generally stood for modern education, equality, rights for mobility, trade and commercial opportunities, etc. All these are civil rights and preliminary requirements for the modern social formation and the evolution of a liberal democratic and egalitarian society. The relevant point to be noted in the present context is that these reformers, those who received traditional and modern education or being influenced by it were not directly influenced by science per se. Instead, their only exposition in that sense was to modern technology and colonial capitalism. None of them were influenced by science education and modern scientific theories that had found debated in the Malabar by the end of the 19th

140 Though these movements started as a youth movement within the community organisation (*Namboothiri Yogakshema Sabha*) and began to receive acceptance in the community, there was serious resistance from the traditional elites, many of them were outcasted. They published a journal of their own called *Unni namboothiri*, which attacked the evils and unjust practices within the Community. They raised slogans for Humanising Namboothiri (*Namboothiriye Manushyanakkuka*) which clearly reflected the situation of the community and the seriousness of their demand. Through various literary and art forms like drama etc. they raised the concern of the society to these issues and gradually through legal measures many of their demands were accepted.

century itself as is evident from the frequently quoted novel of O. Chandu Menon's*Indulekha*. But at the same time, these people were concerned with humanness, and equality, etc. which may not necessarily be derived from external sources.[141] It is also to be noted that concept like 'socialism' was there in the debates of the elites in the late nineteenth century. Therefore what is to be elucidated here is that the internal contradiction created by the existing and traditional circumstances, new social situation created by the colonialism and its capitalistic technological and instrumental rationality expressed with new opportunities and expositions, trade, commercial and other riches, etc. with the education, though traditional gave chances for obtaining the ability to read and write. In the context of publications and press etc. providing opportunities of democratic debates and thereby the realisation of exploitation and oppression together created a situation sufficient for the evolution of reformers and progressives. It is also to be noted here that though all these movements were unique in themselves, there was unanimity in their demands, activities and characteristics of their mobilisation. They demanded better conditions and opportunities sufficient for changing their material conditions. Even the movements demanding opportunities of worship were not simply demanding chances for seeking god and *moksha*, as they all had their own separate and traditional conceptions and rituals to god. Instead what they demanded was opportunities of exercising these civil rights as human beings, which naturally included the right to worship and mobility. The community empowerment and emancipation movements were not attempting to strengthen their community against others.[142] The opposition and quarrels (as

141 Instead as explained above these notions might have completely been derived from their internal contradictions in the changing socio-cultural context. However, the presence of missionary activities, instrumental rationality associated with European colonialism, etc. along with the accessibility to an extended variation of traditional education might have accelerated this movement in this particular historical context.

142 Instead what is to be noted here is the historical context of 19th century Kerala in general and Travancore in particular, which was a society highly compartmentalised based on the ideologies like caste. It was anyhow

evident in the case of Makti Thangal and Ayyankli) were against exploiting the weakness and illiteracy of the people and attempts to openly tarnish their religious sentiments and beliefs. Notwithstanding it is also to be mentioned here that continuity of many of these community mobilisations very sooner gained communal and sectarian characteristics in the succeeding generations.[143] However, all these do not lessen the contribution played by these social reform movements evolved out the historic context of the late 19th and early twentieth century.

The second stretch of the early phase of the social reform movement (mentioned above) was the one influenced by modern science, its nationality and world view. Which had a completely different strategy and programmes though evolved along with the early phase of the social reform movement and the first wave of its continuation chronologically. They were also highly concerned with the caste system, social inequalities, oppressions and evil practices in the society. However, unlike their predecessors, they understood

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impossible for them to organise people in general nor would their call be accepted by those higher or lower in the hierarchy, unanimously. It is interesting to note, for instance, that in the case of Narayana Guru's SNDP Yogam, majority of its members were more or less those belong to *Ezhava* caste which had its own internal division. The *Thiyyas* (their equals in Malabar according to colonial enumerations) considered themselves distinct from the *Ezhava* and hesitated to join in the movement for a long time, though it had an extra community character in the initial stage. Therefore, it was easier for the reformers to organise their own community to achieve civil and political rights. Thus many of them got a community tag in the initial stage itself. However, what they preached and practiced were truly material demands sufficient for a 'civilsed' daily life.

143 These movements for civil rights of each community could have counterfactually moved into a secular social formation with the spread of scientific rationality. Instead by the early decades of the 20th century, they grew themselves into sectarian mobilisations and mutually opposing groups leading to various communal clashes and leading to communal divisions in the entire social structure of Kerala. The colonial intervention might have been a chief factor in this growth. In the above discussed social circumstances, they could divide people very soon and turn them each other for diluting anti-colonial sentiments. This communal division of the society had long-lasting effects in the history of Kerala.

them inseparably linked with the existing religious beliefs and intellectual traditions. Therefore to them, those knowledge and social systems unless replaced with modern science, its rationality and critical consciousness would always reproduce the unequal, exploitative and hierarchical social order. Therefore along with mobilising and organising people, they argued for educating them in modern knowledge and its world view. To them, the existing religions, world view, knowledge and social systems would never let the people relieve out of its clutches, which are cleverly formulated and historically tightened for the maintenance of the hierarchical system and Brahmanic culture. They also demanded the creation of an administrative and social system based on the principles of liberty, equality, democracy scientific rationality and socialism; which would treat all equally without considering their educational, birth and economic status and would provide equal opportunity for all. Some of them went to the extent that they found temples and other remnants of traditional cultures as the reproducing agencies of ignorance and exploitative system. Therefore they have to be set on fire for relieving society and creating a rational and modern society.[144]

144 While Narayanaguru, who had founded many temples for the lower class who have historically rejected permission even for walking near them, said that if modern education reached its full swing into the whole society people will themselves demolish these temples and there is no need for building any more temples, instead establish more educational institutions. For details see, K. Surendran, *op cit.,* V.T.Bhattathirippad, a true rationalist and went to some more extent and called for setting fire to these temples (*Ini namukku ambalm theevekkuka*) in the context of *Guruvayur Styagraha ,* an agitation demanding temple entry for the lower class people. Even after continuous demand and publishing the results of the referendum in support of temple entry with 77% of the upper-class participants voting in support the authority rejected the demand. This provoked V.T and other revolutionaries. It was in such a context he called for setting fire to temples, which were considered as center of percolating inequality and darkness in the brains of the common people, in an article by V.T.Bhathathirippad, in *Unni Namboothiri,* on 28th April 1933. this was republished in several biographical works. For instance, see Bakker Methala, *VT Bhattathirippad Kalpangalude Kamukan,* Kottayam, Sahithya Pravarthaka Co-operative Society, 2016. pp.89-94.

The contradictions of positions and ambiguities during the transition to scientific rationalism and atheism from the first stage of social reform movements have been quite clear in the writings and activities of early rationalists. There were elements of both scientific rationalities and community reforms among them in the initial stage. However, many of them realised these problems themselves and have clarified their stands before critics. Such a revolutionary, as well as contradictory position, could be seen in the writings and activities of C.Krishnan, popularly known as *Mithavadi* Krishnan, one of the earliest rationalists in Kerala. He was one among the founders of *Yuktivadi*, the mouthpiece of rationalists in Kerala along with M.C.Joseph and others. He had become the editor of *Kerala Sanchari* published from Calicut soon after his graduation, before going to Madras for studying law. After becoming a popular advocate in Calicut he took over the position of the editor of *Mithavadi* in 1913, which gave him its name as a prefix to his own. He was a follower of Narayana Guru and was influenced by him. It might be through his influence that he established a bank at Calicut named as 'Calicut Bank' in 1908, following Appu Nedungadi's (the author of *Kundalatha*) Nedungadi Bank, which was established in 1899.[145] The Calicut Bank opened its branches not only in Malabar but also in different parts including various places in Travancore, Cochin and Madras states, which worked successfully for about 20 years up to 1928 and gave its contribution in the economic prosperity of Malabar especially among *Ezhavas*.

The aforementioned ambiguity is evident in the declaration of policy of *Mithavadi* itself. That he declared in the first issue of the monthly that 'as of now no newspaper or any periodicals is belonging to*Thiyyas*. However, the

145 Narayanaguru has directed his able followers to start industrial and commercial ventures and productive activities to enhance riches sufficient for the emancipation of the community. By accepting this call several people throughout Kerala started new industrial and commercial ventures by utilising the facilities of colonial capitalism. Thus these industrialists themselves turned to be sponsors and promoters of social change in the initial stage. However, their intimacy was tilted towards capitalistic interests later on.

growing curiosity among *Thiyyas* in Malabar, Cochin or Travancore in religious and educational aspects brings about changes in their community. Therefore they must have their own publication'. Therefore it is being considered as fulfilling such needs of their own monthly, from Calicut. This was supposed to help people of different regions 'to know the changes somewhere else and get inspiration through it. Thus Mithavadi would cater to the role of spreading the ideas of progress and social change throughout these regions'.[146] The monthly later turned into a weekly publication from 1921 January onwards, which, however, took a critical approach towards the national movement under the elites and he states if 'India gets the self-rule before the curse of caste system being eradicated, the conditions of the lower class people would naturally turn to be a pathetic situation. There would not be any apathy among the upper caste Hindus towards them. Therefore it is better to continue under British domination up to a satisfactory level of progress regarding social discrimination and oppression is achieved. Otherwise, the feudal domination of the traditional elites would replace the colonial elites'.[147] This was a major perception of the common people towards the national movement in Kerala until its leadership was taken over by Gandhi and his massive programmes. Therefore, *Mithavadi* took a midway of bringing changes in the social situation.[148]

Though the role of a 'community reformer was applicable to him he dissented on various matters including religiosity, temple construction, etc. He directly revealed his opinion before Narayanaguru on several occasions. However, he took part in the efforts of Narayanaguru and others in the temple

146 C.Krishnan, *Mitahvadi*, August 1913, quoted in P.Govindapilla, *op cit.*, *Kerala Navothanam*: *Mathacharyar*..... pp. 104-105.

147 *ibid.;* p. 106.

148 However, the name of the journal, though acceptable to C.Krishnan, was not his contribution. It was adopted by its founder T.Sivasankaran, from whom C.Krishnan had bought it in 1907. However, he did not change the name as it was an acceptable political position predominant in the Indian National Congress then.

constructions at Calicut and Thalasseri. At the same time, his arguments continued to be that of a rationalist based on materialism. These ambiguities differentiate C.Krishnan among the disciples of Narayanaguru. He simultaneously opposed idolatry and worships along with helping Naryanaguru and S.N.D.P.Yogam in such attempts as temple construction. This reflected in his approach towards colonialism as well. He accepted the progressive nature of Europeans and colonialists at the same time wished to get independence. It is evident in an Editorial written in *Mithavadi* that the 'science and wisdom of Europeans were not used to oppress the people nor to downgrade them, instead they always attempt to reform people and bring peace and happiness in the world. To him, the Hindu religion tries to oppress the majority of people and believers to degrade them and enslave them forever. Though the Brahmans are wise like the Europeans their wisdom is always used to distinguish between the *Jeevatma* and *Paramatma* (the individual and universal souls). Whatever may be the differences who gain from them all. When the European masculinity efforts for discovering trains, ships, airplanes and utilises them for human progress, the Brahmans satisfies with their bogus claims that all these trains and other facilities were used by the ancient and epic characters like Sakuni, Vibheeshna and Chandragupta Maurya etc. They satisfy in deceiving people. This attitudinal difference makes the Travancore under a Brahmin Diwan a failure and the Kochi rule by a European Diwan, Herbert, a successful one'.[149] Mr. Krishnan is said to have been debating for rationalism simultaneously visiting astrologers and seeking their opinion and preparing horoscope. He had even prepared and published the horoscope of Mahatma Gandhi.[150] He even joined in the Brahma Samajam under the inspiration of Dr.Ayyathan Gopalan. However, he declared that he do not accept their concept of God etc.

149 *ibid.*, pp. 110-111.s

150 *ibid.*, pp. 112.

Thus such a situation of ambiguity was present in him. It cannot be viewed at a minimal level as a fault of his personal interests. Instead, it was the condition of the transitional period in Kerala.[151] The social criticism and movement of Narayana guru and other reformers gave way for the evolution of rational and scientific world view. The situation was that the people had to be brought forward in a way acceptable for them. Whether one is rational or believer is not the problem. The suitable way according to the situation had to be accepted. Therefore it might not be their personal choice or interest but the taste and acceptability of the people among whom they had to function as their chief concern in their bigger aim of constructing a new society based on progressive and liberal principles. However, there were conditions of dilemma among the forerunners of every movement which gets clarified through practical experiences and opened numerous ways for their successors to carry them forward. This situation of ambiguity in positions is also visible in the case of C.V.Kunjuraman, the founder of *Kerala Kaumudi,* a paper which acted as a platform for progressive movements in Kerala. C.V.Kunjuraman also was a disciple of Narayanaguru and his paper *Kerala Kaumudi* has been acting as an unofficial mouthpiece of SNDP Yogam. However, he took very rational a position and criticised the concept of god and religions through his articles. He wrote satirically that 'it is the God who makes the confusion among people, otherwise it is possible that all religions might be the creation of Satan, the eldest son of God in some conceptions. One text is given to people of Palestine and the other to people of Arabia and told them each that theirs is the original scripture (Veda) what to trust. Is it

151 There was large scale debate among the intellectuals, especially under the auspices of SNDP Yogam on the ways to be adopted for the emancipation of society. Some of them stood for adopting the possibilities of religious conversion in order to threaten the traditional elites and not out of piety. However, many argued for fighting within the present conditions. Some openly declared stopping of help and promotion for temple festivals as many of them had turned to be rich through new commercial ventures. People like T.K Madhavan stood for political mobilisation as a way of overcoming present social conditions.

not the confusion created by Satan? The Indians are yet to decide which the original Veda among hundreds they have is. Better people would burn them all together and live like Adam. Or God must sanction people life expectancy equal to that of Adam's age. How God accepts the humiliation of his creature caused by the devil. Further is it not boring to God to hear the same prayers and flattery uninterruptedly throughout life. Why don't the god follow the people who during their old age distribute their assets among those whom they leave behind'.[152] He openly stated before Narayanan Guru that his respect is towards Buddhism not towards Guru's Vedantha or 'Hindu philosophy'. At the same time, he admired atheism and rationalism. When people and friends criticise him for this double stand and change of opinion he would be that 'opinion is not an iron rod'.[153] This was his reply to a question regarding his change of opinion later that conversion is not a solution. He, however, demanded the Ezhava representatives of Praja Sabha to submit a resolution for temple entry to Ezhavas in all temples as a civil right. Thus community reforms and rationalism were held together by C.V.Kunjuraman like many of his contemporaries. He did not forgo his rational and critical position towards any opinion even that of Narayanaguru whom he considered as his Guru and leader. On several occasions, he engaged in serious debate with his fellow reformers in SNDP Yogam and outside. His ambiguity was the creation of the socio-political situation of the late 19th and early 20th century which led many of them to hold a more or less scientific and rational approach towards several issues.

M.Ramavarma Thampan was one of the pioneering rationalists and scientific thinkers of Kerala. He had played a crucial role in the making up of several revolutionaries and rationalists including K.Ayyappan. He received

152 Such a language for ridiculing the concept of God and religion was used by Kunjuraman during the early 20th century. This is extracted from his article in *Yuktivadi,* Vol.I, No.5, quoted in *ibid.,* pp. 123-124.

153 Thus this usage which became common in Malayalam, later on, was one of his contributions to the language.

education from Paravur High School, Ernakulam Maharajas College, Thiruvananthapuram Maharajas College (present University College) and Chennai. He was a teacher in Paravoor and Chengannur High Schools became a teacher in Thiruvananthapuram Maharajas College and Training College and became the Principal of Zamorin's College at Calicut. He came across several intellectuals of 19th century including Charles Bradlaw, Robert Green Inger Soll and also read H.G.wells, Bernard Shaw, Bertrand Russel, Sydney Web, Biatris Web, etc. He made touch with several new concepts including socialism, especially Fabian socialism. He had been popular as a rebel among the youth of the early twentieth century. Though he had to undergo several painful experiences in life, he did not lose confidence in his materialistic understanding. He could influence the thought and imagination of several students and could induce them into the ideal of rationalism and scientific approach including K.Ayyappan. He later became popular in the name *Sahodaran* Ayyappan was his student at Paravur R.V.High School and continued to be in contact with him after completing his schooling. Thampan gave his students including Ayyappan several books and opened their world views and cultivating a critical approach in them.[154] He wrote several articles and made eloquent speeches on various phenomena and social subjects. His articles in different journals and publications like *Kerala Kaumudi, Gurunathan, Basha Poshini*, *Service*, *Unni Namboothiri*, *Mathrubhumi* etc. were thought-provoking to the readers.

Among the successors of the early wave of social reformers, the upholders of Science and its rationality as a world view and method of social

154 This culture of reading books and popularising them among different sections of people and subsequent debate culture was the motive force behind the spread of new ideas and scientific rationality. As well as leading Kerala towards new social, cultural and political movements including Kerala Renaissance. Thus rationalists and materialists like Charles Bradlaw, Robert Green Inger Soll, H.G.wells, Bernard Shaw, Bertrand Russel, Sydney Web, Biatris Web Voltaire. Thomas Paine, James Jeans, Karl Marx and Charles Darwin, etc. and many of their works were quite commonly discussed among the middle class during the early modern period.

change were popularly known by the blanket term *Yuktivadis* (rationalist). Among them, M.C.Joseph was aptly being called as the rationalist through his affiliation and as an editor of the monthly *Yukthivadi*, founded by a collective of revolutionaries like himself, K.Ayyappan, M.Ramavarma Thampan. etc. He was born on 6th January 1887 in a Jacobite Christian family of Mookkancheri. He received his early education from the *kalari* of Kusalan Asan, Thrippunithura English School, Ernakulam St.Albert's High School. He had to discontinue his First Arts (FA) course at SPG college Thrissinappalli, due to financial difficulties. He later joined Maharaja's College Ernakulam, there also he had to stop midway, due to his rough encounter with the Principal. He was acquitted of his college education without completing the FA course. He worked as a reporter to papers like *Malabar Herald* and *Cochin Argus*. By this time he had developed a habit of reading which brought him in touch with the works of various scholars and philosophers including Voltaire. Thomas Paine, Inger Soul, etc. Thomas Pain's *Age of Reason* is said to have influenced him very much. His acquaintance with *Swadeshabhimani* K.Ramakrishnapillai helped him to get familiar with concepts like socialism and the writing of Karl Marx.

M.C.Joseph, from his childhood onwards, had been showing high curiosity to learn things and various phenomena. He raised doubt about the king, god, caste, etc. from very younger days.[155] Though born and brought up in a highly religious background, during the college days at Ernakulam, he read widely on various aspects including the theory of evolution (which was a matter of serious debate then), materialism, rationalism, atheism, religions, etc. It was due to his disbelief and arguments with friends on these matters that he became in the hit list of the Principal in the college which finally led to his ousting from the campus. His meeting with K.Ayyappan made a transition in his life. They debated on various subjects including rationalism and

155 M.K.Sanoo, 'Yukthivadi.M.C.Joseph, Thiruvananthapuram, Department of Cultural Publications, Government of Kerala, 2002. This work gives a detailed picture of the life, and ideas of M.C.Joseph in detail.

religious criticism etc. Their ideas were not easily got published, as the editors showed reluctance towards such subjects. They gathered like-minded people including Rama Varma Thampan, C.Krishnan, C.V.Kunjuraman, M.D.Varkey and Doctors like P.P.Antony, M.P.Pappu. M.F.Thomas and convened a meeting at C.K.Krishnan's office at Calicut and decided to publish a journal *Yukthivadi* from Calicut.[156] Later Ayappan himself took initiative and began to publish it from 'Sahodaran' press by mid-August 1929. (1105 Chingam-1). It received serious criticisms from all over Kerala.[157] There were prayers in churches against this publication. Later M.C.Joseph took the responsibility of the *Yukthivadi* and became the editor. He continuously published it for above 46 years from 1931 onwards. He could create a wave of continuous criticism through this.

M.C.Joseph not only criticised religions and superstitions, but he practiced this critical sense in his practical life. He challenged the concept of devil, demons or satans. Whenever such rumours of these disturbances were reported, he directly went to the site and uncovered the actual problems and the people worked behind such 'disturbances'. On several occasions, he had to deal with such cases of '*Chathan* disturbances' and cases of hysteria. But he directly interfered it them all and evacuated people's fears. Several letters were requesting his interference from different parts of Kerala, he attended them as far as possible. He saved many people from such ignorances by applying his logic and reasoning. This provided a wider acceptance for him. As he had to live in rented houses during his days as a junior advocate, he opted for such houses hesitated to live and due to this reluctance, he got them

156 Though the meeting decided to print the journal from C. Krishnan's *Mithavadi* with five joint editors, there was no further action in it. Therefore, the magazine could not be released for one year. Later Ayyappan himself took initiative for the publication of *Yukthivadi*.

157 Even people like Moorkkoth Kumaran an activist and Litterateur working with SNDP Yogam ridiculed the attempts of *Yukthivadi* being published by five editors together. He wrote in a satirical way that: *Pathikalonnalla*, *Randalla*, *Moonnalla*, *Chathura Veeramar Anchund Kanthanmar* (it has husbands not one, two, three but five giant heroes!)

for cheaper rent.[158] He lived life by promoting a sense of rationalism and critical thinking among people. He spread such a novel idea through his writing and speeches that attracted several people towards his fold. Thus he could involve in promoting scientific reason and progressive thought among Malayalis. However, he was met with several criticisms and punitive measures from the part of church and traditionalists. But he did not hesitate to speak out his ideas before any one. He has been a source of inspiration for youth. His works apart from articles in various journals include *Purogathi (1947), Yuktiprakasam (1956), Asaya Samaram (1976), Thiranjedutha Kurippukal (1976), Chinthaviplavam (1976), Nasthikya Chintha (1977), Kuttichathan (1983), M.C.yude Lekhanangal* (posthumous-1991), *M.C.yude Darsanangal* (posthumous-1995).

Among the direct disples of Narayanaguru, the one highly influenced by scientific rationality, modern world view, democratic sensibility, and socialistic consciousness was Kumbalathuparambil Ayyappan, popularly known by the name of his journal and organization attached with himself as 'Sahodaran' Ayyappan. He wrote extensively and preached all around for social change and an egalitarian consideration of human beings. He was born on 22nd August 1889 at Cherayi in erstwhile Cochin state. He was very fond of learning that impressed his teachers like, Rama Varma Thampan who gave him books for further reading on various aspects of social life. He had to witness caste oppression by the elite and middle castes towards his friends or their way to school for 'polluting' them by being on their way.[159] His father and elder brother were renowned practitioners of traditional medicines

158 He continued this policy when built his own house. He called a Thachan (traditional architect) and asked him to find the worst and unlivable space in the compound for building a house. He chose that particular point to build the house and lived there without any problem up to his death.

159 As noted earlier due to the complex hierarchical character of caste system people who witnessed severe oppression from their elites did perform the same way with the people whom they regarded below to them. In the present case, he later observed that *Ezhavas* who speak and question subjugation and atrocities by the *Nairs* in turn beaten a child going to school to the worst level.

(*vaidyas*) who promoted him for studies by witnessing his high curiosity and commitment. His life at Calicut where he studied for intermediate was a transition period where he could read widely on science, rationalism, philosophy etc. in the Basel German Evangelical Mission College (BGM) where he learned Malayalam, Sanskrit and Logic as elective papers.[160] However, he continued to be a pious student with traditional attire and appearance. It was here who had to cut his hair tuft and wear trousers and a shirt which became symbolic of his later transformations.[161] He engaged in serious debates with friends and attended several socio-cultural and religious programmes in Kozhikkode, which was a centre of cultural and reformative emergence during that period.[162] He joined for graduation in two colleges at Madras; Madras Christian College for Philosophy, and presidency College for Sanskrit Honours; but had to drop both due to his financial conditions. He then met with Naranayana guru, who helped him for his studies and led to the development of a close companionship with Kumaran Asan which lasted up to his death. He engaged in serious debates with Asan in the context of his poems and social issues. He criticised Asan for his depiction of Mappilas in the poem *Duravastha* for which Asan replied furiously, in the context of severe criticisms from various corners that by such usage of cruel Mappilas he meant only those who engaged in riots and attacked people cruelly.[163] He also got a chance to meet and get acquaintance with several persons and ideas

160 The BGM College later renamed Malabar Christian College, located near Calicut town.

161 He was such a studious, obedient, and calm student that when he was forced to cut short the hair tuft (due to severe teasing, ridiculing and humiliation from his peers and interestingly, not out of his will) his house owner made such a remark that this child who lost his 'good looking appearance' and his 'good character'. The teachers and students of the campus had viewed him as a 'pious' and 'sincere' boy.

162 There were several cultural and religious programmes conducted by the *Arya Samajam* at Calicut town. Ayyappan has been a frequent visitor there and which influenced his character formation at this stage.

163 M.K.Sanoo, 'Sahodaran.K.Ayyappan' (Mal), Kottapam, D.C.Books,1980, pp. 54-68.

during his life at Thiruvananthapuram where he studies for BA in Maharajas College in Indian History and Sanskrit.

Ayyappan had begun his social services while working as a teacher in the Union High School itself. He taught his students various aspects and novel ideas including the theory of evolution, which was a matter of serious debates among Malayali middle class during those days, scientific discoveries, democracy, etc. He was an eloquent orator and could influence his audience swiftly. He spoke against the caste system, its discriminations, atrocities, and inequality in the most suited way for communicating with the audience. He used both modern scientific rationality and ancient literature occasionally for substantiating his arguments. One of the major events which could invert the social debates in Kerala organised by Ayyappan on 29th May 1917 was the popularly known as 'Misrabhojanam' or 'Panthibhojanam' or inter-caste dining. He invited people with a notice for meeting on Guru's teaching without mentioning his programme. However, he declared it on the spot and several people accepted to take part in it. He organized some of his friends to stand with him like K.K.Achyuthan, P.N.Achyuthan, K.C.Kesavan, K.Kumaran. A.C.Karthikeyan, A.T.A.Andi, K.A.Krishnan, A.Raman Pillai, T.K.Kittan, Kooni Raghavan Master and Krishnaseeri Vaidyar. But no one from oppressed classes like Pulaya did accept their call. Therefore, they invited two students belonging to the Pulaya caste named Vallon and Chathan for the programme. They served food for those who became willing to eat in the revolutionary movement by breaking all the regulations of traditions and practice.[164] He made those who assembled there to pledge against the caste

164 *ibid.*., pp. 75-79. Though there were attempts of intercaste dining earlier, under the auspices of Ayya Vaikundar etc. as mentioned above, Ayyappan's move become historically relevant because of this fact that he forced people belonging to middle castes, who themselves practiced casteism some way through distancing people belonging to caste considered lower to them, eating the food served by two students belonging to downtrodden caste.

system.[165] There were several criticisms from all corners of society. All those who met together at every nook and corner discussed this news and there were mixed responses towards the breakers of the custom. What is interesting is that those who eloquently speak against caste oppressions and discriminations against the Ezhava and other middle castes by the elites belonging to castes like Nair, etc. could not even consider the people in caste lower to them approaching and sitting with them. They were not ready to consider them as human beings. Because the ideology nurturing caste system was deep-rooted in the brains of people. However, the primary principles drawing Ayyappan forward were his commitment to principles of scientific rationalism, socialism, democracy and humanism, etc. *Vijnhana Vardhini Sabha,* an association of the Ezhava community took a very harsh position against these developments.[166] They convened a meeting and decided to excommunicate 22 families who associated with the movement.[167] They also decided to delink completely from those who actively participated in it. They issued a pamphlet misguiding people that Narayanaguru was against such actions and he had told the secretary of Vijnhana Vardhini Sabha that he had not permitted such a provocative action. Instead, he wishes a gradual social change through education etc.[168]

Ayyappan, however, formed an association of the supporters of his movement as *Sahodara Sangham*, and made his point, clear through speeches, writings and he approached Narayanaguru directly. Who told him that he had come to know the happenings and has every support for the movement. Do

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165 The pledge, in summary, was that 'the caste being against science and harmful. I would eradicate this evil through all possible legal means'. He made all who assembled there to swear this, through his inspiring and provoking speech.

166 It is interesting to note that this organisation like many other low caste movements stood for upgrading the conditions of people belonging to Ezhava caste and to defend them from caste based atrocities as well as the promotion of Narayana Guru's ideals.

167 *ibid.* ., P. 79.

168 *ibid. ; pp. 82-84.*

not get upset by such setbacks and propagations. He asked Ayyappan to 'Forgive like Christ'; Ayyappan was happy and requested Guru to give him his support in writing by his own hand; Guru did so.[169] In the meantime Ayyappan started a magazine as the mouthpiece of *Samastha Kerala Sahodara Sangham* through which he harshly criticised not only the traditionalists and conventionalists but also those who stood for "gradual change" through education alone. Even Kumaran Asan had taken a stand in the beginning that it would be suicidal for hurling headlong into revolutionary movements like ‘Panthibhojanam’; However, he also warned the traditionalists for not allowing the educated youth for doing anything progressive. However, the movement inaugurated at Cherayi had soon spread and repeated at different parts of Kerala, especially after spreading the news of Narayanaguru's support, either under the auspices of Ayyappan himself or by local progressive youth. However, the movements were unfortunately identified with the Ezhava and Thiyya castes, which shrank the possibilities of the growing such revolutionary movements all over Kerala. He also organised burning of a giant effigy of the devil 'caste' (jati rakshasa dahanam) at different places.

He wrote several revolutionary and thought-provoking poems in simple language which were easily understandable and memorable even for lesser educated and semi-literate people. Those poems reflect his atheistic and scientific spirit which did not confine to anti caste-themes but extended to various subjects including promotion of science and rationality against rituals and sacrifices, education, newer ideals like socialism, democracy, revolution etc. some of them entitled *Dharmam, Samabhavana, Rajavinu Pratyaksha Patram, Rani Sandesam, Swathanthrya Gadha, Ujjivanam, Jati Chikilsa*

169 His statement was that which can be roughly translated as "Whatever being the religion, language and attire of people their 'caste' being one that all human beings can dine together and there is no problem in they marrying each other" see ibid., p.85, (translation mine); also cited in, K.Ayyappan, "Sree Narayana Sandesam' (Mal), in P.K.Balakrishnan (ed.,) *op cit.*, *Narayana guru..*, pp. 286-287.

Samgraham, Gandhi Sandesham, Yuktikalam Onappattu, Purahita Jalam, Science Dasakam, Buddha Margam, Onappattu, Divaswapnam, Alariyude Munpil, Misram, Purohithente Pinjanmam, Chandalan, Asamsa, Misravivaha Ganam, Pulacolony, Jati Bharatham, etc.[170] All these poems reiterate the influence of science and its rationality along with other modern ideas in the social conscience of Ayyappan.

Scientific Rationality and Social Reform

The latter wave of the second phase of social reforms as mentioned above was led by those influenced by scientific rationality. Though modern education and allied reading and debating culture as noted above was the leading light before them, which cannot be considered as the sole reasons for this emergence and socio-religious criticisms, possibly due to two reasons. 1). Modern education as discussed earlier had no intention of creating a community with scientific knowledge nor was it sufficient or efficient for that. 2). The critics of traditionality did not completely belong to the modern educated middle class. The majority of the educated middle class did not prove to be scientific in their approach, nor did they come up against the traditional social order. Notwithstanding the influence of modern education and the possibilities opened it up cannot be reduced, diminished or degraded in any sense. Because all those mentioned above and many of their comrades had developed wider reading and debate culture which is presumed to be made possible through the education they had received. It opened up a world and conceptions hitherto unfamiliar for them. It was this reading and debate culture that made them all critics of the social system, practices, ritualism, injustice and active protagonists of a new world order based on liberty, equality, fraternity and social justice. As mentioned above, the context of publication and press opened up wider possibilities of debate and expressions;

170 All these poems are cited and roughly translated by Ajay Sekhar in to English in his critical work on Ayyappan. For details see, Ajay Sekhar, *Sahodaran Ayyappan: Towards a democratic Future; Life and Selected Works*, Calicut, Other Books, 2012.

it was the reason that many of them started publishing journals suited for their conveniences and tastes. These circles of intellectuals became organisational platforms for social change like *Sahodara Sangham*.

Scientific rationality was their main arbiter for determining an institution or event as relevant or not in the social context. However, many of them were ambiguous in their position and practical religious symptoms in their personal life, as mentioned above. But they all held reason as supreme. That is evident in the simple logic used *Sahodaran* Ayyappan in a speech that a cow cannot deliver a child of a buffalo and vice versa but a Namboothiri woman would deliver a child of a Pulaya or Paraya and a Namboothiri can produce a child in a pulaya woman, therefore it is deducible that all of them, being humans belong to caste (he intend though not stated *Homo Sapien Sapiens*).[171] However, it cannot be concealed in this context that these rationalist reformers and revolutionaries had also utilised the traditional knowledge, texts and philosophy for better communication among people and to get easy acceptance of their new and revolutionary ideas. For instance, Ayyappan himself utilised the*Vedic* and *Upanishadic* hymns accordingly to disprove the idea of a caste system and discriminations based on this.[172] But though they utilised these scriptures and tradition they were not to assert their validity nor even by accepting their sanctity, instead it was to disorient the deep-rooted notions among people through their own logic. Moreover, they were of higher influence among people and they viewed them as sacred, therefore, they realised that it would be quite receptive if presented in that notion and epistemology. However, their basis continued to be scientific rationality altogether.

171 M.K.Sanoo, *op cit.*, Sahodaran...., pp. 106-109. (assertion added).

172 As he had learned Sanskrit from a very early age itself. it was not difficult for him to quote and argue on the basis of these *Vedic* hymns. Thus he could attract the notice of the people and scholars as well. For details see, ibid.

What they tried to teach the people were completely novel ideas of scientific rationalism, democracy, socialism, equality, etc. which were based on the newer knowledge and world views achieved through their wide reading and education. Though there were elements of agnosticism, atheism, materialism, etc. in the Indian Philosophical tradition and which were utilised by the early reformers and Bhakti saints, they all had their own limitations of the ages of their evolution. Though these revolutionaries were aware of all these traditions, they did not depend much upon them, as it may misguide people to their similarity. For instance, M.C.Joseph could have utilised the material aspects of Indian Philosophy which he discussed in many of his writings, therefore known to him, for his negation of the devils, evil souls, *kuttichathan*, etc. but the simply did not go behind them all he instead destroyed them by utilising modern Psychological theories.[173] Unlike their previous or first wave of reformers in their attack against caste system and inequalities, injustice like untouchability etc. they used modern conceptions, scientific and material reasons and stood with their anti-religious and anti ritualistic position without giving any chance for ambiguity. They, therefore, stood not to reform the existing society with lessening the hardness of caste system and injustice but for creating a new social order, new knowledge and modern science and its technology by de-linking from all the traditionality.[174] They hoped that the traditional religions and social systems etc. However, reformed would sooner be set down with their atrocities and injustices because all of them were founded in such unequal and inhuman world views and social settings. Therefore they did not dilute their stand points for getting

173 For details see M.K.Sanoo, *op cit.*, Yukthivadi M.C…..

174 Even the knowledge systems and practices adopted from the tradition were those which seemed to be sustaining and relevant in the new methodological experiments of science.

attracted and accepted in society. They thought their revolutionary ideas would be taken up by the coming generations through education.[175]

However, this revolutionary wave of the social reform movement in Kerala could not achieve a massive character like the early social reform movements. Instead, it was confined to some sections of the newly formed middle class in Kerala through the debates opened up by them. There are several reasons which contributed to such a situation. The most important reason seems to be the popularity achieved by the early phase of the reform movement which did not completely reject or problematise the traditional knowledge instead what they suggested was some rejuvenating measures within that philosophy. For instance, Narayanaguru did not demand a sudden break from their socio-religious practices but he preached some reforms in the existing order and thereby a gradual social change in the early stage, except in some rituals and practices. He also utilised the conceptions and notions of a religious saint including his attire and activities.[176] Similar was the case of almost all other reformers of the first phase mentioned here. Therefore by the late 19th century, they could attain wider popularity among almost all parts of Kerala and adjoining regions of neighbouring states. They could create a cult character and the society, in general, was restructured and settled in this way. All these did not demand a break from the past nor from its socio-intellectual traditions. Above all the social settings of early modern Kerala, dominated by the middle class, in which they all were working were not familiar with a scientific attitude apart from some technologies and other applications of modern science like medicine.[177] In short, the new phase or the

175 They were of the conception that those who get modern education and scientific knowledge would realise the injustice of the traditional society and would get rid of them in the future. This optimism proved fatal very soon.

176 Even Narayana Guru who always preached of the unity of god in all elements including humans did not resist people from deifying him to a certain extent he is accused to have enjoyed them all.

177 These applications did not demand any psychological changes among their stake holders. Instead, they simply replaced their previous substitutes. For

revolutionaries who completely relied on scientific rationality could not achieve that popularity. Their activities, notions, ideology and methods were altogether modern and required a clear break from the existing socio-religious context. Though all these revolutionaries and their idea were a clear product and continuation of the early phase they were confined only to the educated middle class of the time. Move over, their methods apart from some street speeches by people like *Sahodaran* Ayyappan were confined to intellectual debates through the journals and literature which had the limitation of the historical situation that the majority of the society whom this knowledge would have been helpful continued to be illiterate and semi-literates. Moreover, the novelty in their ideas also became fatal for the movement. Unlike their predecessors, they had to face severe physical attacks and challenges like those met with by Ayyappan from almost all the venues they went. They were attacked by the people physically and verbally. Even those who were the supporters of the early phase of reform movements and who gained their social status from such movement stood in oppose to the new movements. Finally, the historical context of the period was to play a crucial role in checking the growth of the movement. As many of these revolutionaries and their movement were confined to the southern Kerala, Kochi and Travancore these regions were politically under the feudal domination. Though there were some benevolent policies and legislative bodies functioning in these states they continued to be ruled by the traditional kings and their associated semi-feudal bureaucracy. This situation did not demand a change in society and the system. But Malabar instead was under

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example, elites carried by people in Palanquins began to be transported by engines and people who acquired money could afford these sophisticated technologies and their life patterns, etc. No theoretical or methodological shift was occurred with these changes, possibly due to the fact that due to the amalgamated condition of social and economic factors the earliest beneficiaries of the changes were the elites and middle class who were also the beneficiaries of the previous social system. Thus the facilities filtering downward to lower class people through an elite mediation had lost its revolutionary character.

the direct rule of British colonialism and had its impact in the socio-political realm. There the political mobilisation and agrarian distress and political movements were predominant.

More importantly by the end of the 19th century itself, counter-reform movements against the early phase of the social reform movement had begun to emerge in Kerala. The orientalist notions and activities of the organisations like theosophical society, Arya Samajam, etc. began to influence the people who were lesser influenced by the social reform movement and those who opposed it. Thus such movement gaining importance and the organisations like Namboothiri Yogakshema Sabha, Janmi Sanghom, etc. along with other community reformers discussed above checked the progress of the social and revolutionary movement in Kerala. They not only diverted the debate but also tried to reinvent many of the reformative characters etc. within the tradition. It also had a wider acceptance in society.

The growth of anti-colonial movements and the spread of nationalism brought about a necessary and historical set back to the revolutionary anti traditionalism. The nationalist awakening either in Malabar or Travancore and Cochin states roused an anti-colonial and anti-European sentiment which became fatal to the aforesaid movement. As a part of this and orientalist discourses, a rich and unparalleled heritage of Indian culture has been rediscovered which propagated a golden and civilizational past of India which were represented not only as unparalleled but also the progenitor of all civilisations and knowledge all over the world. Therefore this roused the sentiments of the people especially the nationalist against the 'inferior' ' alien' cultures specifically the European and material culture (which were always used interchangeably). Moreover, the growing anti-colonial movement also utilised this orientalist viewpoint for giving a historical backup for their struggle and this newly invented tradition began to be held against the material culture of the 'west'. Moreover the Europeans especially the British people were wrongly equated with materialism and scientific rationality.

Their technological advancement and anti-pagan culture were held as equal to the rational and material consciousness aroused by the revolutionaries. However, the European's appreciation of these anti-traditional movements and their educational attempts were also added to the growing antagonism among the people towards the rationalists. Thus all these contributed to the check of the revolutionary and scientific movement in Kerala albeit its influence among a section of the newly formed middle class.

Conclusion

The socio-economic and political changes in different parts of modern Kerala by the 19th century created contradictions, sufficient for the emergence of the social reform and renaissance movements here. Large scale religious conversions under the auspices of missionaries and cultural changes due to violation, rejection and reorientation of rituals and ceremonies alarmed the beneficiaries of the traditional social system including the state. Thus they were forced to extend the traditional education sufficient for maintaining and strengthening the conventional socio-cultural order to the middle castes. Along with the changing socio-economic and technical circumstances, this extended traditional education created internal contradictions among the middle and lower caste people. Thus several incidents of breach of conventions and open challenges to the traditional practices emerged in Kerala. There emerged several social reform movements and from the middle and lower castes. Being exposed to sophisticated discourses of Indian culture as well as socio-political tradition, these reformers in the initial stage stood for reforming the society for the attainment of such an egalitarian golden age again. Thus they began to replace their pagan gods and allied rituals with Brahmanic gods, temples and rituals as the extended traditional education made convinced them that, their own lower-class practices were chronic deviations from the 'original' Brahamnic cultural tradition. The extension of instrumental rationality, bureaucratisation of state, changing socio-economic and production relations and extension of technology into new fields etc

created a situation sufficient for the emergence of a middle class who turned to be reformers demanded the civil rights of the people including right to walk on roads, wear clothes and ornaments, appear in the public spaces, education, employment, etc. Of course, it included the right to worship, but it was raised as the civil right of the people as many who stood for popular temple entry were atheists and did not personally opt to go and worship there. Most of them applied scientific rationality as their logic for demanding and working for social change. There were several conflicting ideas in the newly emerging public sphere during the late 19th and early 20th centuries. They reflected in their confusion of the option between community emancipation and secular social formation as the immediate goal. Many of them, in the particular social situations of Kerala, stood for the emancipation of each community as the immediate goal for social reform. Some of them suggested for a complete break from existing cultural and religious circumstances while some others stood for changes within the existing system. This led to a wider rudimentary democratic debate culture in Kerala. However, many of the community emancipation programmes, later on, turned to be communal consolidations and added to the communalisation of social discourses during the early 20th century itself.

CHAPTER IV

SCIENCE, PUBLICATIONS AND HUMANISATION IN MODERN KERALA

Introduction

The social reform movements and Kerala renaissance used several means for the spread of new ideas and criticisms to the traditional social order. One of the chief media of their interactions and debates was provided by the newly started publication culture and allied public sphere. They published various journals, books and other materials during the early modern period, chiefly for promoting different new perceptions and developing an intellectual and democratic debate culture in Kerala. However, there were no unanimous positions among the newly emerging middle class on several issues. But they kept a rudimentary democratic atmosphere intact. Various positions taken by the new middle class on major areas of the debate can be grouped into three on the basis of the application of scientific rationality in them. A comparatively smaller group adopted scientific temper and its rationality as an arbiter of their arguments. While some others emerged with harsh criticisms against new revolutionary movements and stood with the traditional notions, though with slighter alterations and new interpretations. To them, the traditional Indian knowledge was complete in itself and derived fro ancient seers. Some of them even held that this irrefutable knowledge was the foundation of all knowledge systems in the world including modern science. Another important group emerged in the new middle class was an expressible ambiguous position identical to ecumenism. They held an open and adaptive approach to traditional knowledge and modern science. Thus the interaction among traditional knowledge, instrumental rationality and modern science in the democratic debate culture gave birth to an ecumenical intellectual position, redirecting social formation in modern Kerala.

As discussed in the previous chapter, nineteenth-century Kerala witnessed revolutionary changes in various aspects of human life. Various factors including different types of education, the publication of various journals, pamphlets and books, and new art forms and entertainments, the opening of the public sphere before wider categories of people, etc. provided a cultural background for the social change. Knowledge of innovations and technologies and various applications of new scientific knowledge into practical life, an extension of trade and commerce into new fields and products and consequent monetary economic system, etc. accelerated the pace of the new social formation. All these were the result of different categories of people mentioned earlier. The new social situation contributed to the formation of a new middle class who had undergone modern education at different levels and have been influenced by the changes in the world and imbibed the new sense of society and world. Some of them naturally emerged to take up the issues of inequality, social injustice, oppression and backwardness to the fore. Thus witnessed large scale debates in these matters and serious concerns of the people towards them and traditional society in general. Thus, emerged mobilisations against all these, social and political issues. Thus Kerala witnessed different movements and counter mobilisations during the dawn of the twentieth century. These processes involving different agencies and institutions with either complementary or contradicting interests or policies were crucial in the emergence of modern Kerala. Among them, science in general and scientific temper, in particular, have played a crucial role. With all its novelties scientific approach provided a distinct world view to the society. However, there was no unilateral approach towards this new world view and social system among the Malayali community, nor was it wholeheartedly accepted by them. However, it could assert its influence even among those who opposed its acceptance. This led to a complex social formation in modern Kerala by the late nineteenth and early twentieth century.

New Middle Class

The concept of the formation of 'new middle class', its process of evolution and agency are all matters of serious debates among historians and social scientists.[1]This class is being understood as a categorisation referred to those people who belonged to the upper strata of society, but not being at the top; they are recognised as financially comfortable and engaged in various professions including colonial state functionaries, bureaucracy, teachers, lawyers, media persons, merchants, etc. who had an altogether different socio-political and cultural orientation distinct from the rest of the society, probably received out of their education and social interactions with the changed colonial situations. They engaged in these professions for earning their life; which distinguishes them from the traditional richer strata of society.[2] However, in Kerala, the process of evolution and constitution along with their programmes indicate their distinct formation.[3] Thus they can be defined as a category of modern educated people who were professionally, socially and culturally de-linked from or altered their respective caste regulated traditions and held a new social outlook mediated by the changed social circumstances of 19th and 20th century. However, it does not mean that those who received modern education would naturally come under this category nor has it the implication that those who were not formally graduated did not come under this purview. Though they were the products of the changed social and political circumstances, they were not a colonial creation in itself nor were

1 For a detailed understanding of the concept and historiography see Sanjay Joshi(ed.,), *The Middle class in Colonial India*, New Delhi, Oxford University Press, 2010. In this work, he has combined different complementing and even contradictory positions by different scholars

2 *ibid.*, pp. xvii.

3 Several scholars attribute the origin of the formation of middle class in India to the benevolence of colonial administrators for instance, see B.B., Misra, *The Indian Middle Classes: Their Growth in Modern Times*, New Delhi, Oxford University Press, 1985, However, in Kerala it is supposed to be a complex formation involving several factors.

they the natural offspring of the middle castes of traditional society. [4]The colonial socio-political and cultural situation (semi-colonial and semi-feudal in the case of Travancore and Cochin) along with new educational facilities (both missionary and local elites' contributions), the printing culture, debates and the socio-religious reform movements paved the way for the emergence of this novel group. They were not unilaterally revolutionaries in character or 'white-collared' in profession nor were they all emerging from the traditional elites. Instead, they included all these groups and held different views on various matters and sometimes their opinions and viewpoints went antagonistic to each other. However, none of them continued to be purely traditional in their world view, those who were traditional in character had undergone several changes and alterations in the modern mediation; they realised the problems in the traditional society in varying degrees and found solutions in either alterations and reinterpretations of the traditional way of life and scriptures or revolutionary deconstruction of the traditional social order. Therefore colonialism, its technology and the capitalistic system have naturally contributed to the development of this new middle class along with some extra colonial and traditional aspects. Thus being generated by such a complex process, there were clear differences of opinion among these groups and they debated from different perspectives on several issues. This argumentative culture in a democratic manner laid the foundation of modern Kerala Society.

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4 The middle castes in the traditional hierarchical order, as mentioned in the previous chapter, though subsisting on the labour of the actual agricultural and related workers were not entirely delinked from the rest of the society culturally and socially. Instead, they acted as the mediating link between the actual working class and socio-cultural elites. They were categorically peasants, held some sorts of rights over land including *Janmam* and *Kanam* rights. The newly emerging middle class, in turn, were not necessarily hailing from these categories. Instead, the modern education and existing variations of colonial rule in three different political units of Kerala created this class from different sections predominantly from the traditional elite and middle castes, as mentioned above.

Humanisation and Social Reform

The idea of humanism that distinguished the modern world from the medieval feudal social system, emerged during the renaissance period in almost all societies and challenged the social sense of people all over the world during the modern period had widely been discussed and debated among the intellectuals. The newly formed middle class in Modern Kerala held it, though in varying degrees, as the arbiter of their social criticism. Interestingly there was no category of common people in pre-modern Kerala. As mentioned above everyone with any religious or cultural category was being considered as belonging to caste-based hierarchical order and were responsible for obeying unquestionable caste regulations. Such *vazhakkams* and *maryadas,* evolved here were not necessarily confined to Hindu *Varnashrama Dharma*. Caste regulated the socio-political system and human life altogether had been identified as the chief obstacles of the idea of humanism and egalitarian social system in Kerala. As discussed in the previous chapter every aspect of a person from birth to death and thereafter had been regulated by the inhuman caste and its allied social system here. Therefore, some of the new middle class, as a continuation of the afore discussed social reformers, held the rejection and annihilation of the caste system and its foundation by uprooting its ideology as the only way for conversion of these caste bodies into general human beings (humanisation of people) and stabilising wider humanitarian consideration in the society.[5] While some others held that some alterations in the hierarchical order and allied distancing of people, penetrated the ancient egalitarian society in the course of history, was sufficient for rebuilding the society.[6] Thus they debated

5 Many of them were driven by the newly spread scientific temper and humanism and stood for a complete restructuring of society based on new ideals for practical social change in Kerala.

6 They found the gradual penetration of the inequality into the socio-intellectual and philosophic traditions of ancient people, evident in their literary traditions as the reason for the evil practices. Therefore, to them, the reconstruction of

it in all possible occasions through journals and public speeches which were the features at the dawn of modern Kerala. Several reformatory journals started by them dedicated a larger share of its space for problematizing the caste system, untouchability, etc.

Socio-religious reforms during the 19th century have raised serious questions regarding the logic, foundation and rationale behind the practices of the caste system. Narayana Guru, himself being a 'revolutionary saint', has disproved caste system from the Vedantic and Upanishadic standpoints. Revolutionaries like Arattupuzha Velayudhappanikkar had forcefully broken and compelled people to break the caste-based taboos as mentioned above. As a continuation of this movement, the publications by the new middle class, like *Mithavadi*, *Deshabhimani*, *Sathyanadam*, *Sahodaran*, etc. criticised the practices of castes and untouchability by the standpoint of humanism and new scientific knowledge. They criticised the ideology of caste system by questioning the logic of discriminating human beings. They questioned the practice that the general public roads which can be used by any animals including stray dogs and people belonging to other religions and castes are being forbidden to the lower caste people who are considered as 'untouchables'. The dignity of the human being degraded to the lowest level even below other animals was unacceptable for them. What made them more furious was that those belonging to these 'untouchable' castes when get converted to other religions by accepting some other names would lose their restriction and can act and live freely and enter the spaces forbidden for them until then. It was widely criticised in almost all journals except those being published specifically by and for 'upper caste' Hindus.[7] It was this

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the original traditions by freeing it from the later additions was the method of social change.

7 However, youth emerging from the upper caste backgrounds like V.T.Bhattathirippad and their organisation, Namboothir Yuvajana Samgham in the light of modern conscience opposed the caste-based discriminations and through their publication, *Unninamboothiri* openly supported new movements

discrimination that made Vivekanandna call homes in Malabar as a 'lunatic asylum' and Travancore as a 'centre of prostitution'.[8]

The historic condition of the lower class people in the socio-economic hierarchy was that a person belonging to non-elite castes in the hierarchy had to keep themselves away from the public roads, they had to mark their public appearances with self humiliating sound 'hoi', 'hoi' so that the upper-class people would realise their 'cursing' appearance and would be able to escape from 'accidental vision'. If an upper caste person comes on the way his carriers and aid would raise sounds so that all the lower castes and 'unapproachable' should hide from the visibility until they reach farther places. These inhuman practices had been recorded by several people including K. Ayyappan from their personal experiences like those cited earlier. However, if a person converts to some other religions mainly Islam and Christianity these taboos would lose their force. It was due to the interferences of Christian Missionaries that such an exemption was given.[9]

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including temple entry for lower caste people. For details see various issues of *Unninamboothiri.*

8 Vivekananda's speech in Madras calling homes in Malabar as 'lunatic asylums' in these circumstances had been widely quoted either wrongly, distortedly or correctly by several scholars and writers on the caste-based discrimination in Kerala. (for details and full text of the speech see, Swami Vivekananda, *op cit.,* Lectures from..., pp. 183-202. However, his criticism on Travancore on similar grounds that a Christian convert gets all due acceptance from upper-caste Hindus which were unimaginable for low caste people being in their ancestral caste have not been widely mentioned in discussions. In his own words, 'there was no land rights for people, regarded as lower in the hierarchy. Women belonging to royal families are proudly pimped for the Brahmins and they are proud to be prostitutes and less concerned of massive conversions', for details see, his letter written to a 'Malayali' and published in, *Mamgalodayam*, Vol II, No.5, *Meenam* 1085 (c. March 1910), pp. 195-200. (assertion added)

9 The case of Channar agitation is worth mentioning here. Those who converted to Christianity began to reject their traditional attires and appeared like the elite women, it was unacceptable for them. Therefore, they acted against these and attacked converted people at several occasions. This led to the Channar agitation. Due to the missionary interference for the sake of the converted, royal orders and circulars were issued in 1814, 1821, 1829. But there were several incidents of the clash among people and the Madras governor

They would naturally attain 'human hood' and will have all the rights and privileges of a 'common man'.[10] This attracted several people towards these new religions that the number of religious conversions increased and it has been discussed through articles in these journals that 'the number of population among Hindu have been substantially decreased in the census and the number among Christians and Muslims have been doubling in each census'. Such narrations have been repeated in several journals of early 20th century both as a concern and as an indication to the aforesaid increasing communal sentiments among Malayalis by this period.[11]

There was a larger cry for permitting entry to temples for the lower caste people which was restricted to upper-caste Hindus belonging to four 'varnas'. Though this demand had been raised by earlier reformers as well, for instance, Arattupuzha Velayudha Panikkar entered several temples including Vaikkam Mahadeva temple and he constructed a temple particularly for the Ezhava community, as mentioned above. Narayana Guru, as widely discussed, himself installed deities and founded several temples all over present Kerala and some parts of Tamilnadu, their demands had a religious tone as they were based on the piety and right to worship the God. However, the revolutionaries of the new middle class demanded temple entry as a means to ascertain their civil right, as many of them were atheists or did not practice religion in the traditional way and some of them were even converted to

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intervened, he sends letters to Travancore Diwan to evade restrictions on converted people in dressing and appearance. Thus due order was issued in July 1849. For details see P. Bhaskaranunni, *op cit*, pp. 1173-1189.

10 This common man was also a creation of the modern age, as there was no such a common person before. All people irrespective of their religion and status were bound to respective caste regulations and customs(*Maryada*). Earlier Muslims (*Mappilas*) or Christians (*Nasranis*) were also considered as caste groups in themselves in Pre-modern Kerala; not as a religious or cultural entity as being claimed now.

11 For instance See, Sadhu Sivaprasad, 'Hindu Mahajanangalodu Oru Vaakku' (Mal),(A word to the great Hindus), in *Sahodaran*, Vol. III, No.10, Kumbham 1096 (Mal. Era), (c. February 1921), pp, 375-382.

Buddhism and Christianity.[12] Many of them continue to question the relevance and presence of god or similar powers on material and scientific grounds. They ridiculed many conceptions of gods in the Hindu belief system. For instance, in *Sahodaran* it is exclaimed about the depiction of *Brahma* (that how can a persons have five heads and continue to live if one of them being chopped off by someone else); several incarnations of Vishnu, absence of powerful vehicle for commutation to God who created everything else, gods engaging in intercourse with women and being seduced by women and goddess being one of several wives of some gods and existence of untouchability and unapproachability even among gods and goddesses, etc. logically.[13] They exclaim that how can the creator of all these universes and everything in it get pleased with bribes from the pious and other people.[14] In this way they continued to ridicule gods, simultaneously seeking entry for all people to those temples and other prohibited areas. It is also claimed that even new forms of older religions will be deposed by 'science' later on.[15] They widely used scientific discoveries and knowledge on the universe for challenging the foundation of these discriminations and establishing their idea of humanism. For instance, the possibility of reproduction by two people

12 For instance, in the Sahodraran monthly almost all issues contained articles, newses and other writings against caste oppression and demanding temple entry, they questioned the sanctity of the claim of *Swarajya* for a person who cannot walk through the public roads. Therefore, to them, the Demand of *Swarajya* raised by the nationalists against British colonialism would not represent the oppressed castes. It is further stated that the rich Ezhavas and others who donate funds to these temples but do not have entry into the temple premises and had to perform their worship and prostrations from distant places should stop funding to them and festivals. Many people now realised the absence of god or goddess in them, but they continued to claim their right of temple entry as a civil right to enter temples and walk through the ways near them. For details, see *Sahodaran*, Vol. III, No. 7, 1096 Vrschikam,(c. November 1920), pp. 249-251.

13 For one such ridiculing and satirical criticism see, 'Hindu Daivangal' (Mal), in *Sahodaran*, Vol. III, No.7, Vrschikam, 1096 (Mal. Era) (C. November-December, 1920), pp. 251-256.

14 *ibid.*

15 *ibid.*, p. 256.

belonging to different castes and sexual relations between people of different communities and the probable impossibility of such reproduction between animals belonging to different species were widely used to question the idea of caste among human beings. This principle has been widely used on several occasions by the new middle class while writing on the caste system and untouchability.[16] However, it is also interesting to note that several people belonging to different ideological positions such as theists, atheists, agnostics as well as pious people belonging to the middle class criticised the logic of discriminations based on the caste system.

Apart from the criticisms towards the existing caste regulated life of the people the middle class shed the light on various aspects of life sufficient for producing a modern humanised and democratic social life in Kerala by applying scientific temper towards social life. It was envisaged through news, media, journals, etc. and appraised the necessity of a published and 'mediated life'. Therefore most of the new middle class either founded journals and publications or associated with existing print culture and produced numerous publications including articles, books, other kinds of literature including pamphlets, etc. They also propagated the necessity of the growth of trade, commerce and other productive economic activities in general; modern education and the requirements of a new life and world view. Their concerns extended from, necessities of health and hygienic conditions, requirements of private property, ownership of land, the disintegration of the existing family system, etc. They wrote on movements and mobilisations all over the world,

16 Following Narayana Guru's explanation that the identity of humanness as the only caste of all people similar to that of cow (being cow) as the caste of cow in his frequently quote verses "Manushyanaam Manushyatwam/ Jatir gotwam gavam Yatha/ Na Brahmanadi Rasaivyam/….", the new middle class also explained that unlike the horses, cows and oxen etc. cannot mate and reproduce in between each other, people of different caste and gradations can engage in intercourse and reproduce among each other. For instance, The people belonging to Paraya, Pulaya, etc. had produced fine children in other caste people and vice versa. for details, see Sadhu Sivaprasad, 'Jathibhedam', in *ibid.*, pp. 265-276.

Novelties in agriculture, enhancement of production, honesty of different kinds of labour, requirements of specialised and skilled labour, up-gradation of standard of living, necessity of social change, community development, cultural changes, changes in literature especially the discussions on novels etc., the roles of religious and priestly class in common life and community reforms, etc. were debated with serious concerns. All these marked the paradigm shift in the Malayali society during the late 19th and early 20th centuries. This contributed to the formation of an entirely new socio-cultural system that necessitated people to take a position in the newly formed debating and argumentative culture. This led to a cultural division of people into traditional, modern and middle standers.

The growth of publications and print media in modern Kerala had played double roles as they took initiatives for social reforms and reflected the changes in society.[17] The increasing number of journals and other publications in Malayalam and their role in transforming the Malayali society can be understood as an indication of the extension of the emerging public sphere. The role of media in criticising the administration and governmental policies thereby engendering a political consciousness in the society was widely discussed here among early modern intellectuals.[18] The history of the emergence of news and journals in the world and the role of such media in shaping social conscience and political formations were widely discussed in such articles. The necessity of knowing things around and the responsibility of royal initiatives for informing the people about their decisions and matters affecting the people were discussed by citing examples from different parts of the world. Moreover, it also discussed various aspects of political criticisms.

17 Apart from the articles and other writings on science and its applications, (which is the main theme of this chapter), there were clear expressions of a changing perspective modern Kerala society, published in these journals. Here an attempt is made to make a peep into it.

18 For instance see, Choondayil C. Raghava Pothuval, 'Malayala Pathrangalum Masikakalum' (Mal), in *Rasika Ranjini*, Vol. II, No.3, Thulam 1079 (c.October, 1903), pp. 176-185.

Several examples of royal initiatives and measures curtailing the freedom of the press were also made known to the Malayalis through these journals.

Its context is historically important because during the colonial regime and the early stage of publication culture in India the government initiated the Vernacular Press Act curtailing the freedom of press and Journalism at the onset. Therefore these articles published during the late 19th and early 20th centuries in Kerala are politically relevant. Their historical and intellectual importance is that they extol the role of the media in informing the government about the plight of the people in general and influences it in shaping the policies. They also praised their role in shaping popular culture and modern sentiments among the people, familiarising them with new literature and social systems, as well as manners and etiquettes. Comparisons of English and Malayalam journals were made frequently.[19] Another important concern of these articles regarding journalism was the profit and riches that it brings back to the owner. Various sources of income derivable through these publications like advertisement and other publications along with the price of the newspaper were presented to the people, probably to inspire them for coming forward to the field of publications.[20] Thus the growth of a commercial perspective of the Malayali middle class was also reflected in such narrations. It should also be noted that this period was inspiring for people to come forward for new business and other profiteering ventures through colonial and other sources. It was witnessed by this period that so many people entered the business field and they acted as a motivational force of modern Kerala society.

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19 Such comparative narrations might have been intended to improve the conditions of these media. However, they are useful for the reconstruction of the history of journalism and the analysis of the actual position of these early journals.

20 K.C. Veerarayan Rajah, 'Varthamana Pathrangal' (Mal), in *Mamgalodayam*, Vol.II, No.1, Vrschikam 1085 (c. November 1909), pp. 3-11. However, as far as the present study is concerned, it reflects the process of commercialisation and the growth of a capitalistic social formation in modern Kerala.

As just mentioned above the necessity of commercialising the production and attracting more people especially educated and unemployed people towards commerce and business have been serious concerns of the middle class. The emergence of a capitalistic perspective among the intellectuals along with the general society reflected in such inspirational articles in these publications. Almost all journals published during the early 20th century were highly concerned with it. They campaigned for promoting technical education among youth and commercialising the small scale home-made products of traditional producing communities like 'Kosavans', 'Kammalars' etc. An article in *Rasika Ranjini* extols some initiatives from the local people and urges for their propagation. It also highlights the requirements and patterns for technical education and the proposed contribution of such education to Malayali society.[21] These journals and articles expose various products and materials abundantly available in Kerala, highly demanded in the national and international markets and basic requirements of day to day life. They also demand the conversion of various traditional pieces of information and knowledge into the industrial productions which would bring up higher income for the people especially young ones undergone such technical education in institutions similar to those at Bombay and some European countries.[22]

One of the important paradigmatic shifts is that there were several articles suggesting provisions for scientific training of agricultural activities during the late nineteenth century itself.[23] They more or less specifically suggested that it is only through such trainings that an increase in the quality

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21 Puthezhathu Govinda Menon, 'Vyavasaya Vidyabhyasam' (Mal), in *Rasika Ranjini*, Vol. IV, No.1, Chingam 1081, (c. August 1905), pp. 28-33.

22 *ibid*. This was a clear indication of the transition into modern Kerala that the shift from the philosophic and intellectual perspective of knowledge to the assertion on practical and technical perspective and taking knowledge along with the products into the market.

23 K.K.M., 'Vidyabhyasam' (Mal), in *Vidya Vinodini*, Vol. V, No.9, Mithunam 1069 (c. June 1894), pp. 199-202.

and quantity of production and thereby promotion of direct commerce and industrial production could be brought about. The middle class argued for scientific training in crafts and industrial knowledge instead of learning through mere practical experiences. To them training in the traditional way, through practical experiences handed over by generation to generation reduce the chances of innovations and meeting the new challenges, as they would help only in the reproduction of the knowledge held by previous generations and trainers.[24] Therefore, to the scientific and technical learning would only be fruitful in bringing any intended changes in the socio-economic conditions of the people. Quite interesting is an article in *Vidya Vinodini* monthly in 1890 titled *Mooladhanam* (capital) in this context, which had been discussing the rational utilisation of resources, conversion of an asset into capital and the methods of reproducing capital and thereby bringing up socio-economic progress to the region.[25] It ridicules the traditional elites in a satirical language for the waste and unproductive expenses incurred by them and ritualistic excess in their routine life. The article renounces the investment in consumer goods and encourages people to propagate the need for engaging and promoting investment in industries, which would extend the reproduction of capital and enhance the socio-economic conditions of the people. To quote such a sentence from the article, 'the wealth utilised for further production of wealth can only be called as capital, which can be spent in both recurring and non-recurring investment. Therefore much attention should be made to the enhancement of investment in products of recurring demands that would further the possibilities of capital formation and thereby socio-economic change'.[26]

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24 *ibid.*, p.201. The caste and kinship-based training were confined to learning through apprenticeship, working with trainers especially previous generations of the family including parents, which had become insufficient for the changing capitalistic socio-economic circumstances.

25 *Vidya Vinodini*, Vol. I, No.5, Kumbham 1065 (c. February 1890), pp. 20-24.

26 *ibid.*, (Translation mine, assertion added).

Another article in the same journal in a previous volume entitled '*Bhoomi*' (land), explains different methods enhancing production from agriculture and better utilisation of land. According to the article, investment in the mechanisation of agriculture would be helpful for only large scale cultivators; others will have to enhance the production through improving the productivity, fertility and quality of the land.[27] The article insists on manuring with 'chemicals suggested for the land' and using better plough shares as well as good and healthy oxen.[28] It also suggests mechanisation of agricultural processes like threshing, harvesting, etc. in large scale cultivation which would increase the profit.[29] It suggests cooperation of peasants for purchasing such expensive machines as the small scale cultivator investing on them, would only increase the burden and waste resources.[30]

One of the impressive aspects of the debates among the new middle class was the economic prosperity for national rebuilding. This was evident from some articles and other writings of the early 20th century. It should also be noted here that anti-colonial nationalism was emerging into more popular level during the early 20th century and the newly emerging middle class was at the helm of such movements all over India until the emergence of massive Gandhian programmes. 'The national consciousness and its prosperity to be aimed in commercial and industrial ventures' was the spirit of an article in

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27 *Vidhya Vinodini*, Vol.I, No.3, Dhanu, 1065 (c. December 1889), pp. 23-24.

28 *ibid.*, p.23. It is quite interesting to note that the differentiation of land according to the soil conditions and qualities and application of chemicals and fertilisers according to it, which became wider in the agricultural sector of Kerala only by the second half of the 20th century had influenced the intellectuals by late 19th century itself.

29 This requires a clear shift in the level of knowledge not only because of the replacement of people by engines but also because the various process of agriculture, being the major source of feeding the society, was connected with higher ritualism and superstitions. To transcend such notions and understandings a clear break with the traditions was required at least at the epistemological level.

30 *ibid.*

Mamgalodayam.[31] This article not only reveals the growing impression in trade, commerce and prosperity but the emergence of the nationalist consciousness and the belief in the attainment of commercial and economic self-sufficiency which would bring up the pride and honesty among the people of India. The article propagates nationalism and concerns for the fellow beings and their prosperity in all aspects of economic activities, production, sales, riches, capital, money lending etc. it states 'those who wish to bring wealth and riches to him and prosperity to the country would surely indulge not only in amassing wealth but would meet the needs of other people, employment to the unemployed, helps to the workers, capital to the nation. In short, he is working for himself and the nation simultaneously'. This is just opposite to the treacherous amassing of wealth, creating unemployed and destitute through exploiting people.[32] However, it cautions people of possible deceit in their practical business. It clearly states that 'Patriotism should be in mind and activity not merely in posters'.[33] It also educates the customers, that they, in their process of buying, should hold the concern for the nation and fellow beings above all.[34] The articles conclude by stating that until our country attains prosperity like other nations of the world all people have a responsibility towards it for upbringing it and attaining the goal.

The relevance of trade and commerce along with industrial progress has influenced the society to the extent that even the *Namboothiri*

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31 K.Sankarakkurupp, 'Indiayile Vyavasayangal: Deshabhimanavum Kachavadavum', (Mal.), in *Mamgalodayam*, Vol. VII, No.1, Vrschikam, 1090, (c. November-December, 1914), pp.15-22.

32 *ibid.*

33 *ibid.*

34 This period, early decades of the 20th century, is marked by the growing nationalism and anti-colonialism in different parts of Kerala as well. Therefore the growing sentiments among the new middle class for the prosperity of the nation and self-sufficiency are the historic symbol of the age. It also indicates the social shift towards a consumer society from the semi-feudal self-sufficient village societies. Therefore, such articles, like the one cited here has both social and political implications.

Yogakeshma Sabha, which is the organization of the *Namboothiris*, (who claim to be the Brahmins of Kerala and thereby the socio-cultural elites of traditional society) through their mouthpiece *The Yogakshemam* weekly, published an article on the importance of trade in the future of India.[35] Though they did not accept the general call for independence and self-rule, as evident in the article itself, the author reiterates the importance of trade and industry in the prosperity of any country.[36] The article extols the industrial and commercial conditions of various nations and the riches and status of these nations brought about by these activities. It traces the examples of Britain, Japan etc. He extols the role of trade in the history of India (as he perceived it) and the infiltration of various nationalities and cultures into India in different stages of its history. Thus the general debate on the socio-economic progress can be said to have influenced various sections.

Health, sanitation and hygienic conditions of Malayalis perceived in the new system of medicine had been one of the serious concerns of the new middle class. Many of them held a critical approach not only towards deteriorating health and sanitation conditions of the society but also towards the systems of medical practices especially local traditions, ayurveda, yunani, siddha vaidyas and their knowledge systems as well as methodologies. Many of them attempted to give modern understandings and ways of curing diseases

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35 Namboothiris as a class is known to be the most traditionalists and well-wishers of the bygone era as they were the beneficiaries of many of the social evils and institutions including the caste system. This journal openly stands for reinforcing traditional norms and values which led the youth wing of the organization, after prolonged agitations within the organisation to break with it and publish a new journal *Unni Namboothiri*. The latter published, under the leadership of progressive youth including V.T Bhattathirippad, E.M.S. Namboothirippad, M.R. Bhattathiri, etc.; several revolutionary articles and other writings challenging traditional norms. It was in this journal that V.T Bhattathirippad wrote his frequently quoted article "Ini Namukku Ambalam Thee Koluthuka" (Now we Set Fire to Temples) as cited above.

36 A.P. Madhavan Nair, 'Kachavadathinte Pradhanyavum Indiayude Bhaviyum' (Mal.), in *The Yogakshemam*, Vol. XI, No.8, Thulam 27, 1096, (November 12, 1920), p.6.

and various inventions. The germ theory of diseases, vaccination, newly recognised diseases, failures and reforms in traditional medicines, chemistry, the constitution of the human body, etc. had been widely discussed and debated by the middle class. Most of them accepted the need for reforming health and sanitation conditions and educating people on the ways of better and modern life for the well being of society. The failure of traditional medical practices in curbing new diseases and epidemics such as cholera, leprosy, etc. led to a wider debate on the systems of medicines in detail which shook the foundation of traditional medicine including ayurveda to a certain extent.[37]

Bodily hygiene and cleanliness became a serious concern of the new middle class with the spread of the idea of the germ theory of diseases. They described various benefits of daily bathing and keeping the surroundings clean in scientific epistemology. The application of soap in baths and the necessity of keeping clothes and body neat were highly reiterated in their writings of the late 19th and early 20th centuries. Apart from the earlier moral and spiritual aspects of cleanliness newer generation and the middle class stressed the germs and microbes in the need for keeping clean. An article in *Vidya Vinodini* in 1892 asserts the virtues of daily bath as it provides defense against skin diseases, cooling the body, cleaning from sweat, etc. precautions for bathing and swimming are also prescribed in it.[38] The article

37 It was in this context that large scale reforms in ayurveda by adopting various knowledge, and techniques from modern medicine has experimented. Ayurvedic practitioners were trained in modern medicine by the practitioners of modern medicine. *Dhanwanthari* a monthly publication was started for teaching and debating medical knowledge by the Kottakkal Aryaviadya Sala, in which the knowledge systems of modern medicine were also made available. For a detailed understanding of the process of modernising and popularising ayurveda by P.S.Varrier and his new venture during the 20th century see, M.R., Raghava Varier, *The Rediscovery of Ayurveda: The story of Aryavaidya Sala, Kottakkal*, New Delhi, Viking for Penguin Books India, 2002.

38 C.D.D., 'Dehashuddhi' (Mal), in *Vidya Vinodini*, Vol. III, No.12, Kanni, 1068, (c. September 1892), pp. 259-262.

insists the hygienic lifestyle of cleaning mouth and teeth, bathing and washing clothes daily. Another article by the same author in another volume of the above magazine gives a detailed understanding of the materials and elements surrounding as and the necessity of keeping them clean all these three conditions of elements that are solid, liquid and gas in order to be healthy. It applies scientific notions and experimental methods in describing and explaining various phenomena of life and the universe. The constituents of the atmosphere, human body, blood circulation, etc. were used for establishing his argument.[39] The author prescribes some hygienic measures in the article like keeping the body, clothes, home and surroundings clean and neat, ensure good air passage inside houses, apply dry ashes etc. at wet spaces, whitewash homes regularly, apply calcium carbonate at required situations, apply perfumes regularly, etc. It is interesting to note that such articles raising concerns of the people were frequent in those journals in the situations of spreading cholera, smallpox and such other epidemics.[40]

The newly emerged middle class alerted people of the seriousness of polluting water, air, etc.[41] Healthy, and nutritious food was another major concern of the people. In taking of the health and nutritional values they were not concerned with tradition and taboos. They graded the different food items available here on the basis of nutritional value to a different category of people according to their age. The quantity of food required to each category of people and its ingredients was described for the general masses through these articles. Moreover, the healthy habits of consuming food and sufficient quality and quantity were prescribed through popular journals.[42] Another

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39 *Idem*, 'Arogyaraksha Margam' (Mal), in Vidya Vinodini, Vol. V, No. 3, Dhanu 1069 (C. December 1893), pp. 53-60.

40 This author, C.D. David (pen named as C.D.D) himself had written series of articles on health and related subjects in various issues of *Vidyavinodini* monthly.

41 For instance, see *ibid*.

42 *Idem*, 'Arogyaraksha Margam: Bhakshanam' (Mal), in *Vidya Vinodini*, Vol. V, No. 5, Kumbham 1069 (c. February 1905), pp. 113-116.

impressive aspect in the discussions among the new middle class indicating a shift from the pre-modern conceptions to the modern practices was the importance given to physical exercise and routine mental rejuvenation programs. Until then physical or mental exercise was not considered distinct or from daily labour or other physical activity but now it became part of the routine and a symbol of honesty.[43]

More interesting is to not the emergence of gender sensitivity, when all persons irrespective of their social status began to be acknowledged with his personal/individual identity as a new phenomenon. Women also began to be considered as a complete individual possessing personal identity and esteem. It is reflected in various writings. Here, in these debates, separate consideration for exercises required and plausible for women was also made, though which invited criticisms from traditional communities.[44] However, health and sanitation became one of the serious concerns of the newly emerging middle class, accompanied by modern ways of life and aspirations. It brought up several changes in the way of life, leisure time activities and approaches in general. Practical shifts, apart from these discussions, to the new ways and approaches towards life was quite unacceptable to larger sections of society who had linked their world view with religious and socio-economic as well as political conceptions which altogether constituted the traditional life in Kerala. However, gradual acceptance and adaptation to various novel patterns were made possible through the interference of the new middle class.

Large scale criticism and resistance against traditional approaches of practical inhuman and birth based distancing of people in the name of caste

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43 Though, *yoga* and other exercises are seen in literary tradition, they seem to have been an activity for yogis or seers who are not supposed to engage in any other physical labour. Anyhow, such practices were not there among common Malayalis until the recent reintroduction of traditional beliefs and practices.

44 *Idem*, 'Arogyaraksha Margam: Deha Suddhi' (Mal), in *Vidya Vinodini*, Vol. V, No. 6, Meenam, 1069 (c. March,1905), pp. 127-133.

system and practical agitations and open breach of such regulations and customs by the revolutionaries and new middle class, as discussed in the previous chapter, made the entry of modern conception of humanism and rational social life possible in Kerala. This brought about a practical shift in the social and cultural aspirations and discourses of modern Kerala.[45] However, these changes were not all-pervasive nor did they receive any rapid all-round acceptance, but it was crucial in changing the course of the history of modern Kerala. Apart from the challenges posed by the revolutionaries against the practice and ideology of the caste system, there were different attempts by many scholars to the theoretical understanding of human racial and birth oriented divisions. They attempted to explain the irrationality of such a division of human beings and tried to trace the genealogy of various anthropological groups. However, it is interesting to note that many of these journals did not address the questions of the caste system and its atrocities against the lower class people until powerful anti-caste movements were emerged and spread all over here.

Though there were several anti-caste agitations in the second half of the 19th century under the leadership of people like Arattupuzha Velayudha Panikkar etc., they could not shake or revert the general conscience of society nor the emerging middle class in general. It was the movements of the second wave anti-caste struggles under the leadership of some sections of the, aforesaid middle class that there reflected the waves of such movements among the middle class and they began to address the issue. More precisely it was after the '*Panthi Bhojanam*' (inter-caste dining) struggle under the leadership of K.Ayyappan reflecting its waves all around, discussed in detail above that there began to emerge critical and serious articles and other writings on the downtrodden castes and untouchability in several journals. It

45 However, it is not claimed that there was a sudden break up in the caste system and humanisation of people was possible by the 20th century. At least some alterations and alleviations in severity have been made possible by such revolutionary interferences.

was in the year, 1917 that is marked with historical anti-caste, touchability movements, that *Mamgalodayam* began to publish series of articles on Pulayas taken and translated from *The Cochin Tribes and Castes*.[46] This was continued in the succeeding issues and reflected in other journals as well. Until then, the lower caste people were depicted as fugitive and mysterious groups in several journals published and contributed as well as read by people belonging to upper class and royalty.[47] Such articles like those in Rasika Ranjini describe them as a people of mysterious life and doing sorcery against anyone they hate. It was these popular beliefs held by the society in general that were used to distance people from such lowest caste groups. There were several such stories spread all over Kerala with regional variations. However, all of them were repeated as experiences of the 'previous generations' and renewed or added accordingly.

However, with the emergence of the middle class from lower strata of society as described earlier, things began to change, they problematised the logic of various stigmas and institutions, which were kept sacred and unquestioningly accepted until then. Their publications like *Mithavadi, Desabhimani, Sahodaran, Kerala Kaumudi, Arayan, etc.* They produced several books, organised educational movements, legislative Assembly interferences, strikes and other agitations, etc. All these made their reflection among various groups and elites as well. Through these movements, they roused various problems faced by them that would stir the society in general. However, it was not clearly and wholeheartedly accepted even by people belonging to these oppressed groups and caste possibly due to two reasons (1) those people historically being exploited held these exploitations and

46 K.Parameswarakkurupp, 'Pulayanmar' (Mal), in Mamgalodayam, Vol.X, No.1, Medam, 1092 (c. April 1917), pp. 58-62.

47 Rasika Ranjini in three issues of Vol. IV, published articles on Parayas, which dealt with their life, belief, worship, sacrifice and sorcery. These articles repeatedly used various fears and beliefs on the parayas held by other people. But not a critical understanding of the same for details see, Rasika Ranjini, Vol. IV, Nos. 6-9, Makaram-Medam, 1081, (c. January-April,1906).

oppressions as a divine curse on them and therefore, unquestionable. (2) Many people who though realised these oppressions and exploitation had held that such chronic practices can only be eradicated and abolished gradually; otherwise such movements would prove fatal and yield reverse effect.[48] However, the movement inaugurated by 'Sahodara Sangham' and other revolutionaries have been adopted and repeated at several places which also led to touchability and approachability agitations and breach of customs in open spaces all over Kerala irrespective of politico-cultural differences. For instance, it has been reported in various issues of 'Sahodaran' that various incidents of the massive breaking of customs and untouchability have been occurring under the leadership of revolutionaries and innovators. For instance it has been reported that during the procession, in connection with the *Sashtipoorthi* (60th birthday) of the king, a group of revolutionary youth at Muthakunnam in Travancore had marched through the road (similar to the one led by Ayyankali, mentioned above) by violating the custom, as it was forbidden for them to use this road on the basis of their castes until then. It is interesting to note that though no such royal orders were rejecting them permission to walk on this road people refused to use it, due to the threat from local elites.[49]

In another incident reported that Krishnethi Asan, a Pulaya leader at Mulavukadu along with more than a hundred followers, converted to Christianity. While Krishnethi Asan was asked of this event by Mr.

48 Even poet, Kumaran Asan, who stood for social change hesitated to accept such radical movements like 'Panthibhojanam' by K. Ayyappan and other revolutionaries at the initial stage. He criticised them as 'hurling head long' from the height of their innovations. *Vijnhana Vardhini Sabha*, an organisation of local *Ezhava* groups, passed a resolution against revolutionaries like Ayyappan and declared them out castes and abused as '*Pulayan Ayyappan*' etc. However, Kumaran Asan sooner realised the mistake in his misguided position and wrote his famous poem *Simhanadam* in which he asks for a revolutionary movement to eradicate the caste system which makes "people pollutive for other people", for details see *Sahodaran*, Vol.II, No.1, Kumbham, 1094 (c. February,1919), pp. 7-8.

49 *Sahodaran*, Vol. I, No.2, Thulam, 1092 (c. October,1917), pp. 27-28.

Bodhananda Swamikal, President of *Ezhava Samajam*, he is said to have replied that the 'Ezhavas have been trying to improve their condition within Hindu religion for about 20 years (indicating the establishment of SNDP Yogam) but could not put a single step further in their conditions, therefore there is no hope for us in working for progress by remaining in Hinduism any more'.[50] In another incident at Chengannur, the women collective convened for marking the celebration of 60th birthday of Travancore King, Mrs. G. Krishna Pilla asked women gathered there to practice interdine and promote their children for doing the same irrespective of caste and creed.[51] It has also been reported that at Calicut Zamorin's estate collector had erected a board refusing people belonging to the untouchable castes permission to walk through the road near Thali Temple which was not only breached but also reported directly to the collector under the leadership of C. Krishnan and his Comrades.[52] In another issue it is reported that in the N.S.S. School at Karukachal students belonging to Pulaya castes and other castes dine together.[53] In another incident at Cherthala people belonging to different communities like Nayar, Ezhava, Christians ate together which was not checked by traditionalists at Cherayai.[54]

A major movement reflecting the influence of Sahodara Sangham and other anti-untouchability movements in Malabar was reported in Sahodaran that more relevant and applaudable than the Tali Breach by C. Krishnan and others was the movement at Meenchanda near Calicut. According to the report 'a meeting was convened on November 18 here by the revolutionary youth who were numbered around 50 people marched on the public road and approached some Brahmins and other upper-caste Hindus and told them that

50 Quoted in *ibid.*, p. 27.

51 *ibid.*

52 *ibid.*, p.29.

53 *Sahodaran*, Vol.I, No.3, Vrschikam, 1093 (c. November, 1917), p. 43.

54 *ibid.*

'We are Thiyyas'. This astonishing movement was applauded by various groups and call for repeating this at several other places were raised. however, no such major event was repeated anywhere'.[55]

Another important incident reported in *Sahodaran* was of political importance in the context of growing nationalist sentiments and anti-colonial movement all over India, that Dravidian association at Rangoon and Madras Dravidians have submitted a memorandum to the British Secretary of State that India in the present condition of caste-based oppression should not be given self-rule. As the caste system and oppression based on this can only be eradicated by the Europeans who are not led by such divisive ideology. It also requested that 'a committee constituted by the Europeans should be appointed entrusting the study of the problems of lower caste people'.[56]

It should also be noted that these middle-class movements and writings were not confined to the claiming of equality or the mobility and status of their community by the middle caste groups. Instead, they raised severe criticisms against the logic of priest-hood, superstitions, royalty, godliness, etc. They criticised the middle castes in the hierarchy for keeping an antagonistic and distancing approach to the people lower to them in the strata.[57] Therefore the revolutionaries among the middle class always demand

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55 *ibid.*, p.44.

56 It was during the early stage of the anti-colonial and national movement that such a piece of news being reported here. There were larger debates about joining Anti-colonial Movements and Congress in Kerala. Therefore, this report has historical relevance. For details see, *ibid.*, pp. 43-44.

57 The caste system is a complex hierarchical ideology. There are hierarchical relations among the castes and within each caste. They keep a distancing approach with each other. The upper castes hold untouchability with the middle castes while they, in turn, follow the same approach towards different sub-castes and groups lower in grade to them. In this way contact, relationship and transactions are checked among them. Therefore just like the upper caste people those belonging to the lower ones have similar responsibility and role in maintaining the system. Therefore the movement against this injustice has to overturn the entire system to make any change in it.

speedy and lasting movements sufficient for making the system fall. The reflection of the movements was illuminating from different parts of Kerala. By hearing the news of various movements in different parts of Malabar, Travancore and Cochin several people came forward to work for social change. Scientific temper acted as an arbiter of their logic and arguments for social change. They held scientific and logical positions on various issues and the forces of their arguments necessitated each people and group to take a position on social issues and institutions.

Scientific Temper and Division Among the Middle Class

The changes in society and social structure have been reflected in the writings of the late 19th and early 20th-century middle class. By the late 1880's several literary forms including novels, stories, poems along with articles, and other non-fiction had clearly expressed the changing mentalities and the thinking process as well as the general debates among the new middle class. This culture of democratic debates played a crucial role in the formation of modern Kerala with distinct socio-cultural formation independent of former proliferations. This is evident in the frequently quoted novels, *Indulekha* (1889) by O.Chandu Menon, *Parishkarappathi* (1892) by Kochuthomman Appothikkari, *Lekshmeekesavam* (1892) by K. Padu Menon, satirical *Parangodee Parinayam* (1892) by Kizhakkeppattu Ramankutty Menon, *Saraswathee Vijayam* (1892) by Pothery Kunjambu, etc. expresses different positions on new social changes.[58] t is to be noted here that, similar to the depiction of characters in these novels, the modern educated middle class were of different positions regarding the structure and future of Kerala society, pre-modern socio-cultural conditions and various social institutions. However, many of them accepted the deterioration and inequality that

58 However, all these works did not keep a monolithic approach towards modernisation and reforms. Some of them are of mutually opposing or at least of different positions against new changes. They are mentioned here to indicate the complexity of the modern social formation in Kerala and to represent various positions. This was also the case of other literary creations.

affected social life in Kerala but they differed on the possible reform or proposed solution for the current problems. They also took different positions on the changed and proposed socio-cultural and economic life which had practically come into being at different levels of the Kerala society. Many of them appreciated and stood for changed socio-cultural circumstances and the modern way of life while some others kept either antagonistic or skeptical approaches towards them. Yet some others kept a more eclectic position of accepting values, notions and acceptable Morales from both sides and stood for an altered socio-cultural condition. Some demanded and worked for swift and revolutionary changes while others stood for gradual and permanent social formation. Though there were marked differences among these positions they can generally be categorised into three broader positions for the convenience of the present study.

A short story appeared in the *Mamgalodayam* monthly in 1916 titled 'Kalam Poya Pokku' would clearly express the changes in society and different responses to these changes.[59] Though the story, written by C. Kunhirama Menon (always known by the pen name as the inverse abbreviation of his name, MRKC in writings in various publications of early 20th century) who takes critical or even antagonistic positions towards modernisation and reformatory movements by the revolutionaries among the middle class, it's reading (at present) would clearly bring about the picture of practical social change and criticism towards them.[60] These criticism are also available through articles and responses in various journals by other writers therefore reliably a realistic approach can be made towards the framework of the story. The story is set as the changes in a traditional agrarian elite family

59 M.R.K.C, 'Kalam Poya Pokku', (Mal.), in *Mamgalodayam*, Vol. IX, No.8, Vrschikam, 1092 (c. November, 916), pp. 202-213.

60 This author had also written extensively in various issues alarming against new reforms and changes and extolling the ancient socio-cultural conditions.

with the arrival of an educated reformist.[61] 'The first entrants of innovations were tea, coffee and sugar, which replaced cold gruel (*pazhamkanji*) in the morning and later on at several times a day.[62] branded bread and biscuits replaced their country foods, condensed milk became necessary, all these led Ekkavu and others timeless and hard-working apart from heavy expenses incurred to the family. They began to use branded bathroom soaps, kerosene lamps, table lamps, bedroom lamps chairs, tables, cup, saucer, jacket, trousers, boots, dish, the plate which replaced several traditional utensils and lifestyles. The catastrophic change according to the narrator was the modern education and consequent innovations in the whole family set up.[63]

According to the narrator of the story the entry of English education, made the children 'useless' to the family, the boy, in two children, after imitating the Europeans became a social nuisance and was arrested for some crime.[64] He led his friends also into problems as they (those who did not go to schools as well) imitated him in styles and dressing they had to steal the money, ornaments, etc. from their families and subsequently from outside.

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61 In the story Nair Madom (an elite Nair household) at Mukundapuram witnesses several innovations after advocate Krishna Menon starts *Sambandham* (a type of authorised sexual/commitment relationship among upper caste Hindus, especially different sub divisions of Nair and Namboothiris castes) with Ekkavu Amma of the family.

62 Earlier people used to have cold gruel (most occasions remnants of previous night) with some hot-tasting chilli mixture in the morning which kept people healthy during their hard work. For a better understanding of coffee replacing the gruel in Madras see, A.R. Venkatachalapathy. *In those days there was No Coffee: Writings in Cultural History*, New Delhi, Yoda Press, 2008 (2006).

63 This is presented as the alarming changes when two children of the family began to be sent, after long quarrel and debate, to English schools, which made them blindly imitating teachers and English learned elite and leading them to several problems and life style complications. Such criticisms against educated people as imitating Europeans were quite common in the literatures of late 19th century.

64 This was also a common criticism that the Europeans and through their imitations the educated local people are morally weak and lead uncontrolled sexual and extravagant lives, destabilising the socio-economic system.

While the girl began to imitate the Head Mistress and other 'Mistresses' of the school, whose morality and lifestyle are highly questionable to the narrator. The common criticisms against educated women during this period was that they do not respect their husbands and other family members, as being done in the tradition.[65] Here the mistresses in the story, according to the narrator are married to some jobless fellows and made them sitting in the home and making homes for these ladies, who are earning money.[66] Moreover, they teach these girls stitching and other needlework and to imitate the European ladies (madamma) in dressing. Which are of no use in the traditional family and social system. They will have to depend on some tailors even for small stitching and alteration works in their home.[67] Moreover, these 'Mistresses' on several occasions criticise Hindu religion and teach the girls to criticise the local traditions for not giving freedom to women. He asserts that they always quote "...*Na Sthree Swathanthryamarhati*" from *Manusmriti* to cite this.[68]

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65 The same criticisms are there in several other works. For instance see the discussion in Kizhakkeppattu Ramankutti Menon, *Parangodee Parinayam* (MaIl), Thiruvananthapuram, Chintha Publishers, 2013 (1892), pp.51-64.

66 A clear inversion of the traditional elite practice, in which the role of a woman is to make home and that of the male members go out and earn money. The current inversion of husbands sitting in and making home and wives earning money for the family were considered as great humiliation.

67 Similar criticisms almost in the same words is seen in the satirical novel *Parangodee Parinayam* mentioned above. In which the hero criticises his modern educated cousin proposed for him, and the modern education system implemented by the missionaries and colonialists here in a dialogue with his mother. However, he do not directly oppose modern knowledge altogether, but find problems in the way it was implemented here. For details see, *ibid.*

68 This verses from *Manusmriti* have been frequently quoted by all who narrate the condition of women according to Hindu texts; in which it is stated that a woman should be 'protected by her father in the childhood, husband during the youth, by her children during the old age and therefore she do not require independence'. Here emerges the problem of practices and epistemology, though not being clearly problematised by the author. It was during the attempts of textual interpretation that the sources of local traditions were founded in the Sanskrit texts, as explained above. But in practice at least among the lower strata of the society there were no such binding to these textual tradition albeit the meagre influence of the Brahmanic cultural

Therefore, the girl and her friends want freedom like their mistresses, who 'visit other homes', 'shake hands with men' and 'freely engage with people without any restrictions' and they 'do not possess any morality concerned with sexual relationships'.[69] The duties should have been done by those children (if they had not gone to schools) in their home such as overlooking agriculture, homemaking and several other jobs are done by servants.[70] The break, in the tradition led to heavy loss and several acres of the land, had to be converted to *pattam* and were to be given for '*Keezhnadappu*' (sublease). By this time everything traditional in their home had been replaced by new patterns and types of equipment which 'lacked traditional strength and had to be frequently replaced, causing additional expense'.[71]

Another major change occurred was their shift to modern medicine in connection with maternity care.[72] Further, every slight unwell feeling was met with doctoral visits and 'English' medicine which made Nayar Madam a 'small hospital' very soon. As several families imitated them, the network of the

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traditions among the upper class percolated through Namboothiri cultures mentioned above. However, with the orientalist reading the foundation of the local practices became these Sanskrit traditions; which was assumed by the indigenous scholars as well.

69 The rough translation reveals the mentality of traditionalists towards modern education in general and educated women in particular. For the original see M.R.K.C, *op cit.,* 'Kalam Poya....

70 It was the way in which the feudal society used to reproduce itself. The children were introduced to smaller jobs and gradually they become well acquainted with the whole practices and replace their elders from the field. Thus unchangingly reproduce the knowledge and system as a whole and maintained the tradition through the ages without any formal inculcation.

71 *ibid.*

72 Ekkavu's pregnancy care and delivery was carried over under the supervision of a surgeon and by the nurses. Instead of traditional care and food she was given some 'English medicine' and it affected her health and that of the newborn child. She was told that breast feeding causes deterioration of her health and beauty, therefore, she refused to give breast feeding to the child. Instead it was given bottle feeding which turned to be fatal to its health. All these were some of the major criticisms against modern medical practices during the transitional period.

traditional workforce was broken and many of them became jobless; blacksmith, goldsmith and other Kammalar, Washer men, etc. lost their job and they had to search other means for life. This broke the traditional inter dependence of people in the village and everyone looked to the market.[73] The *janmies* did not continue their 'Polichezhuth' and they lost the kanam right of several agricultural fields which dissolved the whole family system. Krishna Menon, whose innovations led to all these miseries left with his 'wife and child' to some other house in town and the 'Karanavar' fell ill.[74] Court, magistrate, judge, etc. enter the story on several occasions. Finally, the *Karanavar* invites Krishna Menon before his death and tells him, how his innovations destroyed the whole village. His imitation of the Europeans, whose lone intention was to spread Christianity and ridicule 'Hindu tradition' was fatal to the society.[75] Thus realising his folly Krishna Menon decided to deform his modern life and return to the traditional system and bring back the 'lost glory' to the family and village'.[76]

This story briefed above seems to be a realistic expression of the practical changes and different responses to these changes in Kerala society during the late 19th and early 20th centuries. It also provides the discourses and

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73 This intrusion of capitalism in to the rural life was linked with new life style, which in turn was allied with new knowledge and social formation. Thus capitalism, modern knowledge and scientific rationality etc. had an intermixed appearance, which led to understanding, acceptance, rejection and criticism of them together.

74 This is the clear indication of the disintegration of traditional family set up and the formation of new 'micro-families' with a husband, wife and child constituting it, which was a symbol of modern family system.

75 This argument was commonly used as a claim for counter reform movement. However, this was made possible through an intermixed understanding of all changes together. This cultural understanding was fatal to the reforms and caused the outright rejection of modern science and its rationality as part of an exterior culture.

76 This end of the story also has a realistic touch as it was a common phenomena that by the early decades of 20th century witnessed several attempts of re-traditionalisation and counter reform movements were common Kerala. This process led to communalisation of the society at large.

counter mobilisations prevalent in the society leading to a complex process of social formation with remnants and traces of different traditions, cultures and new interpretations. These changes and various responses including counter-reform movements, both practical and ideological or theoretical has been explicit in various writings of the period. The publication of various literary works including novels and the journals along with the transitions in the social reform movements helps to reconstruct the complex process of the social formation of modern Kerala. There were different positions among the new middle class which can be grouped into three broader positions according to their leaning and for the convenience of the present study.[77]

Modernists

The modern education and subsequent reading and debate culture, as well as employment and educational opportunities outside, created a group of people, who constituted the modernists among the new middle class mainly from traditional middle and upper castes.[78] These modernists were very much adaptive to the changed social circumstances, many of them were educated from modern educational institutions either inside or outside present Kerala including Madras or Bombay, Calcutta, etc. and had wider reading habits and acquaintance with literature including in English and Sanskrit. Most of them were B.A graduates and some had an additional B. L degree.[79] They wrote on

77 However, there is no direct means to specifically realize the response of the common people and general working class towards these novelties, apart from their technological adaptations and practical changes. Notwithstanding the characters from working class background represented in these narrations and later responses towards the social reform movements are used as the sources for analysing their responses.

78 This class characterisations were caused by their early expositions to modern education and subsequent socio-economic changes as discussed in the previous chapter. However, this was extended very soon to other classes and categories as well.

79 It is interesting to note that many of the people belonging to this category were those graduated from outside Kerala or those had gone out for study or work. Some were even gone outside the country and were studying in London, Paris

new discoveries, new knowledge, scientific theories, technological advancements, medical and socio-economic progress all over the world in a manner of inspiring and easily understanding to the people of Kerala in general.[80] They stood for new knowledge and social situations and changing the Kerala society in accordance with this knowledge and culture.[81] They were critical towards the traditional knowledge and culture and extolled the possibilities of new social systems.[82] They appreciated new movements and dreamt a new life and society in Kerala based on the knowledge, technology and economy brought up by the modern education and its world view.[83] They appreciated various discoveries and technological advancements and briefed them all to the people of Kerala through various journals and other publications in Malayalam.[84] However, they kept an uncritical approach

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or New York. They wrote what they experienced new or relevant to the people of Kerala through those publications mentioned earlier. Most of them were B.A (Bachelor of Arts) holders or even had an honours degree, some were B.L (Barrister at Law - popularly known as Bar at Law) and some were Masters in various subjects and few others medical practitioners and again some were highly influenced by them all. In short their exclamatory notes and narrations on technological, scientific and social advancements were widely published and read in Malayalam journals during late 19th and early 20th centuries.

80 Various journals of late 19th and early 20th centuries contain several such articles written in an inspirational language. For instance various issues of *Rasika Ranjini, Vidya Vinodini, Mamgalodayam, Kairali, Dhanwanthari*, etc. are suggestible.

81 To them the knowledge traditions of pre-modern Kerala were insufficient for the growth of a new society based on modern ideals and similar to those experienced somewhere else.

82 However, many of them did not directly participate in the social reconstruction process. Their main concern was the intellectual tradition and technological advancement of the society with new facilities. But this do not mean that there were no traces of such positions among social reformers. For instance, the positions of rationalists including K.Ayyappan etc. belonged to this category.

83 However, many of them were very much mechanical and concerned lesser about society and they were upholding the emancipatory role of education, which were widely criticised by reformers.

84 For instance one of the article of representational character to this was published in 1904, for details, see (an anonymous article published by the name a student from London) London Vidyarthi, 'London Nagarathile Chila

towards colonialism and its capital or some of them even appreciated them and held that the only possible way forward before Indians is through Europeans.[85] They revealed a broadened universal and scientific concept before the people intended to extend their imagination and open up a ray of light emerging from science and its rationality to the Malayali imagination. They criticised the spirituality, priesthood and the innumerable number of gods which were found as blocking the imaginary terrain of the people.[86] It was their interference, rather than modern education, that laid the foundation of scientific rationality here.

Neo-Traditionalism

The spread of anti-traditional and revolutionary conceptions among the youth, the influence of the Kerala renaissance movements in general and new rational and scientific interpretations of traditions by the newly emerging middle class, in particular, led to the emergence of a vigorous reiteration of traditionalism sometimes with new logical arguments.[87] This growth of

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athishayangal'(Mal), in *Rasika Ranjini*, Vol. III, No. 3, Thulam, 1080, (c.October,1904), pp. 124-129.

85 This had been widely criticised by both traditionalists and other people alike. As mentioned earlier several novels, stories etc. for instance See, Kochuthomman Appothikkari, *op cit, Parishkarappathi*…..; Kizhakkeppattu Ramankutti Menon, op cit.,*Parangodee Parinayam*... etc. came criticising this position. Jourals also raised such criticisms; for instance see, Pattathil Padmanabha Menon, 'Adhunikarude Anashasyangalaya Chila Anukaranangal', in *Kairali,* Vol.III, Nos.7 and 8, Karkkidakam-Chingam,,1093 (July-August,1918) also see, Kunnathu Janardhana Menon, 'Pashchatyaparishkaram: Japane nokki Parayunnathu', in *Mamgalodayam*, Vol. X, No. 7, Thulam, 1093 (c. October,1917). etc.

86 In certain their assertion on these debate on god and supernatural forces led to the diversion from their themes and their misreading as the group against god and religion. It not only reduced their popularity and social relevance but submerging the serious debates and subjects raised by them.

87 Their world views and perceptions of knowledge clearly contradicted with the newly spread ones. Therefore, they tried to rediscover their rich and superior intellectual tradition either by inventing these new knowledge in them or by reintroducing and interpreting them in the new epistemology. This process of what Meera Nanda calls as epistemic charity was to establish the sanctity of

traditionalism among the new middle class either overtly expressed or covertly presented in the new epistemology can be categorised as Neo-traditionalism.[88] Its logics and justifications of traditional society and knowledge forms had the elements, influences and epistemology of both modern rationales and mere traditionalism. Therefore it is difficult to differentiate between this mere traditionalism and newly interpreted traditionalism (or traditionalism argued with new rationales).[89] Moreover they mutually helped and promoted which led to wider debates during the early 20th century. These groups held the superior position of ancient Indian intellectual traditions, and Vedic origin of knowledge especially Indian shastra knowledge tradition and allied culture.[90] Along with revealing the shortcomings and weaknesses of modern scientific knowledge and its propositions of rational social system they reiterated the greatness of the tradition along with their reopening through historical as well as heritage

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traditional knowledge in the changed situations. See, Meera Nanda, *op cit.*, Prophets… p.67.

88 They used scientific epistemology like energy, force, concept of universe, etc. in explaining traditional lores and interestingly quoted many European orientalists like Annie Besant etc. for reiterating the validity of ancient knowledge and religion. It was common in almost all journals of the period under discussion.

89 Such blending of traditionalism with modern scientific epistemology was seen in these articles and other narrations. For instance, see K.N.M., 'Aryavaidyappazhama' (Mal), in *Rasika Ranjini*, Vol.IV, No. 11, Mithunam, 1081 (c.June,1906); also see, Chirayinkeezhu P. Govindapilla, 'Pracheena Bharathathile Rasathatwa Vijnhaneeyam' (Mal), in *Mamgalodayam*, Vol.II, No.4, Kumbham, 1085 (c. February, 1910). etc.

90 It is interesting to note that these reiterated traditions mostly belonged to the elite cultures which was being established here as the common tradition of all people during this period. Therefore they attempted to reinterpret and reiterate their (ever superior) belief systems and practices in the light of modern science and its rationality. But it was mere assertions of the past rather than critical analysis of the traditional knowledge. There were several writings reiterating the Vedic origin of every knowledge all over the world especially scientific disciplines like chemistry (from alchemy), medicine including surgery and vaccination(from ayurveda), astronomy (from Indian astrology), etc. in journals including those noted above.

studies.[91] Therefore larger historical articles (interpreted in their perception) and republication of articles and quotations from various books were their chief activity for asserting their heritage.[92] They also translated books, articles and other writings from different languages into Malayalam and published them in popular journals and in the form of books. They generally asserted the importance of Sanskrit language in Indian culture and interpreted various knowledge and other languages in India and outside as deviations and extension of this tradition.[93] They produced counter-narratives to modern interpretations and history. The chivalry of ancient and medieval royalty and epic heroes were frequently published to reiterate the political and cultural

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91 It is to be noted here that people of this category hailing from any backgrounds had conceived their heritage as the elitist tradition. It might be due to the fact that by this time the orientalist notion of Indian history had achieved predominance here. All the other traditions including the practical experiences explained in the first chapter were conceived as the deviations of the general heritage.

92 History of Hindu culture(eg; 'Hindukkalude Gathi' (Mal), in *Mamgalodayam*, Vol. I, No. 2) , puranas (eg; 'Purana Granthangal' (Mal), in *Mamgalodayam*, Vol.I, No. 7), heritage(eg; 'Charithram' (Mal), in *Mamgalodayam*, Vol.II, No.2), ancient rulers(eg; 'Perumakkanmar (Mal)',in Mamgalodayam, Vol.IX, No. 6,7 ; 'Chandraguptan' (Mal), in *Mamgalodayam*, Vol.IX, No.8 and 'Sivaji'(Mal), in *Mamgalodayam*, Vol). X, No.11), shipping(eg; 'Pracheena Bharatheeyarum Kappal Yathrayum' (Mal), in *Mamgalodayam*, Vol. IX, No. 12) and commerce in ancient India(eg; 'Pracheena Hindukkalude Videsha Vyapti' (Mal), in *Mamgalodayam*, Vol. XIV, No.6), supremacy of Sanskrit language(eg; 'Samskrita Bhashayum Videsha Pandithanmarum' (Mal), in *Mamgalodayam*, Vol.V, No. 1), urban culture in ancient India(eg; 'Pataliputra Nagaram' (Mal), in *Mamgalodayam*, Vol.XIV, No. 5), materialism and atheism in the tradition (eg; 'Nasthika Matham' (Mal), in *Mamgalodayam*, Vol.IV, No.11) etc. (all the examples cited here are taken from various issues of a single journal to assert the breadth of such writings and debates.)

93 One of the chief area of such assertion was the field of medical system; all the medical knowledge including modern medicine were interpreted as the extension of a deviated form of Indian medical system formulated and developed by ancient seers, for instance, see a series of article in the field like, K.N.M., 'Aryavaidyappazhama' (Mal), *in Raika Ranjini,* Vol. IV, Nos.11,12, Mithunam, Karkkidakam, 1081 (c. June-July,1906).

superiority of ancient Indians.[94] Undeniable validity of ancient knowledge, the reinterpretation of ancient and medieval north Indian idioms, the justification for ancient and medieval socio-cultural degradation and injustices such as caste base oppressions and exploitations were widely published.

However, on various occasions, they accepted the chronic degradation of ancient institutions and social order with foreign invasions and newer religions as a justification for such changes were widely published.[95] Much important was the position on medical knowledge. They still cling on the Ayurvedic hymns for newly discovered epidemics and other diseases.[96] They held that every disease affecting the human body can be found referred indicated in the ancient Ayurvedic texts therefore, they are curable by this system. They, more or less unanimously accepted the orientalist position of Indian history, its religions and socio-cultural pattern.[97] However, they tried to locate modern science and its discoveries in the Indian traditions and epics with an extended meaning for ancient idioms.[98] Notwithstanding due to the

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94 For instance see K.S., Parameswaran Pilla, 'Haindava Veera Dharmam' (Mal), in *Mamgalodayam*, Vol. X, No. 7, Thulam, 1093 (c. October,1917).

95 M.R.K.C.,'Kalagathiyum Kali Kautilyavum' (Mal), in *Mamgalodayam*, Vol.X, No.1, Medam, 1092 (c.April,1917).

96 Numerous articles on the effectiveness of traditional medicine agaist epidemics and other diseases were published in Dhanwanthari monthly. For instance, see series of articles on Cholera titled 'Vishoochika' (Mal), in *Dhanwanthari*, Vol. I, No.1, 2, 3… (from) August, 1903 ; on plague, 'Plague allenkil Agnirohini' (Mal), in *Dhanwanthari*, Vol. I, No.6, Makaram-1, 1079 (14th January, 1904); on tuberculosis, see M.G., 'Kshayarogam' (Mal),in *Dhanwanthari*, Vol. I, No.10, Edavam-1, 1079 (14th May, 1904).

97 For example, see K.M.,'Charithram' (Mal), in *Mamgalodayam*, Vol.II, No. 2, Dhanu, 1085(c. December 1909), pp. 72-28. and also see another article by the same author, K.M., 'India Charithram' (Mal), in *Mamgalodayam*, Vol.II, No. 12, Thulam, 1086 (c. October,1910).

98 For example, see Chirayinkeezhu P.Govindappilla, 'Pracheena Bharathathile Rasathatwa Vijnhaneeyam' (Mal), in *Mamgalodayam*, Vol. II, No. 4, Kumbham, 1085(c. February,1910). also see, K.V.M., 'Viswolpathi' (Mal), in *Mamgalodayam*, Vol. II, No. 7, Edavam, 1085(c. May,1910). and by the same author K.V.M., 'Hindukkalum Rasashastravum' (Mal), in *Mamgalodayam*, Vol. IV, No. 2, Dhanu,1087(c.December,1911). above all the

growing influence of scientific knowledge and its technological advancement a scientifically justifiable interpretation of Indian culture and knowledge tradition was widely attempted.[99] They were supported and appreciated by the traditionalists in their own way. Thus this position led to the formation of debating and a proto-democratic social formation in Kerala. Therefore scientific knowledge either supporting or critically became a major theme of debate at the dawn of the 20th century.

Middle Position Turned Progressives

An obviously eclectic position evolved out of the confrontation of modernism and traditionalism in Kerala by the late 19th and early 20th century itself. People categorised as middle standers were not a unified group with unanimity of positions on some issues; instead their positions varied according to subjects and social circustances and relevance. Therefore their positions more or less completely acceptable for a wider group of people and could largely influence the social formation of modern Kerala. Many of these people were hailing from the middle caste social background and were the first generation recipients of modern education. Not being highly dominated by the sanskritised shastra traditions of knowledge they had no hesitation in criticising them. They were of a critical position towards traditional social order and many of its institutions based on modern world view and humanism as arbiter for acceptability.[100] It seems now that many of the middle class

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claim of all science embedded in Indian tradition in C.K.,'Shastreeya Thatwangal' (Mal), in *Mamgalodayam*, Vol.V, No. 8, Karkkidakam, 1088(c. July,1913).

99 One of such attempt was to write the hisory of Kerala by K.P Padmanabha Menon, which was published as series in *Mamgalodayam* itself. For details see, *Idem*, 'Adi Keralam' (Mal), in *Mamgalodayam*, Vol.VII, Nos.8...(from) Vrschikam, 1090(c. from November, 1914).

100 As stated earlier many of these groups were hailing from middle caste recently exposed to modern education. They were not culturally bound to elite Brahmanic cultures. Instead many of them had undergone caste based discrimination and were influenced by the ideas of liberty, equality and humanism etc. therefore based on such new notions they opposed many of the

belonging to this category had stood for an ecumenical character of knowledge. As evident from their stand points, the reformulation of the local knowledge and translating much scientific knowledge in to the local contexts was their major contribution. However, all of them did not voluntarily accept the scientific rationality in the form it was exposed before them; probably due to the presence of colonial and capitalistic mediation allied with scientific rationality the modern social form familiar to them.[101] Their formula had both the elements of revolutionary modernism and traditionalism at varying degrees depending on the problem.[102] Many of them stood for reforming the society by accepting modern idioms of scientific rationality and its technological as well as practical applications.[103] However, they did not

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practices and institutions including caste system, untouchability, etc. All of them were viewed as hindrance to social progress.

101 European colonialism and allied capitalistic system were identified as the agents of modern science and its technology in India. As mentioned above, due to the presence of an indistinguishably intermixed condition of modern science, colonialism and capitalism, the problems of colonialism and capitalistic greed were found natural allies of modern science and the social formation based on its rationality. Therefore many intellectuals, despite being critical to traditional knowledge and social order could not completely adhere to scientific rationality and its social formation.

102 It should not be mistaken that these people accept a mediocre position on different subjects; but it is very much difficult them to enumerate in any category due to their ambiguous positions. They take revolutionary and progressive stands on different issues, while taking explicitly antagonistic positions to modern conceptions on some other subjects and unspecific and ambiguous stands on yet some other matters. Therefore such extensive positions are brought together to form this group only for the convenience of the present study.

103 They used to explain various new discoveries and scientific phenomena through the idioms and epistemology of traditional society. For instance, see various articles in the *Vidyavinodini,* monthly like 'Bhooprakrthi Vijnhaneeyam' (Mal), in *Vidyavinodini,* Vol.V, No.2, Vrschikam, 1069 (c.November,1893) .

hesitate to appreciate and follow various elements of the traditional Kerala Society.[104]

They attempted to reinterpret various institutions and beliefs of traditional social order in the wake of new principles like humanism, liberalism and democracy and tried to translate modern scientific rationality in the epistemology social system familiar to the local people.[105] However, they criticised various stigmas and taboos of traditional order which stood against the progressive social formation, which opened up serious debates in the existing social order. Unlike many of the modernists this group openly came up and struggled for eradicating social evils and actively participated in the social reform movement.[106] This position extended the possibility of debate and argumentative culture laying the foundation for democratic social formation in Kerala. However, after the prolonged debates many subjects kept inconclusively open. In such circumstances a mediocre position was accepted with an eclectic character.[107]

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104 For instance an articled on astrology though accepting many wrong and evil practices have crept in to the tradition, its capability of predicting the future is appreciated. For details, see Oru Pracheenan(meaning a traditionalist), 'Jyothishastram' (Mal), in *Vidya Vinodini,* Vol.IV, No.2, Vrschikam, 1068(c. November, 1892), pp. 38-41.

105 As revealed from their writings many of them stood for altering customs that resist mobility of people. For instance an article on European journey titled 'Blathiprayanam' (Mal), in *Vidya Vinodini*, Vol.I, No.8, Edavam, 1065 (c. April,1890) stands for accessing European experiences for study and professional purpose; but it also takes an appreciating position towards Indian intellectual tradition and expresses pride on heritage as such.

106 However, as they were not antagonistic to traditional knowledge per se, their positions and call movements for social reforms were acceptable to the society at large. These *Ulpathishnus* (progressives) were in the front row of social mobilisation, educational movements, eradication of caste and other social discriminations, etc. It can also be said that it was from these groups later political mobilisations of various strata including radical left movements wereemerged.

107 This was evident in the large scale debate on education and the proposed character of education. For instance regarding the kind of education for the Namboothiri students, who had been undergoing the traditional education for a

They stood for educating all categories of people and gradual up gradation of society. They also accepted modern scientific understanding and its rationality for observing the world to a certain extent until it questions their basic conceptions. In such subjects they more or less held an ambiguous position. Therefore they could keep an argumentative standpoint with both tradition and modernism. They did neither accept modern scientific rationality as a whole nor did vehemently reject it. It was due to the historic condition of the 19th and early 20th century that they were forced to take such an 'ambiguous' position. The modern monetary economy allied with colonial and capitalistic advancements had such an exploitative character that it weighed everything on the basis of profit.[108] Thus profitary motive and exploitative character of colonialism and above all the spirit of religious conversion allied with the Catholic religion of Europeans, who were being propagated as the representatives of modern life wrongly in a genernalised manner, were the major factors distracting people from modernisation and its logic. However,

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long period, as mentioned earlier, a larger debate evolved whether they should be continued in the traditional system or brought in to new form. There were serious and prolonged debates in *Mamgalodayam* started between Punnasheri Nambi and Kodungallur Kunhikkuttan Thampuran. It was taken over by others like Mannarkkad Mooppil Nair, Kavil Avinhikkattu Neelakandan Bhattathirippad, Mutharngottu Bhavathrathan Namboothirippad in Nambi's side and Choorakkottu Mekkattu Narayanan Namboothiri and others on Thampuran's side. Some others also participated in the debate with eclectic positions. While Nambi and team stood for modern education, Thampuran's position was against it. He reiterated the cultural and intellectual superiority of traditional knowledge and its inculcation among Namboothiris. For details see various issues of *Mamgalodayam* from first volume onwards.

108 This expression is being made by a heinous character is the 19th century novel *Parishkarappati* by Kochu Thomman Appothikkari. This novel takes a critical position towards modernity and colonialism. A wicked and cruel character (naturally opposed to narrator's stand point) says that the 'aim of human life is to earn money. There is no good way or bad way in it; all of them are the creations of some philosophers. The good way in each age is the one in which majority earn the money. In this age it is to earn money any treacherous or deceitful way, therefore we should not hesitate to do that. What someone cannot do will be called as a bad way by him nothing more...for details see Kochu Thomman Appothikkari, *op cit.*, *Parishkarappathi*...pp. 84-85.

all of them were not sufficient to accept the injustice in the practice caste system and limitations of knowledge systems of traditional society.[109] Therefore an eclectic position could attract much more peoples towards them, probably due to the fact that, in taking such a position they neither had to disavow their inclination towards their tradition, religion and heritage.[110] It was relevant because of the fact that by the second decade of 20th century religion was frequently expressing in all sorts of debates in Kerala.[111]

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109 By this time the mobility attained by the lower caste people had led to wider antagonism and oppressions from the part of the traditional elite as discussed above. Through the efforts of reformers and revolutionaries the general sentiments of the society had began to grow against such oppressive practices. For details of such debates see various issues of the *Sahodaran*, monthly mentioned above.

110 It was a situation in which the dialogue between religion and scientific knowledge was at its peak here. After the first wave of modern conceptions and rationality there were increased interference of religious and traditional institutions and organisations in education as explained in the previous chapter. Thus both religion and modern education could procure together. Thus the debate whether modern education and tradition should keep antagonistic to each other. This is passively expressed in several debates. A specific problematisation is seen in an article in *Mamgalodayam* during this period. For details, see K.K. Kavalakkattu, 'Vidyabhyasathil Mathapadanam Thyajyamo?' (Mal), in *Mamgalodayam*, Vol.VII, No.2, Kumbham, 1091(c. February,1916).

111 As discussed in the previous chapter, while a major wave of early social reform movement was leaning towards scientific rationality, materialism, atheism and extra-religious social reform movements altogether, as explicit in the later responses Narayana Guru and his disciples themselves, an equally powerful wave of community reform movements were growing towards communitarianism and subsequent communalism. Therefore, wide ranging debates connected to religious beliefs were seen in the journals. By this time specific journals and other publications with proclaimed religious commitment were widely published from different parts of Kerala. All of them contributed to a communally divisive 1920s; which witnessed large scale violence with clear communal proliferation. Common problems and agrarian issues were linked with community and religious interpretations, as seen in the case of frequently quoted agrarian struggles of Malabar. The problems of day to day life of common people, education, etc. began to be explained with religious and communally interpreted popular cultures. Moreover, due to colonial and orientalist interventions, regional cultural variations observable all over Kerala, committed to the socio-political and cultural formations of those regions were ahistorically connected with major communities occupying there.

Moreover the utility, benefits and social status attached to modern technology and the opportunities provided by modern capitalism attracted people towards them, which did not require any commitment to theories or knowledge of modern science. Various manifestations of science including technology, urbanisations, automobile, electricity, different engines etc. were frequently expressed in their writings with utmost exclamations.[112] Thus the generation of Malayali middle class emerged after the spread of modern technology was highly admiring on them but their rationale was still committed to traditional beliefs and ritualism.[113] Thus the proponents of this position though they criticised tradition or caste system had wider acceptance in the society, due to their flexibility in position.[114] Many of the modernists

112 Almost all representations of modern technology in those articles are exclamatory in character, extolling the benefits, virtues and utility of these novelties. For instance, different possibilities of modern technology achieved in London in all sorts of human life is narrated in an article in *Rasika Ranjini*. It states, technical advancements had actually reduced not only risk of human life but has shrunk time of people required for each work in London, for details,see London Vidyarthi, *op cit.*, 'London Nagarathile…, Similarly narration on train by, Naduvath Mahan Namboothiri, 'Theevandi' (Mal), in *Rasika Ranjini*, Vol. II, No.5, Dhanu,1079 (c.December,1903). Also see description on aerial flying, in a developing stage at that time in C.S., Gopalappanikkar, 'Akasha gamanam' (Mal), in *Rasika Ranjini*, Vol.III, No.10, Edavam, 1080(c. May,1905), and later a more advanced narration in R.P., 'Parakkuvanulla Yanthram'(Mal), in *Mamgalodayam*, Vol. I, No.10, Chingam, 1085(c. August,1909). A different narration on various usages and applications of electricity is written by P.Subrahmanyan, 'Vidyuchakthiprayogangal' (Mal), in *Vidya Vinodidni*, Vol.VI, No.2, Vrschikam, 1070(c. November,1894).etc. Are a few examples.

113 It was in this circumstance that traditionalism expressed in modern scientific epistemology cited earlier began to appear in journals and debates.

114 It was due to the fact that though many of the social institutions were critiqued and restructured during reformative process, the basic characteristics and sensibilities were not affected by them. It seems that the convetionality of society was not lying merely in these institutions; instead they all were various expressions internalised belief systems, ideology and knowledge. However, no serious blow to such internalised knowledge could be forced by the reform movements or colonio-capiltalist mediated modernisations. The social revolutionaries stresed up on uprooting the graded inequality or changing the appearance of the society through socio-political and economic revolutions.

had to lighten their criticisms against tradition to get an acceptance in the society and implementing the immediate social change according to their priority.[115] Their acceptance is reflected in various debates and from the fact that these people who stood for reforming the society and changing various stigmas and taboos were often called in a more or less appreciable way as *Ulpathishnukkal,* as mentined above.[116] This position also influenced the formation of Malayali culture in the early twentieth century that the social structure, political consolidation, religious beliefs etc. have undergone changes to accept this middle path in Kerala.[117] Therefore, Kerala could keep a separate socio-political and economic character distinct from the general Indian scenario.

Encounter, Translation and Redefinition

The spread of scientific knowledge and subsequent novelties in Kerala led to the emergence of serious intellectual debate between its propounders and those of the already existing astrological and medical knowledge systems. Because the new methodological and conceptual framework required a more or less complete dismantling of many of the basic ideas, which were rooted and well spread as the intellectual and social system among the Sanskritised

115 This was evident from many debates evolved during early 20th century and directly addressed by them. For example see various debates and editorials in *Sahodaran* monthly cited earlier.

116 The term can roughly be translated as 'progressive'. This nomenclature indicates their acceptance that those who keep a critical approach towards wrong doings and injustice as well as tradition were known by this term. This continued up to mid twentieth century that even revolutionaries like communists and socialists were being called by this name and became synonyms to them later on.

117 Various socio religious and revolutionary movements formulated in the early 20th century share this middle position that all of them have distinct formation and characteristic from their counterparts elsewhere. Various elements of mutually opposing ideology can be seen in such movements, owing to this social formation.

or otherwise traditional elites and their associates.[118] Therefore this created a clear contradiction between what was held and what came anew among the people hailing from such backgrounds. Such contradictions were expressed in the debates published or otherwise. In this context the published debates can also be categorised into three broader positions similar to those mentioned above; that is modernistic, traditional and an extended middle position. Various subjects including education, new scientific theories, human-nature relationship, time concept, concepts of universe, god and religion, dressing and routines including food culture, etc., were widely discussed among the middle class as all of them had already established, systematised and structured conceptualisations here, which were either contradictory, conflicting or at least different from what came anew.

However, as mentioned above technological advancements in the fields of transport, communication, medical equipment, agriculture, etc. were easily accepted without much-conflicting debates. As they did not require any replacement of existing established systems than human labour, which had been a clear contribution of lower-class people in the social hierarchy.[119]

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118 Such class characteristics of culture were there due to the historical establishment of elite intellectual tradition of pre-modern Kerala, described in the first chapter. However, it remained more or less confined to these class and caste groups mainly because of the ideology of complicated hierarchical social order. Though their influences had gradually penetrated downward, they could not completely replace the previous practices in the lower strata of society. But regarding modern technology it could easily replace the existing counterparts among the lower strata of the society as they constituted the workforce of both traditional and new society. There were no theoretical or ideological confrontation in this process. While regarding the elites the novelties had to confront with the existing system of knowledge with well structured ideological support. This was evident in the belated entry of Brahmins and other elites in to the social reform movements and modern world view.

119 However, the facilities provided by modern technology including steam engine and transportation were not being resisted by the elites. Instead many of them according to the availability were adopted though involuntarily. The progressives in each family as in the case of Krishna Menon in the afore-cited story brought some of these new facilities in to each homes or villages and spread it there by itself by novelties and usages.

Therefore these changes affected different classes of people differently. As far as the lower class people were concerned these changes provided relief and opening to the regulated motions and daily life.[120] While to the feudal and princely functionaries and erstwhile royal servants the modernisation in general and colonial administration in particular provided chances for working for the new masters. To them, these changes were an extension of possibilities for entering into bureaucracy and state service. Therefore they witnessed these changes very much mechanically.[121]

Notwithstanding, the novelties in the practical and theoretical knowledge had reflections in the day to day life of Malayali required alterations and changes in the social structure and led to a complex social formation that had the elements of both traditionalism and modernism together.[122] However, these debates created turmoil at the beginning of the nationalist and anti-colonial movements, which also affected these debates and contributed to the evolution of modern Kerala. Another aspect seems to be relevant in this context is that those innovations directly affecting the lower strata of society, that is the practical expressions of new knowledge, such as

120 This does not mean that this knowledge themselves contributed to social change, but the social revolutionaries and new middle class, influenced by these novel ideas and world view agitated for social reforms. These reforms and extended modern education were the expressed form of new knowledge as far as the lower class people were concerned.

121 It has been largely discussed among the scholars that the European colonialism actually extended possibilities of traditional royal functionaries under new system.

122 Because many from the elite social background observed the changes as a reflection of the ideology of the colonial ruling class; in other words a shift from feudalism to colonial capitalism. Thus they assumed these changes as mere technical changes and attempted to grab the opportunities provided by the new system as well. They attempted to enter new administrative and bureaucratic platforms as they did in the previous systems, which did not require any intellectual change rather than epistemological alterations. This conflict can be seen in various movements of early 20th century Travancore, including Malayali Memorial, Ezhava Memorial, Reclamation Movement, Mobilisation for Responsible government, etc.

technological advancements, agricultural innovations, etc. were of direct capitalistic involvement and they did not create a situation of confusion, probably due to the fact that they did not require any theoretical displacement. Because people dealing with them were historically away from such discourses or rhetoric and the ownership of property landed or otherwise was vested in the hands of elites both under the previous and new regime.[123] However, the Namboothiris unlike other constituents of elites did not directly involve modern education and therefore, colonial administration. Many of them instead continued to enjoy the remnants of feudal system as they were not directly affected by the changes in the beginning.[124] This becomes relevant while realising the fact that the elites accepted even the practical advancements in their life comparatively later than others.[125] It was the historic setting in which the intellectual debate between the propounders of modern science and traditional knowledge occurred here.

Astronomical Knowledge

Though there were various traces of some heliocentric conceptions of the universe prevalent among ancient scholars, the general understanding and

123 Political, administrative and cultural authority had naturally remained under the same class in feudal and colonial administrative systems. The changes in both these system were merely epistemological. However, the changes in the class character was brought by the mobilisations and agitations under the leadership of newly emerged middle class and revolutionaries mentioned above. Which was naturally accepted by the colonial administration as their capitalistic interests did not affect by these changes nor did they bother about them.

124 They, being the holders of traditional elite knowledge system, continued unaffectedly with it in the beginning. It might be this lacunae between the traditional elite knowledge and the modern scientific knowledge that led to the absence of a clear intellectual revolution leading to the creation of a comprehensive or hybrid knowledge system here.

125 Social and religious reform movements among traditional elites took more time to evolve than the lower class. It was after the spread of reform movements among the lower class and as a response to such movements that the social elite realised the necessity and organised themselves under the leadership of newly emerging middle class among them.

common sense of pre-modern Malayali society continued to be a geocentric universe. During the medieval period the elite intellectuals due to the socio-cultural predominance of Brahmanic tradition viewed *Meru* mountain as the centre *Jambu Dwipa* which in turn perceived as the centre of the earth.[126] It is understood that people of pre-modern Kerala have generally conceived the geocentric universal system from the predominance of the particular zodiac, and connected almanac among people. However, there was the influence of the Philosophic traditions of Aryabhata, etc. among the scholarly community of Malayalis up to the modern period.[127] However, there is no observable evidence to generalise the conceptualisation of the universe among common people in Pre-modern Kerala. But it is assumed to be a more or less similar to the flat and round earth and a parallel sky filled with several stars and heavenly bodies, a general conception conceivable with an untrained observation, predominant among people belonging to different cultural backgrounds. This view is evident from different narrations belonging to medieval Malayali intellectuals and saints.[128]

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126 G.R. Kay, *Hindu Astronomy: Ancient Sciences of the Hindus*, New Delhi, Cosmo Publications, 1981 (1924), p. 19 ; For a better understanding of ancient Indian astrological knowledge, see John Benthy, *A Historical view of Hindu Astronomy,* Part I, New Delhi, Cosmo Publications, 1981 (1825). From a peripheral analysis of the medieval astrological traditions of Kerala, it is evident that these system among the predominant elite intellectuals here were not obviously different from the north Indian Brahmanic traditions.

127 The predominant 'Madhava school of mathematics', mentioned above and their calculations are clear evidence of the influence of Aryabhata traditions and hypotheses of universe among them.

128 For instance late medieval texts like *Jnhanappana,* attributed to Poonthanam Namboothiri, clearly states this conception of universe. In his narration as predominant among them, the centre of earth in literal and cultural meaning is Bharatham (ancient conception of an extended Geo-political form of India) with surrounding lands oceans and mountains. For details see, Poonthanam, *Jnhanappana, Kottayam,* Sahitypravarthaka Co-operative Society,1968. This conception of ancient Indians were also criticised by Al Beruni, that 'ancient Indian do not accept living or intellectual activity out of their premise'. For details see A. Rahman, *op cit.,*A Perspective…..pp. 7-31.

However, it was in such an intellectual situation that modern astronomy and its conception of the universe was spread.[129] As a knowledge they simply added to the information of people who had undergone modern education in general and the newly formed middle class in particular, but as a new methodology and system of knowledge they were not merely an addition instead began to question and challenge the foundation of the traditional astrological system and the world of knowledge based on it. In various issues of periodicals, apart from some books during the early 20th century, there were series of articles on different astronomical phenomena, sun, planets, solar system, space, meteors, etc. along with some specific articles on the science of astronomy and its various implications and possibilities. Authors like K.M (Vadakke Kuruppathu Kizhakke Srambiyil Kunjan Menon wrote in his pen name in various journals during this period. It was only after his death that the editors gave the expansion of his initials. It was quite common that many authors did use their initials as pen names during this period), S.V.R., K. Ramakrishna Pilla, M. Raja Raja Varma, Bhaskaracharyar, Puthezhath

129 Despite the presence of a well developed calendrical astrology and the structural conceptions of universe, modern astrology could alter popular conceptions and influence their thought process and debates. There were two possible reasons for this shift. One was the inefficiency of Indian astrological system to explain various new phenomena and discoveries. The imaginations on possibility of life in planets like Mars, widely discussed here during 19th century itself. For instance see an article titled 'Kimpurshanmar' (Mal), discussing about the characteristics and skills of 'people in Mars' for details see,*Vidya Vinodini*, Vol.I, No.4, Makaram, 1065 (c. January,1890), pp. 10-13. Such an imagination was impossible within the local conception of cursive Mars and illuminating planets analogous to fire, etc. This article went to the extent that 'interplanetary communications' with Mars will be possible soon. Several people attracted to this proposition and they debated on the possibility of life in Mars from two extreme stand points. For a strong criticism against this over enthusiasm see, A.S., 'Kujalokam' (Mal), in *Mamgalodayam* Vol.II, No.7, Edavam, 1085 (c. May,1910), pp. 284-288. The second factor was the change in calendrical calculations marking a shift from agrarian almanacs to the one regulated by colonial and capitalistic world order. The local calendar system based on Kollavarsham though sufficient for agrarian *nhattuvela* calculations, became irrelevant before more advanced Gregorian calendar in the context of colonial and capitalistic world order.

Raman Menon, et al wrote on various topics in those journals, either in series or single articles intending to provide new knowledge about universe to the Malayalis.

In Rasika Ranjini, monthly series of articles were written in various issues by authors like K.M, SVR, Ramakrishna Pilla, M. Rajaraja Varma (he sometimes wrote in the pen name R.V). They dealt with the sun and various planets of the solar system and explained the rotation and evolution of various planets and satellites. These articles narrated the eclipses and their seasonal changes.[130] Planetary discussions always were ambitious of the possibility of life outside earth during the late 19th century itself.[131] The article in Rasika Ranjini differentiates the formation of the atmosphere in Earth and on Mars and the earlier cooling of Mars and the possibility of a livable condition in it, millions of years before earth evolving to such a condition.[132] More important

130 These explanations become relevant in the context that these stars and groups of stars, their motions as well as eclipses were of higher concern in medieval astrology. They were imagined as determining and affecting life and conditions on earth. The medieval Malayalis also held people's progress and misfortunes as the result of changes in positions of heavenly bodies. For a better understanding, see Oru Pracheenan, *op cit., 'Jyothishastram…* A clear picture of the conditions, knowledge systems, predictions etc. are available in the *Kerala Astrological Magazine*, a monthly published in English from Mangalore from February,1920 onwards. This magazine discussed various subjects according to the astrological perspective.

131 For instance see, *Vidya Vinodini*, Vol.I, No.4, Makaram, 1065 (c. January,1890), pp. 10-13. In this article titled 'Kimpurshanmar' (Mal), the author exclaims about the possible form of life and about the people living in Mars! their intellectual capacity, social status etc. were imagined. Though hypothetical, Its relevance is that the general conscience was the traditional astrological belief in the negative influence of Mars up on people's lives. According to astrological beliefs the planet Mars has such negative influence up on some people (determined by time of birth) and other elements on earth that it causes misfortunes and even death to people. Another article S.V.R., 'Kujan' (Mal), in *Rasika Ranjini*, Vol.II, No.1, Chingam, 1079 (August,1903), pp. 12-18. Explains the physical features of Mars and it also expects the possibility of people and other animals living there.

132 Though these discussions were methodologically unscientific, their relevance lies in the extension of imagination opened by scientific knowledge to a comparatively darker world.

is the explanations on the forces of gravity and its variation among planets.[133] This scientific knowledge and intellectual guess indicate a shift in the perception and knowledge among the people. However, it cannot be concluded that this change among the learned few, have percolated to all over Kerala and a general perceptional shift had occurred in Kerala. But this followed by other articles and debates in various journals opened up a chance for such a shift in the intellectual atmosphere of Kerala.

The contradiction between new scientific knowledge and tradition is explicit in an article on the sun in *Rasika Ranjini*.[134] In this article, the author justifies tradition in modern epistemology, that is a traditional belief of the sun being the centre or the creator of all universe and everything in it that is the seat of *Brahma*, is explained with the help of various hymns from*Tahithireeya Upanishad*, *Bhagavat Gita*, etc. For validating them, he explains new scientific knowledge on the sun; its physical features, various discoveries and hypotheses, etc. He explains sun as the 'source of energy' for both living and non-living things in the earth and all over the universe, hypotheses on the constitution of the sun also explained in it. However, later he concludes with the justifications for worshiping and praising the sun with new scientific knowledge.[135] In another article on Jupiter, the differentiation between stars and planets are made. It explains the experimental method to testify the gradual cooling of heavy bodies than the lighter ones.[136] This

133 *ibid.*

134 K.M., 'Sooryan', in *Rasika Ranjini*, Vo.II, No.2, Kanni, 1079 (c. September,1903), pp. 76-83.

135 This factor of contradiction of two systems was more or less a common phenomena emerged out of the encounter between the traditional 'oriental knowledge' and the scientific discoveries during the early modern period. This representation might also be an outcome of the problem of acceptance among the traditional people. However, modern science and its knowledge systems were widely used for justifying the tradition.

136 For details, A.SankarapPothuval, 'Brhaspathi' (Mal), in *Rasika Ranjini*, Vol.II, No.5, Dhanu, 1079 (c.December, 1903), pp. 298-301. This clearly indicates a

article accepts the hypothesis of the possible presence of water in Jupiter, However, his application of commonsense leads him to guess it to be in gaseous form while considering the temperature of the planet. The presence of clouds indicates the possible formation of an ocean in Jupiter when cooled. He provides information on four satellites of Jupiter and the recent discovery of the fifth one etc.[137]

Another article by K. Ramakrishna Pilla explains the formation of the atmosphere in various planets. The utility of atmosphere for preparing a livable condition, raining, etc. are explained along with the differentiation of atmospheric structure on earth and other planets. However, he is optimistic about exploring the future possibilities of a livable condition in exterior planets.[138] As a continuation of these points in the succeeding issues, he extols the role of the atmosphere in maintaining life on earth.[139] He appreciates various attempts by scientists in Europe to enquire about the light, density and constituents of the atmosphere. The help provided by aeroplane and aerial journey in improving human knowledge on the atmosphere was highlighted by him.[140] The experimental studies and their results were highly applauded through these articles.

Yet another interesting article dealing with astronomical knowledge was written by M.Rajaraja Varma, with descriptions on various phenomena from the evolution of the universe to different theories and researches in the

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shift in to the mechanical understanding of universe. This break from the traditional conception was necessary in the growth of the scientific world view.

137 This also was necessary to make a shift in the logic of people and to differentiate between the previous conceptions and the modern understandings.

138 K.Ramakrishna Pillai, 'Anthareeksham: Ulpathiyum Unnathiyum' (Mal), in *Rasika Ranjini*, Vol.III, No.9, Medam, 1080 (c. April,1905), pp. 472-477.

139 *Idem*, 'Anthareeksham' (Mal), in *Rasika Ranjini*, Vol.III, No.10, Edavam, 1080 (May,1905), pp. 559-565.

140 *ibid.*

field.[141] He exclaims on the scientific knowledge and the structures as well as the evolution of the universe. However, he concludes the article after describing much about science and scientists, expressing his wonder on the greatness of the God who designed and maintained all these.[142] However, these articles also attempted to expand the imaginary terrain of people and their universal conceptions.[143] Notwithstanding the general conscience of people does not seems to have gone beyond the visible flat sky, stars and other heavenly bodies in the sky parallel to the flat earth, etc. An article in *Mamgalodayam* tries to make a peep into such as the expanded concept of the universe in the traditional epistemology and distances calculated in miles.[144] It applies different logic familiar to the local people to explain the measurement of the distance of such a huge arithmetics. However, it concludes by expressing the unaccountability and unimaginable distances and structure of the universe beyond a certain limit. It wonders of the minuteness

141 M. Rajaraja Varma, 'Nammude Vyoma Mandalam' (Mal), in *Rasika Ranjini*, Vol.III, No.11, Mithunam 1080 (June,1905), pp. 575-581.

142 *ibid.* This is a clear expression of the contradictions in the perceptions of traditional and modern world view. Though people were familiar with modern understandings and new discoveries their new knowledge were shaped and cut short to make them suitable for their previous conceptions.

143 It does not mean that all the familiar conceptions of universe were shrunk into observable sky. Instead the popular conscience was not much extensive than the observable stars and planets. However, there were numerous philosophical positions on the universe familiar to ancient people. It extended from the above discussed *Anda* shaped one universe to the existence of multiple universes with unimaginably large number of stars, planets and other heavenly bodies. For example seer, Gargyana Maharshi conceived a *Brahmandam* consisting of a star and seven planets, *Jagath* consisting of seven such *Brahmandam* and such thousand *Jagath* constitute a *Viswam*, one and half a Crore *Viswam* constitute a *Mahaviswam*, such 20 Lakh Crore *Mahaviswams* constitute a *Lokam*, etc. as a model universe. For details see, Nalappattu Narayana Menon, *Arshajnjanam*. Kozhikkode, Mathrubhumi Books, 2004.

144 R.V., 'Digantharam' (Mal), *Mamgalodayam*, Vo.I, No.8, Mithunam, 1084,(c. June,1909), pp. 292-295.

of our planetary system when it is placed in the complex system of universe.[145]

The predictability of scientific knowledge is impressively presented in an article on comets in *Mamgalodayam*. The motion of various heavenly bodies perfectly explained and prediction of their motion by scientists like Isaac Newton is extolled in the article.[146] Gravitational and other universal forces and different patterns of planetary motions are narrated impressively. The exact prediction of Halley's Comet and the passage of their movement and the possible arrival of next comet viewable from here are also presented in it.[147] Another article in *Mamgalodayam* tried to give the history of astronomy and the break from the Ptolemaic conception of the universe. This introduced the contributions of various scientists like Copernicus, Tycho Brahe, Kepler, Galileo, Isaac Newton, Laplace, William Herschel, Leverrier, et al.[148]

One of the important points made in an article on scientific advancement and the indifference shown by the local people towards them is found in *Mamgalodayam*.[149] It says apart from concerns about the day to day life Malayalis have no problem in whatever goes around the world. Though

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145 *ibid.* This also seems to be necessary for delinking from the geocentric understanding of universe, familiar to people in traditional understanding all over the world. This expanded conception of universe was supposed to provide a scientific understanding among Malayalis.

146 R.V., 'Dhoomakethu' (Mal), in *Mamgalodayam*, Vol.II, No.6, Medam, 1085, (c. April,1910), pp.237-239. Newton was one of the most discussed mathematician in early modern Kerala. This capability of modern science in exactly predicting the universal phenomena was quite attractive and sufficient for impressing people of the potential and reliability of modern science.

147 *ibid.* Thus a brief picture of modern astronomical concept, known then, has been provided in such journals.

148 Bhaskaracharyar, 'Pashchathyarude Jyothishastram' (Mal), in *Mamgalodayam*, Vol.X, No.3, Mithunam, 1092 (c. June,1917), pp. 82-86.

149 Puthezhath Raman Menon, 'Jyothi Shastravum Bhooprakrithi Shastravum' (Mal), in *Mamgalodayam*, Vol.IV, No.9, Karkkidakam, 1087 (c. July,1912) pp. 271-275.

scientists all over the world, through hard work prove various phenomena, people in Kerala will not be ready to understand and trust them.[150] He explains, with the advancement of science and technology and other methodological clarity, knowledge about the universe has increased rapidly and it is approaching a comprehensive character.[151] The discoveries of Galileo and other scientists were hailed in it. Geological, biological and astronomical inquiries give a clear answer for so many traditional questions. The assumptions of 'external worlds' and the possibility of animal life in them all raised the curiosity of people all over the world. It suggests with the 'increasing knowledge our humility should also increase that what we know before the oceans of knowledge is at the minimum analogous to children picking shells on the beaches'.[152] Such a sense 'push us forward in search of better and wider knowledge'. Thus the ignorance and uninterested approach of local people were criticised.[153] This criticisms against the traditional indifference to modern knowledge became quite common among the people as evident from several hints towards those directions from the writings of the middle class.

Increasing impressions of modern science and its rationality among the educated people were widely criticised by the traditionalists. As cited earlier, the criticisms against modern education and its antagonism towards traditions were one of the important activity of traditionalists. In all possible occasions, they criticised the novelties and found these movements as the chief reason for the moral and social deterioration in society. For instance, in*Rasika Ranjini,* one article on theosophical society and 'oriental rediscovery' of

150 *ibid.*

151 *ibid.* This confidence was common among new Malayali middle class as evident from many of their discussions. They held science is going to discover every principle behind the universe. The discovery of aeroplane and such other new facilities added to this confidence.

152 *ibid.*

153 This criticism of traditional society was quite common among the new middle class and revolutionary intellectuals of modern Kerala.

Indian tradition says that 'those who could bite a small tip of English learning would thenceforth start ridiculing Hindu religion and become attackers of Hinduism and our tradition. To them, Hinduism is the root of every ignorance and evil practices'.[154] This was continued in several other writings as well. Thus there emerged the natural response from the traditionalists and Neo-traditionalists alike. They began to rediscover 'science' in traditional knowledge in the light of new scientific discoveries and attempted to convince the people of the sacrilegious position of modern science practiced here. They also praised the superiority of 'Indian knowledge' and traditional scholarship. Some others presented the new knowledge in the traditional language and claimed science to be an inalienable continuation of the traditional one. Yet some others presented the traditional knowledge in the epistemology of modern science.[155]

In the case of astronomical discoveries, several attempts were made to enchant the new knowledge.[156] This process was quite common in Malayalam as evident from the debates in several novels and other literature including articles in journals.[157] Many of the articles in defense of astrological knowledge had several similarities. Therefore, the defense of astrology against modernists' criticisms can be taken from a comprehensive article

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154 P. Govinda Menon, 'Mrs. Besant' (Mal), in *Rasika Ranjini*, Vol.II, No.10, Edavam, 1079 (c. May,1904), p. 623. (translation mine; assertion added).

155 Thus a process of what Meera Nanda calls, as an 'epistemic charity' was common among the section of middle class who held the position of middle roaders in the debate between traditional knowledge and modern science.

156 The concepts of 'enchantment' of science is taken from Shruti Kapila, 'The Enchantment of science in India', in *The History of Science and Society*, Vol.CI, No.1, Chicago University Press, March 2010, pp. 120-132. (accessed from JSTOR).

157 Such debates were widely seen in different novels published during late 19th and early 20th centuries. Three different positions are available in the debates of O.Chandu Menon, *op cit., Indulekha….*, Kochu Thomman Appothikari, *op cit*., *Parishkara…,* Kizhakkeppattu Ramankutty Menon, *op cit., Parangodee Parinayam…* etc. and stories like M.R.K.C., *op cit., Kalam Poya*... along with several articles

published in series during this period.[158] One of the major points in defending traditional knowledge in their arguments was that this knowledge was derived out of Vedas and through great seers, therefore they are unequivocally perfect and unparalleled. , However, accepted the failures and weaknesses of contemporary practices in these traditions but they accused foreign intervention and interactions with external cultures for such degradations.[159] More interestingly regarding the degradation of astrological knowledge among the traditional community they blamed the less-known people, practicing astrology and making predictions for their subsistence and earning money, this activity of 'making false predictions are the major problem behind it, predictions by fortune tellers claimed to be astrological add to this'.[160]

Some articles observe that most of these predictions and fortune-telling has no textual binding. Some people by 'pleasing some devils predict peoples' future; many of their narration on past become acceptable to the customer that they trust in the predictions, but many of them on future would be wrong and this will diminish the reliability of astrology, not the person who predicts'.[161] Thus the author criticises many of such practices including fortune-telling by card picking, face reading, palm reading, etc. He compares with an analogy of gems among fake stones. He thereby criticise those who accuse astrology as 'untrustworthy practice and unscientific', as ignorant and blind-eyed towards

158 The series of articles by Manavikraman Raja were of comprehensive character and therefore, can be taken for representing the arguments of traditionalists in defence of astrology and predictions based on it. For details see, K.C.,Manavikraman Raja, 'Sadacharam' (Mal), in *Mamgalodayam*, Vol.I, Nos.7,8,9,10,11.., (from) Edavam 1084 [c.(from) May,1908].

159 For instance see *ibid.*

160 There are a series of article in *Vidya Vinodini* monthly written in this perspective who were influenced by the criticism against them that they are traditionalists. For instance, see Oru Pracheenan, *op cit.*, 'Jyothi Shastram..., pp. 39-41. (translation mine, assertion added)

161 *ibid.* therefore to the author, as to many others, the problem is regarding the people who practice those ancient saintly knowledge that does not make them irrelevant through wrong predictions.

the greatness of some 'scholarly prediction by astrologers'.[162] It has been revealed through such narrations that the criticisms towards astrology was quite harsh during the late 19th century itself. He defends the astrology against criticisms of 'unscientific and untrustworthiness' through a taken for granted position that Sankaracharyar had stated before ascending the '*Sarvajnha Peedam*' that 'no knowledge without astrology is complete'.[163] As 'Sankaracharyar should not be unacceptable for people the statement and defense should also be acceptable and true.[164] In the succeeding issue of the journal the author continues to defend astrology and predictions, more 'logically'. He says that two people born simultaneously at different part may have different plight due to the 'condition that, the dawn in the earth will be the dusk at the 'Pathalam' therefore, though born at a time they will have different or even opposite plights'.[165]

Another justification was regarding the changes in the modern way of reckoning time on the hourly clock, which cannot exactly be the same as the textual and astrological timing based on previous almanacs.[166] He also states that the mathematical foundation of astrology set several centuries earlier may have slighter differences with the current position of planets, therefore, our

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162 *ibid.*

163 He quote Sankaracharyar as stated that 'Jyothisham Vina Sarvajnhoham (rough translation mine) *ibid.*, p.41.

164 *ibid.*

165 Oru Pracheenan, 'Jyothishastram' (Mal), in *Vidya Vinodini*, Vol.IV, No.3, Dhanu, 1068 (December,1892) p. 61. Such defence was inevitable in the context of severe criticism from the modernists by citing the examples of opposite qualities and situations of people born simultaneously. More over people criticised, in the context of new discoveries, that the belief of some planetary and stellar influences upon people individuals and objects in the earth as ignorance of the ancient people. Such logical explanations were spreading among the new middle class.

166 He argues with the example that the hourly timing all over south India is based on Madras time. But astrologically different parts of South India should not be in a single time zone. Therefore the time we consider for birth etc. varies from the real time. This makes some predictions incorrect.

prediction based on such calculations may become wrong and it affects the predictions.[167] Moreover 'some astrologers in expectation of higher reward from the clients wrongly predict good fortunes by hiding the actual information, naturally, get higher rewards, and this affects the reliability of astrological knowledge as a whole'.[168] Another major justification was the greatness of the seers who formulated all this knowledge.[169] Therefore, the author defends the knowledge and Shastra of astrology, though accepting some problems in its practice. Thus the new logic and sacred position of ancient knowledge were equally used in the justification and defense of the tradition. Moreover, there were several attempts to spread traditional knowledge and its superiority in time concept. They more or less accepted the chronic problems in them and the necessity of reform in them.[170] However, apart from attempts to justify the validity of traditional knowledge no serious attempts were made to verify the sanctity of criticisms development of a hybrid knowledge by including information from the traditional lore and practices. Instead what has been done was the attempts to present the superiority of the traditional knowledge through these articles but which failed to reach the destination due to changes in the social milieu and

167 *ibid.*, p. 62.

168 *ibid.*, p. 63.

169 For instance an author says all these should not diminish the greatness of a 'Shastra' formulated by great seers like Varaha Mihira and included in textual traditions like *Pancha Siddhanthika*, *Brahajjathaka*, *Brahat Samhitha* etc. for details, see *ibid.*

170 For instance in Mamgalodayam an article by A.R. Rajaraja Varma reiterating the necessity of calculating the exact time for several Brahmanic rituals as well as the correct prediction of eclipses for ritualistic purposes explains differences in different calculations such as *Drgganitham* and *Parahitha* system. He asserts the medieval reforms in calculations (though he call them *Naveena-* means modern) and attempts to reduce the anomaly between solar and lunar calculations. He hails the scholarly works of pre-modern people and ask the contemporary scholars to reform the calculations and almanac to avoid problems like their failure and wrongly predicting an eclipse in Vrschikam 1085 (previous month) and allied conundrum and lose of confidence. For details see, A.R, Rajaraja Varma, 'Kalaganana' (Mal), *Mamgalodayam*, Vol.II, No.2, Dhanu,1085(c. December,1909), pp. 59-71.

comparative irrelevance for them. One of the important points they tried to express in such articles seems to be the accuracy and minuteness of time conception and the relative breadth of time concept and the unimaginable extension of each *yuga* which the modernists criticised for being cyclical in conception.[171]

It was during this period that the geo-centric, flat earth conceptions were generally criticised by the middle class and the modern conception of universe, earth, planets, stars and satellites, comets, etc. were receiving wider acceptance among the people that the scholarly positions of pre-modern people including Aryabhata's, hypothesis and ancient, Vedic and other conceptions began to be widely discussed and debated among people through these journals and other means in general. In this context, various conceptions of the universe, solar system, heavenly bodies, divine conceptions etc. came into serious reclamation. Several articles and debates reconsidered ancient hypotheses, literary traditions ritualistic and sacrificial meanings, etc. It is evident in an article in *Mamgalodayam*, titled 'Viswolpathi' that Vedic origin of different astrological conceptions was asserted through different hymns and philosophic principles, especially those, belong to ancient materialists like *Samkhya*, *Meemamsa* traditions as well as theistic traditions *Vedanthas*, *Vaiseshikas* and *Naya* philosophers together.[172] It reiterates that what these

171 One of the strong criticism towards Indian conception of time was the cyclic consideration of age and the *Chathuryuga* concept. However, there were several attempts by scholars on pre-modern time conceptions that, though the overall conception of time here was cyclic in character, its extended stretch were sufficient to cover the linear ages. This problem had been there in the consideration and debate during the period under discussion as is evident from the debates. In an article by Thelakkatte Gopala Menon, in *Vidya Vinodini*, the author describes the division of time here from *Matra* to *Brahma Kalapam* and repetition of the *Yugas*. It is this astonishing calculations of unimaginable millions of years that was used by the scholars to the superiority of the ancient Indian time concept. For details see, Thelakkatte Gopala Menon, 'Kalapramanam' (Mal), in *Vidya Vinodini*, Vol.VII, No.3, Dhanu, 1071 (c. December,1895), pp. 105-109.

172 K.V.M., 'Vishwolpathi' (Mal), in *Mamgalodayam*, Vol.II, No.7, Edavam,1085 (C. May,1910), pp.270-275.

philosophers had done was to re-explain and spread what already was there in Vedas. However, in its explanation of holistic greatness of ancient Indian philosophy led to further complexities created by multiplicity and contradictions embedded in ancient philosophies. The sun is considered as the *Viswakarma* or the creator of the whole universe and thereby becoming its centre but later consider sun being created by God who deserves praises.[173] These along with some other explanatory contradictions indicate the complexities created by modern science among the takers of traditional knowledge and *Shastras.* The emergence of time after the 'creation' of the universe by the God is explained in it, so as to answer several questions raised by modern science and prove the principle of embeddedness of every knowledge in the Vedas.[174]

The possibility of livable conditions in other planets discovered recently had been one of the serious debates among the intellectuals of the late 19th century itself. During the late 19th and early 20th century, almost all discussions on planets and other heavenly bodies had such anxieties about the possibility of creatures like human beings in those worlds like those mentioned earlier. In *Vidya Vinodini* there was an article titled 'Kimpurushanmar' about the people living on Mars as mentioned above.[175] However, such an exaggerated narration of overconfidence was ridiculed and criticised by a later article in *Mamgalodayam* harshly.[176] It observes the human greed behind all such overstated dreams of controlling and redirecting

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173 *ibid.*, pp. 272-273.

174 *ibid.*

175 For details, see 'Vidya Vinodini', Vol.I, No.4, Makaram, 1065 (c. January,1890), pp. 10-13. This article was in an astonishingly exclamatory and hypothetical character, that it wish to communicate with the people in Mars through any symbols or placards next time when Mars reaches near the earth in the revolutions. Though this overexcited statement has no actual sense, it shows the confidence of people about modern science and human capability of restructuring and controlling universal forces.

176 A.S., 'Kujalokam' (Mal), in *Mamgalodayam* Vol.II, No.7, Edavam, 1085 (c. May,1910), pp. 284-288.

the entire universe swiftly.[177] Apart from criticising such aspects, the article questions the logic of inter planet communication mathematically, by calculating the distance and evolutionary hindrances logically. It also explains the impossibility of life on Mars due to climatic and atmospheric conditions of that planet. The author questions the logic of perennial water flow in Mars by indicating the dry and hot conditions seasonally there. He ridicules such debates as philosophic rhetoric.[178]

Another important aspect of this debating culture was that by around the second decade of 20th century, as mentioned above along with the increased communalisation of society, the intellectual atmosphere also began to witness the publication of conventional notions and traditionalism per se, (not as a reformed or reinterpreted and sophisticated form) through these journals. For instance, *Mamgalodayam* being proclaimed itself as a journal of 'Namboothiri Brahmins' had the responsibility of representing the unchanged traditional knowledge in all its orthodoxy. Therefore it began to publish articles and notes propitiating true traditional people. Thus it published such articles hailing horoscope etc. Detailed positions of 'Nine Planet's including Sun, Moon, Rahu, Kethu, etc. in the atmospheric circle, influencing earth and its objects, etc., overtly began to be published.[179] This change became

177 The article says that people with the help of electricity have already began to control the earth, now they aspire to conquer entire universe and its wealth. Such a criticism against capitalist and allied cultural greed was common among Malayalam journals, like those cited earlier. This criticism should be understood in the context of European colonialism and their capitalistic ventures.

178 *ibid.*, p. 288.

179 Such knowledge, though they were predominant in the society, did not widely come under the purview of publication as the field was largely controlled by the newly emerged middle class. Though there were traditionalists among the new middle class, they represented a neo-traditionalist position as they wrote their points in the sophisticated language and used scientific idioms to present their traditionalism. By the second decade of 20th century such revivalism and communalisations etc. began to be overtly came into public domain of Kerala society. Therefore, the discourse became entirely conventional in character. For

explicit, as seen in almost all aspects of Kerala society by the beginning of the third decade of the 20th century. Almost all sophistications and diluted traditionalism etc. gave way to entirely traditional, communitarian and communal thought all over the states. This reflected in the publications and scientific temper as well.[180] Thus the orthodoxy got expressed in the journals as opposed to the scientific and novel debate and researches indicating a socio-political shift.

Geography

Apart from the theories of medical and biological sciences, the geographical knowledge, and its influence among the common people was another intellectual mobility that extended the imaginary terrain of the revolutionaries and helped in the march forward. Though there were different astrological traditions among traditional intellectual elites holding the spherical shape of the earth, heliocentric theory of the universe, etc., the general understanding was a more or less a flat earth hypothesis.[181] This knowledge continued to be a predominant system among the people until being revolutionised by modern science. Scientific knowledge of the universe, earth, geology, atmosphere, climate, etc., were inculcated to the students at the schools itself but which was insufficient to change the general mentality

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instance see, *Mamgalodayam*, Vol.XIV, No.9-10, Dhanu, Makaram, 1097 (c. December,1921-January1922), pp. 366-370.

180 However, such societal shift though highly relevant in the social history of modern Kerala do not come under the purview of the present research. Therefore, no attempt is made here to make an analysis of factors leading to such a change. Though it requires serious historical and 'objective' researchers.

181 In short the predominent conception of universe among Malayalis continued to be the geocentric theory. The centre of the flat earth was considered the epic Meru mountain. This hypothesis was allied with conceptions of 'Utharayana', 'Dakshinayana', sun, moon, nine planets (including Sun, Moon, Rahu, Kethu, etc.) revolving around the earth, 27 star groups in the Zodiac identified with each day etc. However, there were clear variations to these conceptions regionally and according to the scholarship predominant to the politico-cultural authority etc.

towards them all. Therefore, the middle class, who conceived these theories and held it necessary for a change in social outlook attempted to spread such knowledge in society.[182] However, this knowledge unlike medical and other practical applied knowledge and technical skills did not penetrate the lower class people at the early stage, as they did not come under the discursive terrain directly.

A series of articles were published in *Vidya Vinodini* tiled 'Bhooprakrthi Shastram' from 1893 onwards which introduced various geographical knowledge to the people. It begins with citing the traditional lore of flat earth and disproves it at the outset and gives various means and experiments for realising the actual semi-spherical structure of the earth.[183] The articles questioned the notions of 'sunrise and sunset' and disproved the flat earth notions and asked people to check it through various simple observations and experiments. Introduced different concepts like radius and diameter of the earth, the constituents of earth, classification of soil, rocks, minerals, etc. were introduced impressively. The complex understandings on eclipses and their cursive effect on human life held so far were simplified through a small example of a lantern and shadow to the people.[184] The author explained each and every aspect of the earth with the utmost simplicity. Instead of the time conception based on sunrise and sunset in *Nazhika, Muhoortham, Paksham, Ayanam* etc. he explains the time conception based

182 Several articles on these subjects published in various journals during the period under discussion would reveal such attempts. For instance see a review on *Bhoovivarana Siddhantha Samgraham,* a treatise on geography in *Rasika Ranjini,* which discusses various understandings on earth including modern theories. For details, see A.R. Rajaraja Varma, 'Oru Niroopanam' (Mal), in *Rasika Ranjini,* Vol.IV, No.4, Vrschikam,1081 (November,1905).

183 *Vidhya Vinodini,* Vol.V, No.2, Vrschikam, 1069 (c. November,1893).

184 Though Aryabhata also said to have compared eclipses as shadows during ancient period, the general understanding and common sense, as stated earlier, continued to be the heavenly bodies controlling human life and their actions including success or failure of ventures etc.

on earth's revolution in the units of second, minute, hour, month, year etc.[185] The explanations of rotation and evolution of earth is quite simple and filled with several experiments to check it the learners themselves. Similarly different phenomena like air, moisture, humidity, evaporation, constituents of air, raining, cold, cloud, humidity, trade winds, etc. were interestingly and simply explained in the series.[186] The different processes of soil and rock formation were also explained to the people impressively.[187]

Another impressive narration in the series was that of climate and seasons. An article on the geological formation of the earth with all available information on different layers and their constituents along with new knowledge on coal formation etc. are explained with the latest possible updates and calculations by the author.[188] Similarly, an article on earthquake and the volcanic eruption was published in Vidya Vinodini. It also explained the geological conditions of earth, its constituents and various layers as well

185 Earlier the basic unit similar to modern second (time for pronouncing the letter 'e') was one *Mathra* or *Nimisham*, such 18 mathras constitute one *Kashta*, 30 *Kashta* becomes a *Kala* and this 30 *Kala* makes on *Muhoortha* or *Nazhika*. Such 30 *Muhoortha* constitute a divasam/dinam(day) and 15 days constitute a *Paksham* (½ a month), 2 months are one *Rtu*, 3 *Rtus* make one Ayanam (six months). 2 *Ayanams* (that is one *Utharayanam* and one *Dakshinayanam* together) makes a year. This calculation is extended to *Yuga* concept and is quite difficult to calculate after a certain limit. For details see, Thelakkatte Gopalam Menon, 'Kalapramanam' (Mal), in *Vidya Vinodini*, Vol.VII, No.3, Dhanu,1071 (c. December, 1895), pp. 105-109.

186 They all were important not only in the intellectual perspective but also in the socio-cultural realm as well. As they all are crucial in shaping socio-economic, and cultural history of Kerala. Though all these were not alien for the popular imaginations, their methodology, basic conceptions, general conscience etc. varied accordingly.

187 This is important in the intellectual and cultural realm as the predominant conception was connected with the legend of Parashurama's creation of the land of Kerala and donating it along with the people and movable as well as immovable property to the Namboothiris.

188 R.V., 'Kalantharam' (Mal), in *Mamgalodayam*, Vol.II, No.8, Mithunam,1085 (c. June,1910), pp. 306-309. such informations were sufficient for providing a shift in paradigm from the hitherto held notions and the holistic understanding of universe..

as their different formation.[189] The geological changes and its effects on earth were also described in the article. Thus all these constituted an addition to the existing knowledge on earth and geography. The previous knowledge, confined to the geomorphological conditions and different methods of converting it into productive means as well as different types and means of life suitable for each geographical conditions evolved historically. Now the entire picture on the understanding of the earth, its constituents, geography, climate, etc. came under human imaginations. Such broadened imagination seems to be sufficient for extending their world view. This change continued to contradict with different religious and conventional conceptions. Most religions, including Christianity and Islam, had formulated a world view similar to the one explained in the beginning. Therefore the question of whether the earth is flat or spherical continued to be debated between religious and materialist world views. However, they, similar to that of medicine were finally settled by adopting the modern scientific conceptions and inventing this new knowledge in various ancient and medieval texts.

Technology and Modern Kerala

Transportation Technology has to tell an altogether different trajectory from the experiences of all other knowledge systems. As discussed in different sections above, their technologies and applications rather than knowledge per se were easily accepted by people, without much controversy, including medicine. Similarly transportation technology and discoveries including aerial fly were quite acceptable for people in their introduction itself. Rail, road, water and air transportation brought here by various agencies allied to colonialism for their commercial and administrative convenience. Such changes did not require any bargain or debate with tradition. Such was the curiosity of the people in general towards them all. Mainly because they found it as an elaborated form of already existing

189 For details see, *Vidya Vinodini*, Vol.V, No.7, Medam, 1069, (c.April,1894), pp. 162-165.

carriages such as animal or people-drawn carts, palanquin, etc. now being regulated by the engine. The only problem that stood as a hindrance in the new means was the idea of pollution and caste system.[190]

Moreover restrictions on using public spaces and roads for middle and lower castes were now extended to using vehicles of any kind.[191] This had to finally shrink in front of the giant capitalism and colonialism.[192] Interestingly when this aspect of modern social formation, the development of transport and communication, came into the discussions among the new middle class there was no clear opposition from their part. Those who opposed even medical advancements did not raise any opposition to this development. It seems to be because unlike medicine, astronomy, etc. this did not have to

190 During the initial state several questions were raised by the local elites towards the caste based pollutions in trains they abode. It was tried to follow in trains as well, as people of different castes were identifiable from their appearance and attire themselves. But the changes in appearances introduced by the progressive middle class through novelties in dressing, hair cropping etc. brought a problem there as well. It was in this circumstance that Narayana Guru was asked, from the train by a Namboothiri about his caste. He replied the 'caste which is not identifiable from vision cannot be trusted from hearing. For details, see P.K. Balakrishnan, *op.cit*. Guru..

191 This restriction was expressed that people belonging to middle caste who began to engage in commercial and other new ventures earned better conditions capable of possessing vehicles. But even then they did not get permission for g their dreams to the roads. Similarly Ayyankali who dared to run a cart (villuvandi) was blocked on the road by elite goons. However, due to his unparalleled courage he could escape from their trap. Thus the technology in its arrival did not bring any change. But it was prolonged agitations by revolutionaries in the changing circumstances that a social change was made possible here.

192 However, it cannot be claimed that the predominant caste system grown to microscopic cells of social life could be replaced by mere changes in transportation, especially in southern regions of modern Kerala. Instead the changes brought about in the socio-economic life had naturally influenced and restructured pre-modern institutions including caste system. Therefore being introduced by the powerful capitalism and colonialism people including traditionalists had to adapt to the situation. Therefore, institutions like caste system restructured themselves and found various new forms and spaces of expressions.

replace any kind of existing established systems of transportation than pedestrians' barefoot travels. Notwithstanding the Malayalis studying or working abroad wrote about the technological advancements they saw in their new cities like London, New York, Calcutta, Bombay, etc.

The technological advancements in London city have been a source of inspiration for the people especially from the new middle class who visited this world. One such report of inspiration was published in *Rasika Ranjini*, which exclaimed of the urban facilities and human control over nature in the city.[193] Railway stations, urban spaces, markets, the electronic commutation systems established undergrounds is narrated with an utmost exclamation.[194] The 'speed of commutation and communication is so high that it feels the engine driver completes one hour with 59 minutes'.[195] Mechanisation in communication and swift movement of messages were of high impression.[196] The swift movements of fire engine through the busy towns indicate their concern and continuous interference. The report and its language have a clear indication of a middle-class Malayali concern and world view. His desire for reducing the time required for each activity, swift life, transportation and communication facilities, urbanisation, utilisation of natural resources to the maximum, etc. made them reformers and progressives. These aspirations in

193 London Vidyarthi (the anonymous author wrote in this name, meaning a student in London), 'London Nagarathile Chila Athishaynagal' (Mal), in *Rasika Ranjini*, Vol.III, No.3, Thulam,1080 (c. October,1904), pp. 124-129.

194 *ibid.*The subway connecting various parts of the town together. At one place the river is flowing under the town but in another it flows over head such is the advancement of technology there.

195 *ibid.*, p. 187.

196 It is stated in the report that Lakhs of mails are carried on each day in a post office in London the works of whole mail in the postal department in Madras a day will be arrived out in an office in London within two hours. Naturally these narrations might have included over statements and over exclamation. But this indicate the aspirations of the new middle class during early 20th century.

the capitalistic world might have been the driving force that formulated the developmental concerns of middle-class Malayalis.

It is in these circumstances of capitalistic and developmental concern, the growth of rail and road transport witnessed in Kerala. Thus the new transportation facilities and their possibilities were represented in different writings. One such example is a poem written by Naduvathu Mahan Namboothiri. The poem salutes the train which transport people, objects both living and non-living, from one place to another and move by breaking every challenge and hindrance.[197] He praises the beauty in watching the motion of the train, which considers every commuter equally 'without any favour' even to the engine drivers.[198] With the discovery of the possibilities of flying with the help of engines, the historic aspiration of people all over the world reached its height. These aspirations crossed all limitations and people discussed this all over the world. Among the Malayali middle class, it added to the growing aspirations of limitless life. The theme of flying over the sky was widely discussed that almost all journals of the early 20th century contained the literary works in it. The history of the idea of flying, scientific discoveries leading to this development, hindrances and challenges in the way, etc. were widely narrated.[199] After explaining different developments and history of flying, the author shares a wish that it may come true within one or two generations that people will be able to fly in Thiruvithamkur-Kochi flight service from Kochi to Thiruvananthapuram.[200] Thus the developments in engine technology, electricity, etc. were highly acceptable to all groups of people who appreciated such developments and dreamt of progress in the field. There were no differences in position among people in

197 Naduvathu Mahan Namboothiri, 'Theevandi' (Mal), in *Rasika Ranjini*, Vol.II, No.5, Dhanu,1079, (c. December,1903), p. 307.

198 *ibid.*

199 For instance, see C.S., Gopalappanikkar, 'Akasha Gamanam' (Mal), in *Rasika Ranjini*, Vol.III, No.11, Mithunam,1080 (c. June,1905), pp. 598-610.

200 *ibid.*, p.610. (the prediction became true within a shorter period of time.)

general towards such progress. However, there was some resistance from the part of the traditional elite against their erstwhile slaves and labourers moving in vehicles through the roads, which were unapproachable for them once. Many people were attacked for such breakings of customs.[201] However, they could not resist the movement of history and the united forces of people. Therefore the government had to issue orders for public transportation of the lower class people. Moreover, by this period technology in almost all fields of human life began to evolve and Kerala socially and economically started to advance further into an actual economic middle class dominated society.

Bio-Medical Sciences and Debates

According to various knowledge traditions of ancient India, the human body is an inseparable constituent of the natural environment, with similar constituting elements, metabolism, etc. However, modern medicine and scientific theories hold a distinct theoretical perspective towards the human body, its health and the medical system. The encounter between medical science, especially its germ theory of diseases and various practical and theoretical advancements, with the existing widely spread medical practices led to serious debates and a distinct formation of medical understanding here.[202] However, the spread of epidemics and innumerable deaths, as well as the comparative inability and failure of traditional practices in addressing, confronting and preventing these diseases, made people turning back against

201 The incident of 'Villuvandi' agitation by Ayyankali is memorable in this context, which was against the regulatins from upper class people in using vehicle and even using the public road by lower class people. For details see, T.H.P. Chentharasserim *op.cit*, Ayyankali.....

202 Though there are different foundational theories which together constitute the basics of modern medical science, its pathology and medication and various techniques of examination and treatment are inevitable to the system of knowledge. The germ theory of diseases was the most seriously debated among the Malayali intellectuals during the dawn of 20th century. Basically because, unlike other aspects, in the context of spreading epidemics, it brought traditional medical practices into direct confrontation with modern medical science.

them. While modern medicine and its vaccination proved to be an elixir in the situation which attracted people towards this system of medication.[203] Moreover the governmental support to modern medicine also helped its spread among people.[204] These changes and conceptual shifts reflected in the debates among the new middle class and helped the break from the pre-modern conditions and institutions. There were serious debates in the late 19th and early 20th century in Kerala up on these changes in the society as evident in the publications. There emerged several supporting arguments in favour of modern medicine but equally relevant is the arguments raised in support of traditional medical systems. Thus evolved a peculiar commercialised practical system of ayurveda by adopting techniques from modern medicine.

However, there was a general consensus among people regarding the comparative failure of traditional medicines including Ayurveda in the context of spreading epidemics. This led to two important formulations that is the reform of traditional medicines in the light of modern scientific and technical knowledge and the spread of modern medical facilities to different parts of Kerala. However, the effectiveness and theoretical authenticity of both systems were widely debated in the, afore discussed cultural context among the middle class. These debates among the middle class led to the reinvention of traditional medicines with the help of different techniques from

203 However, this does not mean that people had absorbed the knowledge of medical science and its theories on human body, health as well as diseases. Rather people were attracted to this system as an effective curative practice. They might not necessarily be aware of the basic theoretical or even practical differences between traditional systems and medical science. However, the educated middle class who participated in the intellectual debates were clearly aware of the differences, as evident from the published debates in various journals.

204 The propounders of traditional medicine always accuse the governmental support to modern medicine as the only factor favoured its success in the competition with the traditional systems. However, such arguments do not have any validity in the historical analysis of the situations of early 20th century. For similar arguments see various issues of Dhanwanthari monthly published by Kottakkal Aryavaidyashala during early 20th century.

modern medicine and the consequent commercialisation. Thus medicine and health debates became a factor in transforming Kerala society.

The discovery of microbes and the germ theory of diseases, as well as inseparable links between living and non-living phenomena (the chemical compounds and activity can give birth to the living organism), etc., were new and revolutionary knowledge for the Malayalis.[205] Thus the chemical explanation of life opened up a new vista in the field of biological science. This understanding added to the debates among the middle class during the late 19th and early 20th centuries.[206] This debate naturally led to two different historical events one being curious analysis and studies of animals, plants and other life forms second was the revolutionary growth in medical knowledge. These movements were naturally reflected in the debates among the intellectuals in the journals as well.[207]

The theory of evolution by natural selection had such an influence among Malayali Middle class that it raised a serious concern and hot debate for and against it, among the Malayalis. Thus all these development helped the formation of Modern Malayali sensibilities. The curiosity of life was not confined to animals and plants but extended to aquatic and other micro-organisms as well. The life beneath the ocean, their survival, feeding, breathing, etc. were of increased interest among the new middle class. It is evident from an article in *Rasika Ranjini* that they have clearly conceived the

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205 According to the *Panchabhootha* theory constituting elements of the living and non-living phenomena in the universe are same and those five elements are the base of everything in the universe. But even those hypotheses did not seems to have imagined the conversion of a non-living element into living features, despite the predominant birth cycle and Karma theories. Mainly because the element of universal soul present in the living organisms distinct from the non-living objects.

206 The debates in the novels cited earlier about Darwin's theory of evolution by natural selection etc. are also relevant in this context.

207 For instance, see C. Andippilla 'Jeevante Ulbhavam' (Mal), in *Rasika Ranjini*, Vol.IV, No.7, Kumbham, 1081 (c. February,1906), pp. 382-387.

concept of natural selection and evolution among animals through their narration of animals beneath the ocean.[208] It further states that apart from these visible animals smaller and microbial life constitutes the animal world.[209] Thus the vividly and extended forms of life were growing to be a new and interesting field of knowledge to them. An article on 'Ants' in *Rasika Ranjini* says that though apes are the nearest species to human beings, according to evolutionary theory, the social life of humans is truly reflected in the collective activities of ants.[210] The author refers to around a thousand types of ants in the world and the locally identifiable groups are depicted in the articles. Different processes in the birth and evolution of ants have also explained with distinct features of many observable ants.[211] Occasionally possible comparisons among different animals indicate the scientific knowledge applied in the analysis of the animal world. The new knowledge derived out of the studies by several biologists such as the system analogous to slavery observed by some European scientists have been narrated in it.[212] In the succeeding issue of the journal, the author describes some sentimental and kind activities among ants. Their mutual help, defense of the group, selfless and tireless work, etc. are narrated by the author with a

208 The absence of eye to fish groups called Taurido Phidium and colours of fishes in the lower level of water etc. exposes such notions. For details see, A. Ramappothuval, 'Azhiyude Adithattu' (Mal), in *Rasika Ranjini*, Vol. III, No.11, Mithurnam, 1080, (c. June,1905), pp. 582-586.

209 *ibid.*

210 Karattu Achutha Menon, 'Urumbu' (Mal), in *Rasika Ranjini*, Vol.IV, No.3, Thulam,1081 (c. October,1905), pp. 177-185. Their march in a clearly linear pathway, mutual interactions and communications on the way, comradeship, united life, in a colony, hard work, etc. express their social life are cited as examples for their social life, replicating humans.

211 Such rare narrations, by absorbing scientific understanding of life distinguished the new middle class from the rest. Even the debates on theory of evolution by natural selection were largely confined to 'human-ape kinship' relationship due to the anxiety and over interference by the traditionalists and continuous reply to their queries.

212 *ibid.*, pp. 183-185.

call for adopting such qualities in human life.[213] The author briefs various discoveries by scholars abroad relating to ants and the identification of new groups into their species. Different kinds of ants are depicted in supporting the arguments. In short, the life and evolution of biological and social life had been a serious concern among the intellectuals and they paid much attention to such studies during the late 19th and early 20th centuries.

This curiosity of learning extended to various features of animal life. Like the smelling, caring, feeding, memory, etc. were the matters of interest to Malayali intellectuals of early 20th century. In such an article human beings were also analysed as one among the living organisms. For instance, an article in *Rasika Ranjini* by A. Shankarappothuval analyses the hearing capacity and of various beings from small insects to giant elephants.[214] However, he accepts the advancements made by people with the help of the capacity of their brain, intellect and assisted by the technological and scientific advancements made by human beings historically in the process of evolution. Similarly, detailed articles on various aspects of living organisms including plants and animals were widely discussed in various issues apart from some mentioned above. It extended from carnivores plants, memory and sensing of animals, the intellect of animals etc.[215] Thus a comprehensive knowledge of life is supposed to have evolved here. These discussions are historically relevant due to two reasons. One was the characterisation of human beings as

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213 Karattu Achutha Menon, 'Urumbu' (Mal), in *Rasika Ranjini*, Vol.IV, No.4, Vrschikam1081 (c. November, 1905), pp. 198-207.

214 He examines the hearing organs, their usages, capacities, social roles etc. in the article to him human beings are not the only nor the best animal in the life worlds in respect to hearing and communicating. For details see, A. Shankarapothuval, 'Jeevikalude Shravana Shakthi' (Mal), in *Rasika Ranjini*, Vol.III, No.6, Makaram,1080 (c. January,1905), pp. 310-315.

215 More impressive among them are like those on intellect of the plants, self illuminating insects, carnivores birds etc. For instance, see an article on plant intellect in *Mamgalodayam*, Vol. III, No.7, Edavam 1086 (c. May,1911) which discusses various aspects of Darwin's theory of evolution by natural selection with regard to plants.

one of the innumerable number of living organisms.[216] The second was that it gave a setback to the local argument that modern science was a simple expansion of European and Catholic belief system and therefore alien to indigenous cultures.[217]

The knowledge of microbes and insects speeded up the spread of the germ theory of diseases and modern medical science.[218] However, the Malayali society in general and intellectuals, in particular, were reluctant towards the theory of modern medical science per se and its methodology in the earlier phase. It was due to the fact that there were alternative systems of medicine for meeting their immediate needs and suitable for their lifestyles, which were sufficient and complete in their conceived senses.[219] However, the scenario began to change very soon, especially with the spread of epidemics like dysentery, cholera, plague, smallpox, etc., which claimed the lives of thousands of people each day. However, traditional medicine could not do anything to control death or curbing the diseases. It was in this context the

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216 This characterisation provides a break from the traditional understanding of human being created by god in 'his own replication'. This sense was predominant among creationists all over the world including Malayalis. Thus the lose of superior (next only to godliness) position among living organisms in qualities like smell, vision, hearing, etc. gave a setback to the overconfidence of conquering the world.

217 This argument had been frequently raised by the conventionalists (now being raised by post-modernists as well) due to the presence of colonialism missionaries and capitalism allied with the spread of modern education here that all these sciences were cultural extension of Catholicism and natural to the European culture. However, these characterisations of living organisms were quite antagonistic to Catholicism and 'European traditions'. Therefore such analysis provided explanation to such debates in the early stage itself.

218 For example see an article on microbes, entitled as 'Adrshyangalaya Jeevashakalangal' (Mal), in *Mamgalodayam*, Vol.II, No.12, Thulam, 1085 (c.October,1909).

219 There were large numbers of people practicing various traditions of medicine in each village. Moreover the number of modern medical centres and hospitals were minimum at a minuscule level while comparing with the traditional practitioners and population. For details See, K.N. Panikkar, *op cit.*, Culture, Ideology, Hegemony:....p. 151.

modern medicine and its vaccination proved quite effective and practical. It could reduce the number of deaths rapidly and provide a satiable explanation to diseases, their means of communication and innumerable deaths.[220]

Thus the people began to lose faith in the traditional systems to a greater extent and began to rely upon modern medicine.[221] In this context there were naturally debates in the society for and against the traditional medicines among intellectuals, with three positions as explained above, one being an argument against traditional medicines and their methodology and philosophy; the second position was exactly in defense of traditional medicine, especially the Ayurveda.[222] The third position was to accept the effective and technical aspects of modern medicine along with traditional especially ayurvedic medicine. For this purpose reforms in the medical practices, advanced bulk preparation and preservation of medicines and capsules, popularisation of medical systems through advertisements, setting up educational institutions for teaching ayurveda, etc. were suggested and experimented along with the publications of its texts and journals dedicated

220 As mentioned somewhere in this dissertation, ayurvedic practitioners searched these epidemics in their texts and history and explained them as some diseases familiar to those texts. However, these explanation and medications proved to be ineffective and the number of cases and deaths increased day by day. It was this methodological failure of ayurveda along with effective treatment in modern medicine that helped the growth of the latter here.

221 However, as far as common people were concerned the practical effectiveness was the sole attractive feature of modern medicine, as they were not concerned with the theoretical explanations of either modern medicine or traditional practices.

222 The ayurvedic knowledge was defended on several grounds like the sacramental character and divine origin of that knowledge, the tradition and geographical as well as cultural aspects of the practices, extensiveness and flexibility of the knowledge system, coloniality, capitalistic association and foreign origin of modern medical practices and above all anti-religious practices including vaccination of modern medicine. Ayurveda in Kerala by early 20th century had accepted the name of 'Aryavaidya' to denote the elite, indigenous culture and sacrament the system.

for medical subjects. These changes and debates naturally reflected in literature especially novels, articles etc.[223]

The journals published various articles in several series describing the new conceptions of life, health, wellness, disease curing, etc. In short, they attempted to provide a new pattern of life, hygienic conditions, etc. For instance, in *Vidya Vinodini* a series of articles were written by C.D. David who wrote in the pen name C.D.D (it was only later that the name of the author was revealed). He dealt with various aspects of human health including, wellness of the body, air and breathing, water we use, sleeping, food, cleanliness, exercise, residence and surroundings, etc. in a modern conception and terminology. There are explanations on various constituents of air, and experiments to prove their presence and various usages of these compound air.[224] What becomes more relevant about his description on air is the concerns about the pollution of air due to human interference during the late 19th century itself.[225] He describes the blood circulation and the process of carrying oxygen into different parts of the body to rouse concerns about air pollution.[226] An impressive aspect of this narration was the stress on the impact made by human life in nature and the natural process of alleviating these impacts through rain, photosynthesis, etc. The author also stresses the necessity of keeping the air clean and suggests several means for purifying the air and reducing human impact upon the environment. The same is the case of water. He reiterates various activities that pollute water and call for preserving the sources of water unpolluted. The explanations on different means for purifying water make this article exemplary. What is relevant is the chemical

223 Many of the new literature appreciated modern science, its logic and practices including medicine from *Indulekha* onwards. However, there were criticisms as well. For instance the Novel *Parishkkarapathi*, cited above, criticises modern medicine along with many other colonial institutions very harshly.

224 C.D.D., 'Arogya Raksha Margam', in *Vidya Vinodini*, Vol.V, No.3, Dhanu, 1069 (c. December 1893), pp. 53-60.

225 *ibid.*

226 *ibid.*, pp. 55-56.

description of various phenomena and scientific methods for purifying the surroundings and reducing the impact of people upon nature.[227] There are detailed narrations on healthy food habit in the succeeding issues, which categorises food in to four based on the mineral contents in it and gives a picture of minerals that are inevitable in the food of each category of people, according to the requirement of energy.[228] He divides food items into healthy, necessary, useful and avoidable groups. He reiterates the necessity of healthy food for a healthy society.

The article on cleanliness seems to be the most important in the series as it transcended the historically existing conceptions of purity and pollution. It explains how the body gets untidy and various means for cleaning the body, clothes and surroundings. He insists on the need for using soap or similar substances for a daily bath.[229] As it was supposed to provide defense against minor infections and skin diseases.[230] Despite caste restrictions on dressing and possible personal hygiene, he suggests neat and tidy clothes for all people

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227 He explains several methods of purifying water including filtering. He also describes various diseases caused by polluted water including cholera, different types of fever, etc. The process of recognising impure and hard water were also suggested and the points to be noticed in handling water. Necessity of keeping them clean were reiterated in the article.

228 *Idem*,'Arogya Raksha Margam'(Mal), in *Vidya Vinodini*, Vol.V, No.5, Kumbham,1069 (c. February,1894), pp. 113-116. Such a description of food become historically relevant, because the distribution of food and other materials in the feudal social order was very much unequal, extending from clear starvation to plenty and wastage. It is relevant here to note here that many of the festivals in feudal systems including *Onam* were in the eve of harvest season. There were larger feasts on several occasions, mainly to mark the events of birth, death and other anniversaries. *Niraputhari*, refilling the granary with new grains was also a ceremony. However, several working class people had to 'discover' different food items from wild plants, their roots, seeds, etc. especially during jobless rainy seasons in order to maintain their life and health.

229 Which was a new habit in Kerala as mentioned in story cited above. For details see, MRKC, *op cit.*, Kalam Poya...

230 C.D.D., 'Arogya Raksha Margam' (Mal), in *Vidya Vinodini*, Vol.V, No.6, Meenam, 1069 (c. March 1894), pp. 127-133.

according to the geographic conditions. His description of the need for sufficient exercises both physical and mental to all people including women and children is also historically important.[231] He suggests exercises according to the age of people and the work they engage in. His reasoning for the necessity of exercises reveals the influence of modern medical logic and health consciousness. Regarding the cleanliness of the residence and surroundings, he suggests frequent cleaning and whitewashing. However, against the traditional usage of cow dung for cleaning, he suggests some other means and criticises several traditional practices which would unclean the surroundings and invite diseases.[232] He also questions the logic of distancing women due to menstruation and other biological and natural phenomena, instead of prescribing hygienic practices.[233] He gives a detailed picture of urban cleaning and insists on the necessity of keeping market places neat and hygienic.[234] However, what has been written down by C.D. David was not merely his personal concerns, instead, they were also constituting the major paradigmatic debate and indicating the changes in the approach and mentalities of people influenced by modern science and its rationalities.[235] Another article in *Vidya Vinodini* titled 'Arogya Raksha' tries to analyse the human health and the reasons for its deteriorations. It accuses the careless and unhygienic life of people as the chief reason for the diseases. The food, surroundings, daily routine and moral responsibility of people towards the self, society and god were the chief concerns in it. Though he interprets life as

231 *ibid.*, pp. 129-130.

232 *Idem*, 'Arogya Raksha Margam', in *Vidya Vinodini*, Vol.V, No.7, Medam, 1069 (c.April,1894), pp. 154-158. Thus a direct criticism against traditional practices and unhygienic ritualisms were explained. Such criticisms were sufficient to rouse critical conscience among readers against conventionalism.

233 Thus he can be regarded as one of the earliest intellectuals of early modern Kerala with humanitarian perspective on gender relations.

234 *ibid.*, pp. 157-158.

235 Similar narrations and consequents debates on health and hygienic practices were quite common among the intellectuals of Kerala ad evidenced by the articles and discussions in several other journals.

a gift of God, still insists on the modern knowledge in maintaining personal and social health.[236] A clear comparison of contemporary medical practices in Ayurveda and modern medicine is made in Mamgalodayam by Dr. A.Ramapothuval, a frequent writer from modern medical backgrounds. He accused influent traditional medical practitioners, for not prescribing healthy living pattern in the changed circumstances to the people and appreciate modern medicine and propounders of modern science for educating people concerning them.[237] He prescribes several measures and way of life necessary for maintaining good health and criticise the traditional way of life practicing dark rooms inside the home for women and unhygienic way of life as well as the absence of sufficient exercises. He cautions people against the spread of epidemics and them to be hygienic and depend on health practitioners for curing the diseases.[238] The same author in another article extols the immunity of the human body and resistance towards diseases.[239] He argued that a person gets ill when his immunity loses due to the unnatural living of people. He ridicules the traditional belief that the *Vaidya* (medical practitioner) cures the disease.[240] He instead reiterates the spread of epidemics and other communicable diseases due to the unhygienic life and prescribes a systematisation of life to defend the body. The article asserts on the class

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236 Vidya Vinodini, Vol. I, No.1, Thulam, 1065 (c. October, 1889), pp. 13-18.

237 A. Ramapothuval, 'Arogya Raksha Kramangal' (Mal), in *Mamgalodayam*, Vol.XVI, No.6, Makaram, 1098 (c. January, 1923), pp. 145-149.

238 *ibid.*, p. 149. This direction for approaching medical practitioners for curing diseases was a relevant suggestion here. Historically, as mentioned above every community and villages had traditional medical practitioners. Still people themselves had some working knowledge on different herbs and panacea against frequent ailments and maintaining vital force. Therefore, only after facing frequent failures of their experiments, they used to visit a medical practitioner. Even after the spread of modern medicine, people continued same approach. Therefore, this direction to stop self treatment and complicating disease, had historical relevance.

239 A.R.Pothuval, 'Rogavum Athinte Karanangalum' (Mal), in *Mamgalodayam*, Vol.XVI, Nos.1-2, Chingam-Kani 1098 (c. August-September,1922), pp. 30-34.

240 *ibid.*

difference in vulnerability to diseases along with the existing geographical and cultural differences.[241] He asserts the involvements of microbes in affecting and spreading diseases and epidemics by citing examples from past events.[242]

Apart from these sorts of primary descriptions, methodological reorientation and comprehensive narrations, there were detailed articles and debates on specific issues like germ theory, vaccination, digestions, functions of various organs, different diseases and their causes as well as solutions in various systems of medicine. As a response to these lectures and articles counter narrations from the propounders of traditional medicine especially ayurveda added to the debating culture of late 19th and early 20th century. Blood circulation, microbes and the germ theory of diseases, vaccination and immunity against various diseases, etc. were the chief items of these debates. For instance the article on microbes, in *Mamgalodayam* as cited earlier provides detailed description on invisible organisms and their extension in the world which diseases various advances in biology, their reproduction, spread, decay, evolution etc.[243] In this description various inventions and new theories in different branches of modern science were highlighted, specifically the theory of evolution by natural selection by Charles Darwin was of higher influence among the intellectuals who wrote articles and made speeches here. In the present article, the constitution of plant and animal body with microscopic cells was explained to get an introduction to the microbes.[244] By

241 The immunity of people according to him, also depend on the climatic conditions and living culture of people.

242 Notwithstanding his assertions on the germ theory of diseases and role of microbes, he explain the idea of immunity with the concept of divine blessings and reminds people of their moral responsibility towards themselves and god in preserving their body intact.

243 Puthezhathu Raman Menon, *op cit.*, 'Adrshyangalaya Jeeva...

244 *ibid.* This cellular understanding of organism had led to conflicting interests here. Some traditionalists viewed it as similar to the propositions of Kananda. However, it was entirely different and a new conception altogether, as mentioned earlier. This accused similarity was utilised in two ways. To some it

acknowledging Darwin, the author characterised mobility, digestion, growth, decay, and reproduction as the factors differentiating living and non-living phenomena.[245] He explained different constituents of each cell and the process of evolution from a single cell to complex animals as described by Darwin.[246] In the article, the author has adopted a lecturing style for explaining the cell. The asexual reproduction among germs and the climatic conditions required for their growth and reproduction is explained with available information then. He explains the saprophytic and parasitic characteristics of these microbes. He tries to explain the presence of microbes in the atmosphere through the day to day experiences observable for common people. Along with using traditional terminologies, the author uses modern names common to people in order to make people familiar as well as avoiding confusion.[247] For instance, he uses the term 'carbon' along with the contemporary term *Ingaramlam* for familiarising new terms with an existing idea, which had been known to intellectuals alone. He also explains several microbes useful in day to day life and agricultural purpose. After narrating detailed information on the microbes and citing their presence everywhere, the author explains the microbes causing diseases. Such an impressive article on microbes and germs would be quite informative and helpful in realising the world of microbes and the seriousness of diseases and cleanliness.

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was an assertion of the greatness of ancient Hindu seers. To others this could be used as a way for spreading scientific knowledge among the local people.

245 *ibid.*

246 For details of the theory see Charles Darwin, *op cit*., On the Origins.....

247 One notable feature of transition period in Malayalam literature is over dependence on Sanskrit words for translating new conceptions and objects, which caused confusion of meaning to several terms. The meaning provided in Sanskrit terms with approximately similar usage but different specification and context created confusion and wrong understanding of the new idea and mistaking it with conventional context of the adopted term. The best example of such distortion of meaning was the word 'science' which is translated as 'shastra' common in pre-modern social life denoting mainly derivative and unchallengeable knowledge as mentioned earlier.

The Dhanwanthari monthly claimed to be the lone medical journal in Malayalam, published from Kottakkal by Kottakkal Arya Vaidya Sala, contained several articles with conceived modern paradigms.[248] Through this journal more or less comprehensive knowledge on health, human body, diseases, routines and healthy living style etc. were found frequently published, As noted earlier this led to several reforms and alterations in ayurvedic practices, debating and establishing various effective medicines, as well as stabilising a synchronised growth of ayurveda along with modern medicine. Apart from theoretical knowledge on health, body and medicine, it gave an informative and practical understanding of contemporary diseases and epidemics as well. The swiftly spreading epidemics and the declining effect of traditional practices including ayurveda were evident from the *Dhanwanthari* monthly. It published several articles on cholera generally equated with the familiar diseases through Sanskrit term *Vishoochika*..[249]

However, being a journal for promoting ayurvedic knowledge, it had to stress on ayurvedic understandings on such epidemics. Moreover, they interpreted it according to the *Tridosha* theory as the fury of phlegm, bile and gas and determined the treatment for regulating it. Due to continuous failure of treatment and some new symptoms than textually cited reasons they had to

248 Though the journal was published for and by the practitioners and propounders of ayurveda, they stood for reforming ayurveda in the light of modern medicine and its technology. Therefore they published several articles written by the practitioners and propounders of modern medicine and tried to give a comprehensive knowledge in the medical phenomena. Therefore such articles and other writing led to prolonged and serious debates as many of the readers and subscribers being either practitioners or propounders of traditional medicines, especially ayurveda.

249 By this nomenclature they aimed at proclaiming the familiarity of ayurvedic tradition with such diseases and means of curing them. Most of these articles held the symptoms of the disease such as indigestion, vomiting, dysentery etc. and prescribed treatment for them. Though some symptoms were similar for both diseases both of them were entirely different diseases. This external symptomatic understanding (*Lakshanajnhana*) and subsequent wrong treatment and treatment for symptoms not the disease, etc. diminished the reliability of ayurveda among people.

depend on the interpretations of modern medicine to a certain extent still did not accept them completely. But most of the time they used these interpretations as founding them in the traditional references.[250] For the present cholera microbes, they linked the references to the dust particle, observable in the rays of light called in Sanskrit as *Trudi*. References to such *Thrudi* in ancient literature were used as same or analogous to the newly interpreted microbes.[251] However, they also gave modern scientific interpretations for these diseases and justified the absence of such references in traditional texts due to the minuteness of these microbes and lack of such magnifying technologies like those of microscope during those days. Anyway, they did not problematise the methodological insufficiency of Ayurveda for identifying these diseases. The series of cholera continue to describe the diseases and different symptoms as well as various categories of the disease according to the excess in *dosha* such as *Vatha Vishoochika, Pitha Vishoochika, Kapha Vishoochika*.[252] However, it adopted various conceptions, techniques and practices from the modern medicine occasionally.

Anatomical articles were published in a series written by doctors of modern medicine. Such a series was handled by P.K.V, from Madras Medical College titled 'Shareera Shastram'. This series explained each organ, both internal and external in the human body with its functions and possible diseases affecting them in the sense of modern medical science.[253] Different

250 This process of inventing the new logic and knowledge in the tradition was quite common among the traditionalists during the period under discussion, as noted earlier.

251 For details see, *Dhanvanthari*, Vol. I, No.1, Chingam-1, 1079 (17, August, 1903), p.4.

252 *Dhanwanthari*, Vol.I, No.2, Kanni-1, 1079 (17, September, 1903), p.21.

253 It is relevant because the anatomical knowledge of traditional medicine is said to have been very much primitive. Though there were claims of dissection and similar examinations which according to Meera Nanda, gave ayurveda an 'impure' status that the Vedanthic and other traditions derided it to be false knowledge or 'avidya'. Nanda, after quoting Debiprasad Chattopadhyaya, claim

stories from Indian Medical records were translated and published monthly which shared several experiences, serious, strange or complicated, faced by doctors in their practices which also intended to broaden the knowledge of the practitioner of traditional medicine and to inform them about different diseases and treatments.[254] An association of practitioners and well-wishers of ayurveda was formed under the initiation of P.S.Varrier (the founder of Kottakkal Arya Vaidyashala) and many of the elites especially the members of almost all erstwhile royal families and prominent landlords (*janmis*) were members and office-bearers. The meetings were reported including the attendance in the journal, which indicates not only the class character of the association but the 'royal patronage' still received by the traditional system.[255] Different medicines used by modern medical practitioners for various diseases were introduced through various issues of Dhanwanthari especially for the help of Vaidyas (medical practitioners).[256]

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the Non-Vedic origin of ayurveda; which is instead attributed to physicians who were committed to naturalistic understanding of life. For details see, Meera Nanda, *Prophets Facing Backward: Postmodernism, Science and Hindu Nationalism*, New Delhi, Permanent Black, 2006 (2004), pp. 77-78.

254 Several complicated cases of surgery, etc. attended or published by practitioners of modern medicine used to report in the *Dhanwanthari* monthly very frequently, this seems to have provided a more mechanical anatomical understanding of human body to people in general and the traditional medical practitioners in particular, they being the chief audience and respondents of the monthly. For details, see various issues of *Dhanwanthari* monthly.

255 The first committee was attended by Rama Varma Thampuran of Kochi(of erstwhile royal family), K.C. Kunhanujan Thampuran of Calicut(descendant of zamorin), Thaikkattu Narayanan Moos, Punnasseri Nambi Neelakanda Sharma, Thrkkoviluzhuthra Varrier, Kunhan Varier, V. Vasudevan Moosath, P.V. Krishna Varrier, P. Govinda Varrier, Vallathol Narayana Menon, M.V.Krishna Varrier, M. Kunhan Varrier, P.S. Varrier et al. This indicate the support received by P.S. Varrier for his initiative of revival and reform of ayurveda which by then had begun to be addressed as Arya Vaidya as mentioned above.

256 However, it is to be noted here that these medicines were not depicted chemically nor did they explain the functioning of these medicines. Instead what has been provided was that the explanation of some medicines curative for some diseases according to the severity of the diseases,very much similar

The spread of Plague in 1896 had been a major item of debate among the new middle class as well. The disease that had already spread all over India and killing thousands of people every day reflected with due importance in these journals. For instance, an article by Chenkulath Komu Menon contained the history, types and symptoms of Plague in detail. Interestingly he provides the details and reasons in the modern medical perspective. However, he did not hesitate to write about the familiarity of ayurveda scholars with the disease as it had spread in India during the pre-modern period, known by the name of 'Agni Rohini' and 'Mahamari'.[257]

There was serious criticism against the traditional medical practitioners and medicine; its lesser effect and theoretical as well as practical complexities. There were replies to such criticisms and debates elsewhere published in the Dhanwanthiri frequently. For instance, such a reply was written by C. Komu Menon against criticisms by M.I.Philip, a private medical practitioner at Alappuzha, in the *Indian Medical Record*, a weekly publication from Calcutta.[258] Philip, in his article on his 'three years experience as a doctor in Travancore(*Dharma Rajya*)' had questioned the logic, methodology and practical effects of traditional medicines.[259] He had also narrated several instances of complications to the patient and disease through the undiagnosed treatments of these *vaidyas*. To this and similar criticisms, Menon replied that ayurveda has similar potential as modern (English) medicine and its

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to the usage of some decoctions in ayurveda. All such articles provide details and explanations in clearly traditional epistemology. For instance, see the description on quinine sulphate titled 'Kwayana'(Mal), in *Dhanwanthari*, Vol.I. No.1, pp.6-8 ,Chingam-1,1079, (17th August, 1903), pp. 6-8. And also, see description on 'Antipyrin' (Mal) with same title, *Dhanwanthari*, Vol.I, No.2, Kanni-1, 1079,(17th September, 1903) pp. 25-27. etc.

257 Chenkulath Komu Menon, 'Plague Allenkil Agni Rohini' (Mal), in *Dhanwanthri*, Vol.I, No.6, Makaram-1, 1079 (14, January, 1904), pp. 115-118.

258 C.Komu Menon, 'Oru English Vaidyante Lekhanathinulla Marupadi' (Mal), in *Dhanwanthari*, Vol. I, No. 7, Kumbham-1, 1079 (13, February, 1904), pp. 133-136.

259 *ibid.*

diagnosis, through identifying symptoms is acclaimed worldwide.[260] He narrates the limitations of modern medical practitioners and says that 'many medical graduates without much knowledge in diseases, treat people with their 'pipes' leading to merciless killing of people'.[261] However, he accepts the proficiency of modern medicine in diagnosing diseases through its technology and dissection. But to him equally important is the skill of trained and observed experiences of traditional practitioners.[262] He, However, compares the criticism of modern medical practitioner against traditional medicine with an analogy of case-less advocate blaming his colleague for his plight. He hails the capacity of *vaidyas* in predicting death rightly.[263]

The technical advancement of modern medicine in diagnosing disease and determining the treatment was the major subject in the debate between medical science and traditional practices.[264] Doctors were always identified as

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260 *ibid.*

261 *ibid.* It is evident, he holds that mere 'university training' and graduation do not create a good doctor, instead it requires thorough 'knowledge and experiences' and justifies ayurveda for its experience of 'successfully' treating diseases for thousands of years. Here he refers with pipe (*Kuzhal*) to stethoscope which is always held as an identification mark (*lakshana*) of medical doctors in Malayalam literatures of the period.

262 *ibid.*

263 It was a common practice among the *vaidya* to predict the death in advance. Through their experiences, they would identify the severity of the disease and mercilessly refuse to treat the patient and adjourn the treatment for some weeks based on traditional almanac and zodiac. Naturally the patient dies before the set date and this merciless killing is claimed to be the skill of 'prediction of death'.

264 The process for identifying disease in ayurveda is through *prathyaksha* (direct observation), *anumana* (guess), *agama* (knowledge derived from previous scholars, texts and Shastra), *poorva roopa* (primitive form; comparable to the incubation period of medical science) etc. through these process the *vaidya* diagnoses the disease and prescribe the treatment according to texts and traditions. There were no ready made medicines instead it has to be prepared by fetching herbs and minerals from elsewhere collected accordingly for ensuring the quality of medicine. If they are not collected in the right way, at prescribed date and time, the medicine loses its qualities. For details, see

a person with a pipe (*kuzhal*); this naturally became a part of printed debates as well. An article in *Dhanwanthari* titled 'Uraparishodhana Yanthram (stethoscope)' gives a detailed description of the invention and history of this equipment, its functions, making and importance in the medical practice.[265] Due to the effectiveness of these types of equipment in recognising the disease and treatment, there were numerous observations from the traditional medical practitioners to adopt such techniques in ayurvedic treatment for the rejuvenation of the system. For instance, it was written that 'Observation of blood circulation, variation in the functioning of the heart and its values and wellness of body can be identified with this device and it is suggestible for even the practitioners of traditional medicine for better diagnosing the disease'.[266] Similarly, articles on 'x-ray', microscope, thermometer, etc. were found in different issues of this monthly publication itself.[267] They also wrote on blood circulation, digestion, breathing, etc. with inputs from modern medicine.[268] The importance of cleanliness, daily exercise, etc. was frequently written in the monthly by different vaidyas and doctors as well as other learned men. This indicates the influence of modern medicine upon them.[269]

P.V.,Krishna Varrier, *op cit., Aryavaidya Charithram…;* also see, P.K., Varrier, *op cit., Padamudrakal...*

265 *Dhanwanthari*, Vol. I, No. 10, Edavam-1, 1079 (14th May, 1904), pp. 186-188.

266 As reflected in this quotation, the call for reform in ayurveda by adopting the knowledge, techniques and technologies of modern medicine was at its high pitch during this period. For details, see *ibid.* (assertion added, translation mine).

267 For instance, see issues of *Dhanwanthari*, Vol. I, No.5, Dhanu-1, 1079(December, 1903) and *Kairali*, Vol. III, No.4, Medam-1, 1093(April 14, 1918). etc.

268 For instance series of articles on blood circulation were published in *Dhanwanthari* written by a non-practitioner from Zamorine's family. He had completely relied up on modern medical science, for example, see K.C.,Thiruveerarayan Raja, 'Chora' (Mal), in *Dhanwanthari*, Vo.I, No.10, Edavam-1,1079, (14, May,1904), pp. 192-195.

269 Though there were several traditions of yoga and similar exercises, they seems to have continued to be of an elitist or saintly character until the orientalist rediscovery and subsequent revival of those traditions. For common people

Though there is no clear evidence to claim that the vaidyas practicing traditional medicine and believing its methodology had accepted the germ theory of diseases or believed it to be true, the periodicals especially 'medical journal' *Dhanwanthari* has several articles by accepting the theory and its world view in the same vigor they published the traditional hypotheses of disease, human body and its metabolism. However, in the argumentative culture, there were spaces for different traditions as that helped an easy adaptation and knowledge transaction between these systems.[270] Therefore the articles from the perspective of medical science, published in the journal for the promotion of traditional medicine were not generally challenged by the Vaidyas and the propounders of traditional practices writing in them.[271] For instance a direct article on blood titled 'Chora' by K.C. Thiruveerarayan Raja cited above, explained the blood, its components, various inventions regarding blood cells with the help of the microscope, various functions of corpuscles etc.[272]

The spread of epidemics had clearly affected the thinking process and approach towards these systems of medicine. As stated above in the case of

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there seems to have no separate exercises apart from their day to day labour and similar activities. However, with the revivalism under the leadership of new middle class including Vivekananda, it began to achieve a popular character and became a chief commodity of cultural export. For a critical understanding of Hindu revivalism and communalisation through such cultures and traditions, see Meera Nanda, *Science in Saffron: Skeptical Essays on History of Science*, Gurgaon, Three Essays Collective, 2016.

270 There were adaptations in different practices during this period including yunani, siddha, etc. they all in turn were influenced by modern medicine. For a detailed understanding, see K.N., Panikkar, *op cit., Culture, Ideology….*

271 *It was common during the period under discussion that a democratic debate culture had been evolving here. Many of the arguments raised against the existing view point and traditions were challenged by those accepting these positions. But in the case of theories like blood circulation and germ theory there were no specific challenges, visible in these published debates. However, the traditionalists continued to explain things in their own view points and based on the tridosha, panchabhootha etc.*

272 K.C. Thiruveerarayan Raj, *op cit*., 'Chora'….

cholera, tuberculosis, plague, smallpox, etc. modern medical theory and practice became highly acceptable to the people as they only had the solution and diagnostic capacity for these diseases.[273] About tuberculosis, articles were published with a modern medical perspective.[274] An article in *Mamgalodayam* (a journal of proclaimed alliance with traditional elites and conventionalism) on vaccination criticised the traditionalists for their reluctance and objections towards modern medicine and vaccination.[275] It describes the history of vaccination, the course of the progress of vaccination, its result in the history of human health, etc. in a thought-provoking language. He criticise the traditional and upper class' approach towards vaccination and modern medicine.[276] He traces examples from the tradition itself against the concept of pollution raised against vaccination and call for reform in the traditions and ceremonies suitable for the age as had been doing by the predecessors.[277] Similarly an article on plague traced the history of the disease and reports from Indian records.[278] However, he reports that many of the traditional medical practitioners, the author approached, had rejected the existence of such a disease. But some of them opined it may be a flu spread through rats, some others opined it as the *Agnirohini*, a disease found referred

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273 Though traditional practitioners used to treat for these diseases, they conceived them to be some diseases identical with similar symptoms, due to their methodological insufficiency. Some of them even raised their voices against vaccination on cultural and religious basis, as mentioned earlier. However, the practical success and clarity provided by modern medical practitioners could bring people under its fold.

274 M.G., 'Kshayarogam' (Mal), in *Dhanwanthari*, Vol.I, No.10, Edavam-1, 1079,(14th May,1904), pp.197-198.

275 K.C., Veerarayan Raja, 'Vasoori Keerivekkal' (Mal), in *Mamgalodayam*, Vol.II, No.6, Medam,1085 (April,1910), pp. 219-229. This standpoint is also an indication of the democratic debate culture with due space for criticisms and oppositions evolved in Kerala during early modern period.

276 *ibid.*, pp. 219-220.

277 *ibid.*, pp. 228-229.

278 A.P., 'Plague' (Mal), in *Mamgalodayam*, Vol.X, No.1, Medam,1092 (c. April, 1917) pp. 62-66.

to in the texts.[279] He alarms people about the absence of clear curative methods or medicine for the plague and therefore asks people to be cautious of affecting the diseases. However, the vaccination (Hoffkin's Anti-plague Inoculation) and methods of preventing the disease are described in the article itself.[280] An impressive and fictitious narration on different aspects of the plague was published in the Dhanwanthari monthly, in an easily graspable way for the people. It was written in the form of a story and in which a discussion between a king and his physician on the manner of spreading the plague, means for checking the growth, and preventive methods, as well as possible defensive measures against plague, are discussed.[281] It states that plague is identified as a disease spread through rats and insects which has no medicine or treatment discovered so far.[282] This story seems to be quite influential among people who read it and the relationship between rats and plague is identifiable from the title of the story ('Plague Deenavum Eliyum') itself.

Similarly, epidemics like leprosy due to its severity and calamity had been a matter of continued discussion that helped, among other diseases, to raise popular conscience in favour of the germ theory of disease. The statistics of affected people in India during the late 19th and early 20th century show the casualties it made to society.[283] Apart from the historical analysis of the

279 These positions are due to their over dependence on the texts believed to be composed by ancient seers. What is interesting is that their rejection came in the same circumstance that the disease had killed thousands of people recently and had spread several times in the history of India especially 1325, 1351, 1399, 1618, 1816, 1836 etc. For details, see, *ibid.*

280 *ibid.*

281 *For details, see Dhanwanthari, Vol.XVIII, No.7, Kumbham, 1096 (c. February, 1921), pp.151-157.*

282 *ibid.*

283 *In the 1891 census the number of people affected by leprosy was 1,05,000 among 21 crore people. That is 5 people per each 10000. But in the 1921 census the number had slightly decreased to 1,02512. But the reliability of this number had challenged by the school of Tropical medicine at Calcutta due to*

disease, the author tries to give a brief picture of epidemics and other diseases spread by microbes for a general understanding of the precautions to be taken against the spread of such diseases.[284] Thus such analysis of diseases and epidemics among the middle class, in general, led to a wider acceptance of modern medicine and its theories among them. However, society, in general, was not highly concerned about the theoretical aspects of medicine like any other knowledge. Instead, the practical success of modern medicine replacing the hegemony of traditional practices as well as the governmental support to modern medicine led to its growth in Kerala. There were wider criticisms from the practitioners of traditional medicine that the system is completely avoided by the government and they do not get any support and due consideration, while government patronises only the modern medicine (English medicine in their terms) and its practitioners for promoting them.[285]

It was in this circumstance of the increasing influence of modern medicine among the people that the ayurvedic reforms and revival of the 'lost glory' became a major agenda among its propounders. The traditionalists began to criticise the influence of modern medicine and doctors among the middle class, as cited earlier. The use of bath soap, drinking tea and coffee regularly, depending on modern medical doctors for minor diseases and even for delivery etc. were considered as the symbols of modernisation and criticised by the traditionalists.[286] There were two immediate responses from

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explicit lacunae between actual number and census report. They cited that, out of 30 patients attended there for treatment only two people were there among enumerated list. For details, see D.R., Shenoy, 'Kushta Rogavum Nivarana Margangalum' (Mal), in Dhanwanthari', Vol. XXII, No.1, Chingam-2, 1100, (c. August,1924), pp. 14-16.

284 *ibid.*

285 For such a criticism see, Vadakkeppattu Narayanan Nair, 'Nammude Ippozhathe Sthithiyum Iniyathe Gathiyum' (Mal), in *Dhanwanthari*, Vol.XVII, No.7, Kumbham,1096 (February, 1921), pp.145-150.

286 Similar criticisms as cited earlier in the story in *Mamgalodayam*, for details see, MRKC, *op cit.*, 'Kalam Poya… and also in Kochuthomman Appothikkari, *op cit., Parishkarappathi...*

the traditionalists that (1) they stood against modern medicine and praised the superiority of ancient medical system 'discovered' and propagated by ancient seers like Charaka, Sushrutha. Moreover 'Dhanwanthari', the God who 'formulated' the 'Arya vaidya', was kept before every discourse and thus the divine status of the knowledge reiterated.[287] (2) Many of them called for reforming the ancient medical system by accepting the techniques, technology and medication.[288] It was this second position that led to the revival of modern, commercialised ayurveda by adopting modern diagnostic systems such as x-ray, stethoscope, blood test, etc. as well as advanced and bulk preparation of medicines and use of preservatives, capsules etc.

Though modern medical knowledge was adopted along with its technology at a practical level, the basic concepts of ayurveda continued to be the same *tridosha* theory based on the conception of *the panchabhootha* formula of nature. Thus the revived traditionalism and the redefined traditionalism stood in defense of ayurveda. However, the different traditional practices of the herbal medical system, community medical lore, etc. began to be interpreted as the distributaries broken away from the single ayurvedic system during the course of history. Anyhow, no attempts were made to reorganise this knowledge and develop a hybrid and a comprehensive medical practice of indigenous people even during this stage of history. However,

287 It should be noted here that the monthly publication started by P.S. Varrier at Kottakkal bore the name of the God, to whom a temple was founded near his *Vaidyashala*. The front cover of the monthly was always depicted with a portrait of the idol of god *Dhanwanthari*.

288 The Aryavaidya Padashala established under the auspices of the Kottakkal Aryavaidyashala, at Calicut had a proclaimed intention in this regard. They included modern medical knowledge in the syllabus for training ayurveda practitioners. They also appointed teachers from the medical science background to teach these students. The founder of Aryavaidyashala, P.S.Varrier himself was a beneficiary of the hybrid knowledge, informally. Moreover the demand for training modern medical practitioners in the traditional knowledge was raised from some corners as evidenced in Dhanwanthari in an article titled, 'Thiruvithamkur Governmetum Scholarshippukalum' (Mal). in Dhanwanthari, Vol.II, No.11, mithunam-1, 1080 (14th June, 1905), pp208-211.

there were attempts to bring them all under these newly started commercial ventures as their franchisees.[289] There emerged another claim that being a practically proven medical system, whatever the theoretical part be ayurveda is a science in itself.[290] Thus there was a multifaceted response from the traditional community and practitioners of the medical system towards modern science and its practical medical application.

One of the early responses of Neo-traditionalists in defense of the traditional medical system was the arguments concluding that every medical advancement in the world was the furtherance of ayurveda. Because it is the root of all medical knowledge.[291] For example, an article in *Rasika Ranjini* 'logically' traces the origin of medical knowledge in India, which went to Egypt, Arabia etc. from whom the Greeks adopted the system which naturally grown and advanced to the modern medical system.[292] It describes

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289 Various systems of medical practices existed in pre-modern Kerala as mentioned in the beginning of this dissertaiton, had different origin from the practical experiences of people during different stages of history. However, Arya Vaidya denote the Sanskritized Hindu medicine based on the textual traditions of North India. Thus by this period they all were theoretically and practically made dependents of the commercialised aryavaidya tradition by providing franchisees to such hereditary practitioners as distributors of ready made kashayam, ghrutham, capsules etc. distributed from the core, like Kottakkal, Ollur, Coimbatore etc.

290 There were several such claims by early decades of twentieth century itself. It was out of this conception that they imagined a transaction of knowledge between two traditions are possible. Therefore, being the propounders of ayurveda the writers in almost all issues of *Dhanwanthari* claimed such status. As stated earlier, this period witnessed the spread of epidemics and people began to depend modern medicine as the only solution. For details,see C.K., 'Shastreeya Thatwangal' (Mal), in *Mamgalodayam* Vol.V, No.8, karkkidakam, 1088 (c.july,1913). And, D. Kunhikrishna Varrier, 'Ayurvedam' (Mal), in *Mamgalodayam*, Vol.IX, No.10, Makaram,1092 (c.January, 1917).

291 They held that, it was from the medical traditions of ancient and medieval Indians that the people of Greece, Rome, West and Central Asia etc. derived their medical knowledge. Therefore every expansion in them will provide justification for the sanctity of ancient Indian intellectual tradition.

292 Similar arguments and claims were raised by some modern Indian intellectuals on various disciplines of modern science, including mathematics astronomy

the history of modern medicine from Hippocrates to the contemporary period to which the tributary of the Indian medical system was linked. The influence of the Indian medical system in the *Materia Medica* is explained it.[293] There were larger claims of ancient Indian mastery in surgery and other medical practices in them.[294] The article goes to the extent that 'the complete system of modern medical knowledge all over the world was derived from cultures like Egyptian, Persian, Arabian, Chinese and it is easily provable that these cultures received their medicine from Hindus whom they all had connections from very ancient period onwards. If such a piece of knowledge gets accepted it can naturally be proved that every basic principle of medical knowledge emerged from *Aryan Rshis* of the ancient period'.[295] He asserts that not only

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etc. However, an extended logical argument of similar character on medical knowledge was also spread, which was accepted by several contemporary scholars. For such a discussion see, K.N.M., 'Aryavaidyappazhama' (Mal), in *Rasika Ranjini*, Vol.IV, No.11, Mithunam,1081 (c. June,1906), pp. 602-608.

293 *ibid.*, p.605. The reference to *Triphala* by Acturius and other Greek medical men along with the absence of complex surgery in their medical practice etc. were noticed as to prove the superior condition of ancient Indian medicine.

294 Regarding surgery there were wider claims by the propounders of Indian heritage that ancient Indians were well versed in it. It seems to be a misleading claim that references to *Shastrakriya* that is *Kriya* using *Shastras* (activity/ performance using instruments/devices) were familiar. Shastras include implements like a primitive forms of sharper knives, points, scissors, etc. are said to have been referred in different traditional texts to assist the Vaidya including 'Sushrutha Samhitta' which were depicted in later works with the help of these explanations and adopting models from modern medical tools and used to prove the advancements in skill and surgery. Naturally these devices could have been evolved into a kind of surgery, but the over emphasis on texts and the methodology which had received a sacred stature blocked such an evolution. Above all the system modern surgery seems to be unacceptable for ayurveda when it received an elitist character as cited earlier. The pictures of such *shastras*, taken from Aryavaidya Charithram were given in these journals widely to reiterate their advancements in ancient period. However, they were drawn by an artists receiving inputs from ayurveda practitioners and adopting models from modern surgeons. For instance, see *Dhanwanthari*, Vol.III, No.2, Kanni-1,1081 (16th September,1905)

295 *ibid.*, pp. 606-607. (assertions added, translation mine).

medicine but modern European philosophy, religions, etc. have bearings from India.

Notwithstanding in the succeeding issue of the journal, the author presents, more logically, the link between medieval scholars with the Indian medical system. References to Charaka are invented in the works of Arabian medical men like Rhazes, Sarapian, etc. References to the translations of the 'works of Charaka, Sushrutha studied by Harun -Al-Rashid (sic), Mansur' etc. were used as evidence in it.[296] He quotes several orientalist scholars referring to the originality of Indian medical systems and their contribution to the growth of medicine all over the world. Similarly the *Dhanwanthari* bore several articles and series on the superiority of ayurvedaic medicine including special series on its branches such as toxic knowledge, pediatric knowledge, ophthalmic knowledge etc.[297] Similarly an article in *Mamgalodayam* reiterated that ayurveda is not a system of treatment, instead it is the technique of life which naturally include diseases, treatment, medicines, alchemy, etc.[298] He traces the history of ayurveda up to Vedic period and finds several references in Vedas for proving his argument along with the references to the works of seers and their disciples who claimed to have formulated the medical system here.[299] Thus, to them formulated systems of practices with stipulated

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296 K.N.M., 'Arya Vaidyappazhama'(Mal), in *Rasika Ranjini*, Vol.IV, No.12, Karkkidakam,1081, (c. July,1906), pp. 681-686.

297 There were series of aricles on *Vishavaidyam*, *Balachikilsa*, *Netrachikilsa* etc. For instance, the series on *Vishavaidyam* written by Channazhi Kumaran Moosad continued uninterruptedly from the initial issue of the *Dhanwanthari* up to his death.

298 D. Kunhikrishna Varrier, 'Ayurvedam' (Mal), in *Mamgalodayam*, Vol.IX, No.10, Makaram,1092 (c. January, 1917) pp. 227-232.

299 It was a general tendency of the period to trace back the history to several saints and seers for attributing authenticity for them. Similarly regarding ayurveda there emerged a general sense that it was emerged from Dhanwanthari and derived through seers like Athreya, Agnivesha, to Charaka, Sushrutha etc. and therefore the system which is available in the textual form have such sanctity and divinity that they cannot be questioned nor can they be changed as they are complete in themselves. It is to be understood that an

instructions and rejections for the treatment and surgery. But the occasions of failure of treatment is related to the 'wrong diagnosis of the constituting bhutha of the patient's body and not to the system of medicine. Because, they hold it as a perfectly evolved system with the practical experiences of thousands of years'.[300] In a speech at the 8th annual ayurveda conference in the auspices of Indian Ayurveda Association's held at Pune, Rama Varma spoke of the actual condition of ayurveda in details. After presenting the history of ayurveda and the system of medicine peculiar to Kerala including the *Ashtavaidhyas*, the Brahmanical system of medicine evolved here from the Sanskrit texts, he reiterated the necessity of reforming the system to include the recent improvements into medical knowledge.[301] He narrates his personal experience of curing diseases 'abandoned' by modern medical practitioners, due to their inability, through knowledge embedded in *Ashtanga Hrdaya*. , However, it accepts the deteriorated condition of Ayurveda with chronic negligence from the part of practitioners, who gave lesser importance to treatments and reforming them, instead held the curing of diseases due to luck.[302] He applauds the works of Ayurveda Association for promoting the system and regaining its lost glory. The importance of his speech in his assertion on the need for organising and recording various practices scattered all over India and to adapt them to the indigenous systems

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orientalist reading of history was receiving higher acceptance here during this period. Though these claims were not new, as mentioned above, during the religious revivalism such interpretations of divinity was providing sanctity to knowledge and tradition at an unprecedented level.

300 *ibid.*, p. 232.(assertion added, translation mine) Such claiming of heritage for thousands of years was a character of this period. It is deriving out of the traditional sensibility that the antiquity and heritage provide validity to knowledge and practice.

301 The full text of the speech had published in *Mamgalodayam,*Vol.IX, No.10, Makaram,1092 (c.January,1917) pp. 296-303.

302 *ibid.*, p. 301.

to form a comprehensive system of ayurveda here and regain lost glory of ayurveda.[303]

Moreover, there had been severe serious criticisms against modern medicine, its practices, vaccination, world view, etc. during this period. One of the important attacks was against vaccination and its challenge of the traditional medical system.[304] Such criticism against the vaccination was raised in the context that modern medicine especially its vaccination and prevention of diseases had reduced the dominance of traditional medical practices including ayurveda among the people.[305] In an article by T.P.R. Menon in *Mamgalodayam,* he quotes several positions taken against vaccination all over the world to disprove the claims in support of vaccination.[306] He joyously quotes the position taken by the British

303 *ibid.,* p. 303. However, no such attempts were made here to codify different traditions. Instead what was effectively done was the commercialisation of ayurveda and absorbing different hereditary practices under their flags as agencies of these commercial enterprises.

304 They found it as an activity that would pollute them as the substance taken from the cow (lymph) injected up on human body would lead to lose of their caste and is forbidden for the Hindus. However, such criticisms were countered with clear reply in those journals themselves with traditional epistemology. For instance, see K.C.,Veerarayan Raja, 'Vasoori Keerivekkal' (Mal), in *Mamgalodayam,* Vol.II, No.6, Medam, 1085 (c. April,1910).

305 However, it should be noted that many people belonging to the middle class, not only supported the vaccination, as its effects were clearly observable for them, but also asked to adopt such system, to the traditional medicine in reforming them. Still the traditionalists were highly reluctant towards this new idea.

306 T.P.R. Menon, 'Vasoori Keerivekkunnath Kondulla Chila Doshangal' (Mal), in *Mamgalodayam*, Vo.V, No.3, Makaram,1088 (c.January,1913), pp. 44-48. He quotes from several anti-vaccination campaigners all over the world including Europe, America, etc. Thus proves that it is not a problem of the East against West. But modern medicine has been challenged people from different parts of the world (especially the intelligent from the west). The historical relevance of this argument is that by this time Europeans had begun to be represented as the propounders of modern science which was wrongly linked with their culture through the works and propaganda of the orientalists. This cultural understanding of knowledge including science became a fashion in the writings. Thus everything said by the western (European) scholars began to

Parliament that 'vaccination is not necessary and people can opt it'.[307] Similarly he writes, in Germany (which was in the front row of adopting vaccination) a movement against it has evolved. He, however, adopts the colonial statistics to question the effect of vaccination upon death rate.[308] Thus it is evident that some of the Neo-traditionalists utilised many references and discoveries for proving their antagonism towards modern medicine and its science from different parts of the world especially Europeans, despite their criticisms against modern science that it is a European knowledge.[309]

The middle position on the medical field was quite extensive than those discussed above. Many of them held that more than theoretical differences science is the knowledge of practical efficiency and advancement.[310] Thus

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receive wrong admiration. Therefore, the anti scientific and religious conventionalism were also began to be established through 'great' words of Europeans.

307 *ibid.*, p.44.

308 However, he takes the number of death 30 years together and divided it with 30 and compared it with the death of 1906 which showed a decrease of 1557 only after the vaccination. Therefore it is claimed to be a lesser effect for details see *ibid.*, p. 45.

309 *ibid.* He quotes from several people all over the world especially from west, like J.H (London), Sir William Callins M.D, Charles Gave, Royal Commission Report, Punjab Army Commission Report, William Tebb, W.J. Dimbson, T. Clifford Albert, Ornold Supton M.P, Barren Humpoldt, Florence Nightingale, Charles Blornfield, British Medical Journal, B.A. Charles Worth, National Anti-Vaccination League - Britain, J.H. Henricks, etc. to substantiate his arguments. But many of them were quoted from out of context.

310 Such an understanding of ecumenical perspective of evolution of knowledge is evident not only from criticisms against science but also among the applauders of modern science. Many of them had understood it to be a useful technology and mechanism for improving conditions of life. For instance, see a comprehensive article by M. Sheshagiriprabhu, 'Shastram' (Mal), in *Mamgalodayam*, Vol.VII, No.3, Makaram,1090, pp. 167-175. In which he explains shastra 'held once as the religious texts, regulating the techniques of ceremonies. As the ceremonies were for the attainment of four 'purusharthas'(aims/roles of human life) like, Dharma, Artha, Kama, Moksha; among them the earlier three are aimed under modern science as well. Therefore, both traditional and scientific knowledge can be denoted by the

traditional medicine, being effective in several cases, becomes indistinguishably science. Therefore the term 'Shastra' used to denote traditional knowledge is unambiguously applicable to modern science and vice versa.[311] Many of them, however, accepted the need for reforming ayurveda in the light of modern science. They held that 'Aryavaidya' will be able to recover the 'lost glory' if the technology, techniques and medication, etc. were renovated by accepting relevant skills from modern medicine.[312] They stood for establishing medical schools similar to modern medicine, with teachers from modern medicine teaching anatomy, surgery, etc. along with ayurvedic theories and texts. Thus apart from publishing articles on modern medicine and through its viewpoint Kottakkal Aryavaidyashala under the auspices of Aryavaidya Samajam decided to establish an Aryavaidya Pada Shala (school) at Calicut.[313] The aim of Aryavaidya Samajam, an organisation for the reform of ayurveda was to regain the 'lost glory' to ayurveda and to extend its reach to further areas. In short, the demand for bringing up sufficient renovations to ayurvedic knowledge and practice was at its peak during this period.

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term 'shastra'. In other words the difference between them are merely cultural' and epistemological.

311 *ibid.*

312 Instead of accepting the methodological differences they held a glorified past and naturally chronic deteriorations. Thus 'reasons for the decay' naturally led to a cultural interpretation of knowledge and therefore rediscovering the lost glory was set as the solution. Thus in the context of growing anti-colonial movements these 'rediscovering the self' was not only insufficient for the renovations but also diverted the movement towards the growing 'cultural nationalism'. Which was fatal in the history of contemporary India. Notwithstanding the movements like those of Kottakkal Aryavaidya Shala was an exception which stood for modernising tradition by taking it into the market, as mentioned above.

313 A prospectus was issued for the purpose of the establishment of medical centre at Calicut. For details see, *Dhanwanthari*, Vol. I, No.10, Edvam1079 (May, 1904) p. 200. The institution was later upgraded to a training centre in Ayurveda by around 1917. Apart from this, there was a training centre for teaching ayurveda in Travancore which taught trainees various aspects of pre-modern medical system.

In the controversy of modernising ayurveda and reforming its medication there were two opposing opinions among the intellectuals of the period. A section of them appeared to present their view that 'English Medicine' should be taught to those trained in traditional medicine/ayurveda. But there arose the tension that it would take so long a period to train them in English medicine after completing their learning in ayurveda. Moreover those who trained in modern medicine finally would turn out to be its practitioners which would not yield anything to the people nor will it be helpful to ayurveda. Instead it will be easy to give additional training of one or two years in ayurveda to those who have already learned English medicine. Therefore they will be well versed in the medicines and systems of ayurveda as well.[314] Therefore, it was expected to be helpful to the people in general. They can be used for training people aryavaidya padashalas (schools) and thereby the effect can be extended to more areas. For all these, they asks the Travancore government to select some skilled people who learned modern medicine and send them somewhere like Calcutta with sufficient scholarships to learn ayurveda for one or two years and recruit them for training people in ayurveda.[315]

Therefore the redefinition and translations of knowledge in ayurveda during the growth of modern medicine became a general phenomenon. Thus

314 This kind of opinion was raised by several people in various occasions including in the Aryavaidya Samajam. In this context, the *Dhanwanthari* monthly published an editorial on this subject, by asking the Travancore government, which has already shown an impressive interest in teaching and promoting ayurveda. For details see *Dhanwanthari*, Vol.II, No.11, Mithunam1, 1080 (14th June, 1905), pp. 208-211.

315 This opinion was raised in a context that medical practices in ayurveda began to attract only few people who could not afford the expense of modern medicine or some people who belong to such traditional backgrounds. Here if the people trained only in modern medicine were appointed to train students of ayurveda they would not easily communicate to them. Therefore someone learned in both systems will have to be depended. For such a situation this suggestion has been made from several corners. Moreover this system later on adopted in the training centre established at Calicut by the Aryavaidya Samajam under the auspices of Kottakkal Aryavaidyashala.

the Kottakkal Aryavaidya Shala along with some other people attempted to utilise the expertise, technology, preservatives etc. of modern medicine in ayurvedic practices. They trained their students in both systems, established factories for preparing medicines and capsules in advance and using preservative techniques, used diagnostic techniques such as stethoscope, x-ray etc. in their practice etc.[316] Thus the acceptance for a larger scale was received for reformed ayurveda and its hybrid production and distribution centres.

Theory of Evolution and the Debates

Apart from these practical applications and technologies, theoretical science had also influenced debates among Malayali middle class from the late 19th century. New methodological and theoretical perspectives on life, nature, environment, geography, astronomy, chemistry, time conception, etc. broadened their approach towards nature and society altogether.[317] This also helped in changing conscience among the middle class and turned many of them to be social reformers and revolutionaries. Thus the openness provided by a new intellectual perspective transformed into critical social consciousness. However, unlike the practical applications of science like medicine, technology, etc., discussed above, the theoretical and epistemological part could not produce a direct social influence among the common people, who were not concerned with these intellectual traditions.[318]

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316 For details of such reforms and their historical context see, K.N. Panikkar, *op cit*., culture, ideology... and also see, P.K., Varrier, *op.cit*., Padamudrakal

317 It was this changed conscience that helped them to keep a critical conception towards pre-modern knowledge traditions and a critical approach to social system evident in the aforementioned debates.

318 The common people adopted various applications of science like medicine, especially its vaccination, etc. due to their practical success and effectiveness. Most of them found it simply as an alternative to what they have been practicing so far. It is evident from the articles and journals that the language used for various new phenomena were those used for similar usages in traditional knowledge. Therefore several new phenomena were wrongly used as synonymous with their traditional counterparts. For example, the term science is translated as 'shastra' which holds a different connotation in the

Thus such influences were confined to be a discursive phenomenon among the intellectuals as evident from various journals cited throughout this dissertation. However, through their activities influenced by this knowledge, its effect penetrated into the wider Malayali conscience, which thereby influenced the social transformation.[319] However, these theoretical perspectives had been severely criticised, largely because people understood them either partially or wrongly.[320] Therefore unlike practical sciences, large scale criticisms in the forms of expressive opposition to the propounders of the theories who were active in social mobilisation and literary scenario were very much common, which also led to the isolation or compartmentalisation of such people and checking their influence and rationality in the society.[321] This, in turn, led to the dilution of scientific temper and thereby reduced the strength of scientific knowledge.[322]

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traditional lore. The interchanging usage of such terms synonymous with each other.

319 A clear example of this influence was evident in the case of K.Ayyappan. Hailing from a traditional *Vaidya* atmosphere, and influenced by the religion bounded reformation movement under Narayana Guru, Ayyappan could transcend all these limitations and stand for scientific rationality and its application in the social revolutionary movement. For a general understanding of Ayyappan's world view and scientific rationality, see his writings in *Sahodaran* monthly, also see M.K.,Sanoo, *op cit.*, *Yuktivadi*...

320 This can be seen in various debates on the theory of Evolution by Natural Selection, popularly known as Darwin's theory of evolution. This theory has been debating in Kerala society from the late 19th century onwards. However, in many of them, it was wrongly debated as the theory of human evolution from apes. For instance, see, the debate in O. Chandumenon, *op cit.*, *Indulekha…,* also see an article on evolution titled 'Parinamam' (Mal), in *Mamgalodayam*, Vol.III, No.4, Kumbham,1086 (c. February 1911).

321 For such criticisms, see P. Govindamenon, *op cit., MrsBesant…,* also see, Pattathil Padmanabha Menon, 'Adhunikarude Anashasyamaya chila Anukaranangal' (Mal), in *Kairali*, Vol.III, Nos. 7-8, Karkkidakam-Chingam, 1093 (c.July-August,1917), pp.268-279.

322 The modernists turned revolutionaries, who wished to influence and transform the society had to dilute their criticisms for being heard by people. This was justified in the longterm intentions. This dilution was visible in the activities of

One such theory, making a major impact on the socio-intellectual atmosphere of Kerala was the popularly known theory of evolution or the 'Origin of Species by Means of Natural Selection' by Charles Darwin, mentioned above.[323] The theory published by Darwin in 1859 was widely debated among Malayali intellectuals within two decades. The publications in Malayalam by the 1880s onwards bear something either critical or appreciating this theory. The novels and other literature published here had taken a position on the topic, which indicates the breadth of the reach of such a scientific theory in Kerala society during the transitional stage. A debate on any intellectual position with either traditional or revolutionary positions had become a fashion of the time.[324] The educated characters in many novels engaged in such debates about various scientific theories, knowledge and social reform. Theory of evolution, which has provoked the basic understanding of humans themselves and other living beings, was an inevitable constituent of such debates.[325] In this context there were severe criticisms against educated

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C.V. Kunhuraman, Krishnethi Ashan, Ramavarma thampan and to a certain lower extent in K.Ayyappan himself.

323 However, as mentioned earlier the wider debate made this theory and allied hypotheses reporting wrongly and debating identical with the proverb beating about the bush. It might be a linear understanding and a shorter span of imagination that led to such a conception that people debated the evolution of human beings from apes. Thus the debate went far away from the fact and centered around 'human-ape kinship' conundrum.

324 This debate culture reflected even in Malayalam novels of the period led to the criticisms from the literary circle itself. It was, for instance, ridiculed in the satirical novel *Parangodee Parinayam*, written as a parody to popular novels of 19th century, including *Indulekha, Lekshmee Keshavam*, etc. mentioned above.

325 For example, the debates in the Malayalam Novel *Indulekha* published in 1889, in which serious and detailed debate among three characters is set at the end. In this debate, Govindappanikkar is a staunch traditionalist opposing modern rationalities and its influence among educated youth, while Govindan Kutty Menon was an educated character strongly standing for modern science and its rationality and Madhavan, the leading character takes a middle position in between conventionalism and modernism. Reflecting the major position among new middle-class Madhavan stands for a reformed tradition and do not directly support either traditionalism or scientific rationality completely, but is

Malayali middle class who keep a critical approach towards tradition and such criticisms by the traditionalists attacked them in general as atheists, infidels, irreligious etc.[326] The novels cited here, provide brief notes on the positions and discoveries of different scientists and philosophers including Huxley, Wallace, Charles Darwin, Herbert Spencer, etc. Moreover, detailed debates on ancient Indian philosophical traditions were common among the new Malayali middle class.[327] Several similar attempts to explain and argue such theories on the evolution of life and human beings were explained in other literature.

An impressive and detailed article with an experimental history of the discovery of the foundation of life and its evolution was written by C. Andippilla, in Rasika Ranjini.[328] He starts from the traditional conception of life and then moves on to the scientific experiments and discoveries. By disproving the differentiation of living and nonliving, he explains the chemical foundation of various organisms.[329] He quotes Huxley in detail and confidently states the possibility of reaching out to 'Protoplasm' as the first form of life in correct reverse sequence from the present life forms. He explains in simple language the contributions of various scientific discoveries like x-ray, Radium, sterilisation, etc. to the human knowledge of nature and themselves. He impressively narrates the stories of various experiments.

Thus it was quite common to link human beings with apes and to promote a social antagonism against modernists as 'people who claim the

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being influenced by both. For details see the 18th chapter of the novel, O. Chandu Menon, *op.cit*., Indulekha.. pp 189-225.

326 As evident in P. Govinda Menon, *op cit., Mrs.Besant…* p.623.

327 For instance see O. Chandumenon, *op cit., Indulekha.*.

328 C. Andippilla, 'jeevante Ulbhavam' (Mal), in *Rasika Ranjini*, Vol. IV, No.7, Kumbham, 1081, (c. February, 1906), pp. 382-387.

329 *ibid.*

ancestry of apes'.[330] Therefore every debate in this matter finally struck down in the 'human-ape kinship' conundrum. It is interesting to note that several attempts were made to study and explain various phenomena including the life, habits and other aspects of different kinds of apes and to relate them with those of humans.[331] The author uses the birth cycle theory of *Karma Siddhantha* of medieval Indians and various other beliefs in re-birth as equal to evolution.[332] He claims that the life and activities of Chimpanzee found in Africa would prove them being very much near to humans.[333] Similarly in a previous volume of the Rasika Ranjini an article with an exclamatory title *Manushyan Vanaranmarude Sandathikalo?* (whether humans are the children of monkeys) written by C. Anthappai had analysed this notion.[334]

It was such a way the theory of evolution had been presented and debated among the people, or it might have reached into such a distortion through continuous narratives and counter-narratives. Thus those who support the hypotheses would be identified as agreeing their great grandfathers as apes or those who oppose would naturally be defending heritage. It was in such an intellectual atmosphere that the studies on various forms of life, their distinct capacities, skills and their features, etc. were studied and published in

330 However, Darwin's theory in most extended form would only suggest that human beings and these apes share single ancestral primates in the process of evolution.

331 C.K., 'Alkkurangan Allenkil Chimpanzee' (Mal), in *Mamgalodayam*, Vol.X, No.1, Medam,1092 (c. April 1917), pp. 28-30.

332 The *Karma Sidhantha* only believe that all forms of life are indestructible part of the universal soul. Therefore, it cannot perish or be destroyed, instead, it transforms into different forms after the death of one body according to the deeds (*karma*) of the animal. (As clearly narrated in medieval Bhakthi poem *Jnhanappana* that a merciless king may be reborn as a worm) Anyway, it is not even comparable with what is conceived in the theory of evolution by Darwin or other scientists and philosophers.

333 *ibid.*

334 For details see, *Rasika Ranjini*, Vol.III, No.12, Karkkidakam, 1080 (c. July, 1905).

these journals as cited earlier.[335] These debates reached the extent that a type of what we now call social Darwinism began to emerge from these debates. Cultural gradation of people and linking the lowest with the animals and highest with the Europeans was a common feature found in some journals.[336] The lowest in the class divisions, living still in the primitive stages of capitalistic social formations such a people dwelling in the forests were easily depicted as the lowest in the ladder of human evolution and very much near to the apes.[337]However, it is to be noted here that the author of this article C. Kunhirama Menon with pen name MRKC was a frequent writer in various journals published during the early 20th century. In most of them, he takes an antagonistic approach to modern science, its rationality, and logic and defends the traditions at all possible levels. Here his frequent quotes from medieval literature, such as *Jnhanappana*, etc. give a clear indication that more than the advancement of the modern theory of evolution his arguments were aimed at the establishment of the rebirth hypothesis and casteism in modern epistemology. He uses the words progress, revolution and evolution interchangeably, and considers the progress as advances in dressing, appearance, food, and lifestyle altogether, while those who are incapable of

335 One of the major intentions of such articles seems to be comparing the capacities, potential and features of these animals with human beings. It included their 'imagination', intellect, reproduction, community living, interactions etc.

336 The caste system practiced during these periods along with the modern 'civilization' and allied cultural changes affecting an elite minority in the society who reached or intend to reach in the higher divisions of class formations made such a misrepresentation of theory easily.

337 Such an article revealing the distorted understanding of the theory was published in *Mamgalodayam* assuming the 'Kadar', an aboriginal group of people living in forests with subsistence out of forest products during those periods, as the lowest in the human evolution process, very near to apes. The author uses the notions of the local birth cycle theory of 'Karma Hypothesis' as his foundation of this kind of evolution. It is evident from his quoting from *Jnhanappana*, mentioned above, that 'flies may be reborn as cats'...., for details, see M.R.K.C., Prathyaksha Parinam' (Mal), in *Mamgalodayam*, Vol.X, No.2, Edavam,1092, (c. May,1917), pp. 71-77.

them are considered as lowest in the evolutionary ladder.[338] His imaginations and differentiations are illustrated in the article.

Communalisation and Intellectuals

However, the debate on science and its methodology was also moving to some other spheres. Religious revivalism as mentioned earlier became one of the prominent features of the 1920's with its natural antagonism towards other religions.[339] Started from the consolidation and scriptualization of religions including 'Hinduism' and westernised Islam turned naturally against deviations in beliefs and opposition to them.[340] Thus different streams of socio-religious reform movements many of them were an extension of earlier revolutionary mobilisations transformed into either community reform groups or clear communal and sectarian forces. These changes have reflected in the

338 *A series of articles meaning the acculturation and changes in appearance as a symbol of evolution or progress (used as interchangeably) titled as 'Prathyaksha Parinamam' (visible evolution) were published in Mamgalodayam by the same author. For instance see, Idem, 'Prathyaksha Parinamam' (Mal), in Mamgalodayam, Vol.X, No.1, Medam,1092. (c. April, 1917), pp.71-76. And also see the continuation of the series in Vol.X, No.3, Mithunam,1902, (c.June,1917), pp. 111-113.*

339 By around early twentieth century, religious revivalism and communal tensions began to erupt in different parts of Kerala. Their reasons, both local and global have yet to be historically traced. In the present context, this dissertation does not go into such details. The only attempt made here is to locate their implications on the intellectual scenario. Almost all journals debating on various social and other intellectual areas began to engage frequently with religious and communitarian subjects. Thus a shift in the conscience of the intellectual world of the new middle class is visible from these writings, as the problems and tensions in the general society can be said to have reflected in middle-class discourses.

340 Such new variants of religions proclaimed themselves original with scriptural sanctity. Hindu beliefs that did not have such particular official scriptures also interpreted the Brahmanical versions of myths, beliefs and texts as the official version. Therefore as mentioned earlier those practices historically evolved here were began to be interpreted as deviations from these originals. Thus attempts of purification were carried out during this period. It was such purification movements that led to community consolidations and communalism at large.

publication culture as well. The journals which have been working earlier from the late 19th and early 20th century including those mentioned earlier began to publish articles and debates on such subjects. Thus religions came to the middle of the society and became an arbiter of several discourses.[341] The debate between science and traditions also became reoriented as science and religion debates and capable of communally dividing people.[342] There were

341 It is to be mentioned that all those writings on the religious character were not merely communal issues. Instead, they included subjects like science and religion, religion and education, religion and Indian tradition, etc. It was also not a problem suddenly emerged by 1920, instead articles of similar character had begun to be published by the second decade of the 20th century itself. For instance, see K.V.M., 'Meemamsa Darshanavum Ishwaravadavum', in *Mamgalodayam*, Vol.II, No.3, Makaram,1085, (c.january,1910). Also see K.K. Kavalakkattu, 'Vidyabhyasathil Mathapadanam Thyajyamo?' (Mal), (whether religion should be avoided from education?), in *Mamgalodayam*, Vol.VIII, No.11, Kumbham,1091(c. February,1916); also in, Kunnath Janardhana Menon, 'Samudayika Vidyabhyasam' (Mal), in *Mamgalodayam*, Vol.IX, no. 8, Vrschikam,1092 (c.November,1916). And also in Vadakkumkoor Rajaraja Varma, 'Prathimaradhanam' (Mal), in *Mamgalodayam*, Vol.XVI, No.4, Thulam, 1098 (c.October,1922), etc.

342 This transformation symbolically emerged in several article and discourses. The criticisms against tradition began to be interpreted as one against religion. For instance, in *Mamgalodayam* an article on idol worshiping was published in 1922 which harshly criticised the social reformers as anti-Hindu mobilisation and ignorance of the new middle class, along with defending idol worshiping. For details see, Vadakkumkoor Raja Raja Varma, *op cit.*, 'Prathimaradhanam'... Also see the poem justifying untouchability and the criticisms against social reforms in Oru Pracheenam, 'Theendal' (Mal), in *Mamgalodayam*, Vol.XVI, No.5, Dhanu, 1098 (c. December, 1922), p. 144. Similarly, various reports in *Yogakshemam* during 1921-1922 which clearly marks the shift from reform issues to communal presentations. For instance, the reports on communal tensions between a group of Christian and upper caste Hindus titled 'Thrissiva Perurile Anathatwam: Udyogastharude Apourusham, Policinte Pakshapatham' (Mal), in *Yogakshemam Weekly*, Vol. XI, No.22, February 25, 1921, pp. 2-4. And also, see reports on Malabar Rebellions during 1921 which was a clear incident of an attempt to instigate people for communal tensions by taking their agrarian disillusionments. Which was used to communally consolidate people on either side. For instance see an editorial on 'Mappila Lahala' (Mal), in *Yogakshemam Weekly* Vol. XI, No. 45, 19th August 1921, p.26. And a report on the issue in *ibid.*, pp. 5-6. And a detailed report in succeeding issue, titled 'Malabar Mappila Lahala: Bhayankara Sambhavangal Sookshma Vivarangal'(Mal), in *Yogakshemam Weekly* Vol.XI, No.46, 2nd September

several communal clashes in different parts of modern Kerala state including Travancore, Cochin and Malabar. Ayyankali, who mobilised people against the oppressive measures of the landlords and led the first known labour strike in demand for education to the downtrodden children, himself stood against the religious conversion of people into Christianity. Several incidents of communal tensions were created thenceforth, including the one at Cherthala.[343] Similarly general public debates and speeches, once common under the leadership of social reformers and decisive in the formation of public spheres in modern Kerala, also became a new platform for communal tensions and clashes.[344] Thus the orientation of intellectual debate on scientific rationality, in the absence of such democratic debates and social reform movements on its basis gave way to debates on religion and community formations. And in this context scientific imaginations and enquiries shrunk to merely technological renovations. However, the growing capitalistic innovations were not affected by any such tensions; to a certain

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1921, pp. 2-3. and editorial titled 'Malabarile Chelakkalapam' (Mal), in *ibid.*, pp. 4-5. There were several other writings with clear religious connotations aimed at religious revivalism. Such writings were common in many journals of the period, for instance, see an editorial on religious education in schools titled 'Matha Vidyabhyasam' (Mal), in *Yogakshemam Weekly*, Vol.XI, No.43, 12th August, 1921, p.4. And a report on religious revivalism as an agenda of The Yogakeshema Sabha, in *Yogakshemam Weekly*, Vol.XI, No.46, September 1921, p.5. etc.

343 It is quite interesting to note that the elites people staunchly opposed Ayyankali both physically and otherwise during his social mobilisations and education movements. One such Namboothiri from Cherthala invited him for a dinner when he came against religious conversion. This incident clearly indicates the transformation in society.

344 Several such speeches were made by K.Ayyappan and other revolutionaries challenging many of the traditional taboos in society. It was from such a corner speech that two revolutionaries and rationalists of modern Kerala, M.C. Joseph and K. Ayyappan met for the first time. Such street speeches became a platform for open verbal clashes between different religious brigades. For instance, such a speech by a newly converted Christian priest, namely Yesudasan at Thrissur against Islam was countered with more vigour in abusive language by Makthi Thangal and which was later published as *Thandante Kondattachenda*. Thus communal and religious tensions became common among intellectual spheres as well.

extent, such competitions helped the growth of accession to more sophisticated technologies. Thus the only representation of science in the general social milieu was various applications like medicine, technology, etc. All of them had become completely capitalistic endeavor by then.

Conclusion

Encounters between traditional knowledge and socio-political system with modern science and its rationality expressed through sophisticated technologies and education and debate culture led to the proliferation of three different positions. This democratic debate culture acted the role of translating scientific knowledge into the local practices. Three broader positions of modernists, neo-traditionalists and eclectic middle positions debated in different standpoints on scientific rationality and local intellectual traditions. This debate culture was crucial in the formation of a public sphere in Kerala. While the modernists stood for the scientific rationality, the traditionalists of different groups stood for revitalising the tradition. Unlike the traditionalists and modernists, those who held a middle position between traditional and modern knowledge were flexible to adopt practical and effective knowledge from different systems and tried to formulate a practical intellectual tradition involving elements of both traditional practices and instrumental-scientific rationality at varying degrees. They redefined knowledge, translated new ones into the local circumstances and idioms. These groups stood for new knowledge and a rational position in those fields where the traditional knowledge was felt insufficient. But they did not hesitate to accept successful traditional explanations and practices in respective fields. Thus comprehensive knowledge systems were evolved here in almost all fields leading to a complex process of social formation in modern Kerala.

CONCLUSION

People, who lived in pre-modern Kerala had formulated different kinds of knowledge systems, sufficient for their lives in the particular socio-economic and geographical conditions. This knowledge had been undergoing required changes and necessary alterations in different stages of history. The pattern of life determined by particular geographic conditions and social situations led to the evolution of the knowledge system sufficient for constructing life through capable alterations and possible modulations in the natural environment. Such interferences are evident from the available traces of stone age, metallic and iron age cultures of pre-modern Kerala. The sedentary agriculture and settled social life required more advanced knowledge and even more efficient control over the natural environment for their survival. It necessitated them to develop new patterns of life, elements of production, observation of natural phenomena including seasons of rain, flood, hot summer, etc. Thus, new knowledge for life in changing circumstances including water management, seed preservation, manuring, preserving food grains for non-crop seasons, cattle rearing, homemaking, house and other construction, etc. were evolved through continuous alterations and changes leading to several shifts in their basic paradigms.

With the migrations of people from different cultures into this region and growth of exchange, people's acquaintance with exterior cultures and knowledge brought a major shift in the socio-economic and cultural as well as political experiences. The arrival of north Indian cultures, Buddha, Jaina, Brahmanic, Judaic, Christian and Islamic, religious beliefs and the world-views of people allied with them, restructured the intellectual settings of Kerala and created a new pattern of life by involving influences from all these socio-cultural elements. Hence, the feudal social formation in medieval Kerala had traces of all these elements together at varying degrees. The Brahmanic social hierarchical divisions and the allied social system produced

far-reaching influences in the intellectual history of Kerala. The shastra traditions and allied cultures brought about distinctions in practical and intellectual cultures. By this period, the social distancing of people based on caste hierarchy became common. The consolidation of newly evolved elite intellectual tradition and appropriation of a major share of means of production including land rights by the upper castes and their close associates led to a new socio-economic system in Kerala. It necessitated the continuation of an altered version of previous practical cultures and production process among the actual working class in the agricultural social order.

The shastra intellectual traditions evolved in medieval Kerala had a distinct formation from their counterparts in other cultures. Though there were clear replications of north Indian traditions in certain fields, in some others it had undergone several changes and assimilations, due to the encounter with the local people and their practices. The herbal medical practices which had evolved here possibly with Buddha-Jaina influence, before the Brahmanic cultures establishing its hegemony in the society, gave distinct characteristics to the ayurvedic practices formulated here. It gave birth to three distinct traditions of medical practices in pre-modern Kerala itself; like the continued multiple pre-shastra practices, herbal practices influenced by Jaina-Budha traditions with Charaka-Sushrutha, Vagbhata traditions of material medication and more ritualistic Brahmanic traditions. However, all these traditions were influenced by each other with rare exceptions, simultaneously with the predominance of the divisive ideology of the hierarchical caste system. Similarly, the architecture evolved here had distinct geographical and cultural influences in it. The astrological and allied arithmetic traditions and geometry practiced here was more or less a true continuation of north Indian traditions. Notwithstanding, they formulated a different tradition here with clear observations of eclipses and other calendrical features which is now popularly known as the Madhava school of mathematics.

In short, these knowledge systems allied with pre-modern cultural traditions, though rooted in different cultural and socio-political backgrounds had some common features. Either textualised or simply practical derivations, they were deductive in characteristics. Both material and ritualistic elements in this knowledge had use-value of practice and they attain a sacralised position with the backup of tradition. The extended antiquity and tradition increase the 'reliability' and 'validity' of this knowledge. All this knowledge was inseparably united and part of the whole, therefore, there was no separate growth of a branch of knowledge. In short, the interactions among these knowledge systems were identical with the process of osmosis. Moreover, there was a closeness of knowledge and practices like art, technology, conceptions on human and natural worlds, etc. People well versed in one aspect must have working knowledge in other areas as well. It was this holistic character of these knowledge forms that helped them to absorb everything came anew to the existing traditions as evident in the cases of various religious practices, different medical traditions including the later unani, siddha traditions, etc. however, this feature continued up to the spread of modern science and its rationality along with its sophisticated technologies during the predominance of European colonial capitalism.

Modern science and its methodology, though began to emerge in Europe in the changed socio-intellectual circumstances after the Renaissance and subsequent movements, it was not confined to any continent, therefore its emergence was not merely a European phenomenon. However, European colonial capitalism adopted the practical aspects of this knowledge for their accumulation and extension. It provided science and technology an appearance as the vehicle of capitalism. knowledge evolved and developed from the practical experiences of people living in different historical and socio-cultural contexts have contributed to the growth of science and its rationality all over the world. In the changing circumstances, scientific researches and applications began to be carried out in different parts of the world with varying cultural backgrounds. Though it was not a natural

progression of the previous intellectual traditions, it could not easily delink from existing intellectual traditions of European, Indian or Chinese civilizations. Instead, a clear redefinition, exchange and translation into the regional contexts occurred as the process of spreading modern science. For this, a clear methodological and perceptional break from the tradition was required. It was this break that led to the emergence of several revolutionary movements in different fields throughout the world. However, it had adopted information, knowledge and practices from traditional lore at varying degrees. Thus scientific temper and rationality appear different in different cultures. The traditional knowledge could have been adopted only after rigorous methodological experiments and after continuous falsification and repetitions. For instance, botanical knowledge that emerged from herbal medical practices including those of ancient India provided led to the advances in biochemistry and medical science.

Scientific knowledge distinguished itself from previous hypotheses and theories. They provided an entirely new world-view and intellectual procedure, and represent an ecumenical character. Biological sciences evolved in India by incorporating information and inspirations from the traditional practices that provide examples for the ecumenical characteristics of science. Therefore, it was not something particular to European culture. Everywhere scientific temper and rationality had been adopting knowledge and inspirations from the traditional lore and theorise them in the new methodological framework. It provided a different universal conception, human-nature relationship, historical and cultural as well as socio-political perspective to the people. Many of the new conceptions were strictly antagonistic to the common sense of traditional societies. Therefore, the existing socio-political and religious institutions as well as ideologies, all over the world held an hostile attitude towards the propounders of the new system of knowledge in the beginning. Thus severe atrocities, both physical and intellectual, as in the cases of Bruno and Galileo were done against the new

researches and publications. Some of them lost their lives and many had to abjure their 'errors' and give up their researches.

Different practical applications of science, including medicine and technologies, achieved wider acceptance as they provided improved facilities and did not concern with what people thought and believed. Though applications of rationality and different techniques were not new phenomena confined to modern societies, the application of scientific rationality provided new impetus to the growth of various technologies. Though ancient peoples of different civilizations developed various techniques for improving the quality of life and performing more hazardous jobs, they had the limitations of their ages and social systems. With the spread of modern science in the capitalistic world order, increased communication and connectivity, various inventions of people in different parts of the world could be appropriated all over the world. The scientific methodology provided chances of reproducing, redefining and improving the logic behind inventions at different socio-cultural milieus. The capitalistic and colonial systems alienated the inventions and labour from people and sold it all over the world. Therefore, a person does not accept independent material forces could also purchase and operate a steam engine. Moreover, the defense that the vaccination and modern medicine provided against diseases and epidemics were applicable to those who do not accept the germ theory of diseases or Pasteurisation. Therefore, people could not resist the increasing predominance of modern technology and its utility for a long period. However, in spite of the growing acceptance of various technologies, the capitalistic alienation kept scientific principles behind their functioning away from the people at large or even the workers engaged with them. Thus, scientific applications without science were spread all over the world. Increased stress on practical application than theoretical science by the scientific community themselves added to the situation. Scientific researches in various fields became more applicational and technical in character in the context of instrumental rationality. Therefore, scientific temper became an unnecessary element in science and technology. However, the role of

scientific rationality in the humanisation of people's conscience was unequivocal. It opened up the intellectual debates on various phenomena, beliefs and world views among people of different standpoints. There were wider debates among different intellectual traditions and independent people on science and new consciousness which led to a wider democratisation of society and its institutions in general.

The new knowledge and its world views spread across the world through various agencies. This process was not one-way traffic or flow from the origin (core) to the rest (peripheries) of the world, instead, it was a process involving exchange, redefinition and translation. However, political colonisation and imperialism in the changing industrialised socio-economic situations provided road for the mechanisation and other applications of science. The knowledge systems in different regions like India, China Europe, American continents, etc. could flow out to other parts of the world through these agencies. Thus, adaptations and changes according to the new knowledge system was visible all over the world. This changed world views affected socio-political systems as well. Spread of new concepts like, liberty, equality, fraternity, rationalism, socialism, democracy, etc. were debated and influenced in the historical process of social mobilisations. A break away from previous socio-political conditions including feudalism and political colonialism became frequently sought demand all over the world, during this period. Thus in the light of political movements roused by new rationality and its world view, a situation of turmoils emerged all over the world. Serious debates in the democratisation process between existing knowledge forms and new methodologies emerged. It created a new system of serious contradictions leading to a complicated social formation involving the elements of previous societies and new knowledge.

In India, the spread of modern science and its technology took place during the British colonialism, by giving birth to serious debates. However, the colonial initiations like Indological and Orientalist attempts of

rediscovering Indian spiritual tradition according to their perception; through classical literary, philosophical and cultural re-interpretations, commercialisation of agriculture, agricultural, industrial and commercial mechanisation, irrigation projects, establishment of railways, communication systems, modern medicine and vaccination as well as science teaching in schools etc. were insufficient for the promotion of science and its rationality among Indian people, albeit their contributions in expansion of modern technology and capitalism. It was only after Indians receiving scientific education and attempted to promote its rationality among local people that modern science became a serious concern of the middle class. Because the colonial authority did not intend or attempt to promote science in India. Though there were some debates on scientific education among Anglicists and Orientalists, their concentration was only promoting English teaching to create subordinate civil and military servants to the imperial services from India. However, there were fluctuations in acceptability of the debates on the process of inculcation and promotion of modern ideals and social order in India, extending from 'rediscovering traditions' to 'modern science education' according to the changes in administrators and ideology. Though many of the Indian social reformers and revolutionaries stood for science education here, it was not accepted widely. This ambiguity had affected Indian scientists and the middle class as well. Many of them tried to rediscover elements of 'science' in Indian tradition. However, some of them attempted to translate ('Indianise') science, while some others tried to 'rationalise' Indian society, all these were carried over under the inspiration of the orientalist understanding of Indian culture and tradition. Thus, there were different agencies including attempts by Indian as well as European scholars for spreading modern science in India, Indianisation of modern science, the disenchantment of Indian society, nationalism, anti-colonial sensibilities and movements, etc. in the process of the formation of modern Indian society. A kind of instrumental rationality was evolved here in the context of colonial capitalism.

In the colonial context and as a response to the large scale religious conversion of lower-class people into Christianity under the initiation of various missionaries in Kerala, the traditional education confined to the elite castes was extended to some middle castes including Ezhavas, Thiyyas, etc. This extension was intended to raise admiration on the traditions and indigenous cultures among the lower class people and to resist large scale religious conversion. Such a cultural admiration among the lower class people was necessary for the survival of the hegemonic Brahmanic culture and its socio-political order. However, this extended education with all its traditionality was capable of developing a sense of contradiction of practice and knowledge among people. For instance, this education provided knowledge of elite social order, Hindu philosophy, epics and Puranas and other classical literature along with astrology, ayurveda etc., sufficient for the maintenance of the conventional socio-political and cultural order. These inculcations of glorious past gave them the sense that what is familiar as practical social hierarchical gradation and caste-based oppressions had no scriptural or philosophic validity. Above all many of their practices including religious worshiping were different from the newly learned Brahmanic traditions. In the *Puranas*, several characters hailing from the lowest caste backgrounds including fishermen could learn and criticise the royal and spiritual authority. They had free access even to royal courts and compiled wonderful literary creations. Thus, the contradiction in the practical and newly learned traditions made many of them capable of challenging the present discriminations and other practices by holding the traditions and scriptures themselves.

This fact that the traditional knowledge, cultural exposition and the subsequent internal contradictions were the force behind the emergence of critical social sense and the social reform movements vindicate the Needhamian standpoint of ecumenical growth of knowledge, in a different sense. These early social reformers, though familiar with the colonial political system to a certain extent, they had not undergone modern education, nor had

they any exposition to modern science and its rationality at any stage. Therefore, their critical sense and mobility were committed to the historical context of the 19th century. However, in the particular social situation of 19th century Kerala this education or social formation were not secular per se; instead they can better be characterized as 'extra-religious'. Therefore, this critical conscience and subsequent reform movements during the 19th century started as social reform within the existing cultural and religious setting was developed into a renaissance movement with certain peculiarities of its own.

These reformers raised several questions to existing practices and social orders including its hierarchical gradation of people based on birth, which was not found in what was conceived by them as tradition and Hindu philosophy. Thus, they tried to break all these regulations at the site of their vulgar expressions themselves. They challenged the regulations on dressing, ban on people of middle and oppressed castes to use the roads, frequented by the elites, near the elite homes, temples, etc. It was extended to all other walks of human life very soon. Similarly, compulsions on wearing different forms of caste tags including *Kallumala*, different kinds of restrictions on appearance, clothing, ornaments, etc. were also forcefully rejected through massive movements. Prohibition on temple entry was also challenged through various means and continuous agitations. Elite cultural forms and restrictions on its watching, performance, and learning were also questioned and challenged by these revolutionaries. When walking near the temple and entry into them was strictly prohibited, these reformers challenged them by building similar temples and installing deities in them by rejecting all the customs and challenges posed by the upper castes. Gradually these revolutionaries themselves called for stopping temple building and establishing schools for the lower class students free of costs. Thus, these kinds of social reform movements for establishing their civil rights were based on new ideals of humanism and equality were the features of the Kerala Renaissance. What makes them peculiar from similar movements all over India was its emergence from the lower caste backgrounds and demanding civil rights

rather than conventional benevolence. They worked for the construction of a new society based on new ideals and social order, prosperity, and equal distribution of socio-economic opportunities.

Different versions of European colonialism, indistinguishably allied with capitalism brought about drastic changes in the socio-economic and political situations of Kerala. The mutually dependent economic system was altogether reoriented to the market-oriented productions, almost all traditional professional groups including artisans, craftsmen, agricultural labourers, potters, etc. lost their traditional profession and security. They were forced to search for new ways of living in the changed socio-economic conditions and had to rely upon the technology and practices of colonial capitalism. The engine carrying people and goods, the rapidity and effectiveness of modern medicine, more sophisticated products of new market system, etc. accelerated the changes in popular perspectives. The agrarian calendar system and time conception had to be replaced with their modern counterparts, so were the cases of other traditional practices. The bureaucratic administration brought several changes in the political and social conceptions and their daily life. These changes also created contradictions and confusion to the people familiar with the traditional socio-political, cultural and economic systems. These contradicting interests and the modern education spread by this time made the succeeding waves of social reform movements more complicated. They were the continuation of previous social reform movements and response to the new changes.

It was in this complicated and transitional social circumstance, that the spread of modern education was taking place under the auspices of different agencies. However, it was insufficient for the promotion of scientific temper and its rationality among the stakeholders. Instead, it aimed and provided education for creating a bureaucratic community for the colonial administration among Malayalis. They became clerks in colonial and semi-colonial administrations and similar 'white-collar' professionals including

businessmen, teachers, lawyers, etc. Thus altogether instrumental rationality was being promoted here. However, as a part of the social alienation of the educated Malayali middle class, it could promote an interest in reading and debating culture in society. This led to the formulation of a new middle class. They, hailing from different caste and community denominations together constituted a class breaking the professions, aspirations and practices of the traditional social order. However, there were different or even mutually opposing positions on various socio-political and cultural subjects including on social transformation, characteristics of a new society, traditional practices, intellectual and cultural orientations, scientific rationality, the extent of its adaptability, religions, god, etc. However, they more or less unanimously accepted problems in traditional hierarchical social practices, untouchability, concepts of purity and pollution etc. Yet their positions varied on the acceptable means of eradication of these evils and on the possible means of new social formation.

Those who became familiar with reading modern literature and impressed in scientific knowledge and those who were influenced by them stood for revolutionary changes in the social order. A few of them became revolutionaries while others kept themselves away from the social formation process and became admirers of the new capitalist system and its technological advancements. Yet another group found the revival of 'actual heritage' with some timely alterations as a solution for the current problems and they became 'neo-traditionalists'. They tried to interpret traditions in the light of modern social and economic order and held the intellectual and philosophic traditions of ancient India, understood in an orientalist perspective, as the root of every intellectual advancement all over the world. Most of them hailing from the traditional elite social background were acceptable to the conventionalists and were being considered as the torch bearers of Indian culture by them. A third group in between the revolutionaries and 'Neo-traditionalists' emerged who stood with an eclectic position of adopting better parts of traditional knowledge and practices as

well as reforming the society based on new world views and its ideals of equality, social justice and democracy. They claimed the actual continuity of the early wave of social reform movements and received acceptance among different sections of society irrespective of caste class orientations.

Thus along with responding to the social inequalities and injustice many of the revolutionaries in the latter phase worked for the promotion of new rationality and scientific temper. However, some modernists, being influenced by the scientific rationality and its world view, stood for their promotion in the society and a complete intellectual and practical break from conventional socio-cultural settings and imagination for the creation of an egalitarian society in Kerala. They questioned various pre-modern conceptions including the sanctity of conventional knowledge, god, religion, caste system, social discrimination, racism, various rituals, etc., based on scientific rationality, it's logic and world views. They tried to propagate scientific rationality as an arbiter of life and knowledge. However, many of them did not receive deserving attention from society. Basically due to their hardcore secular viewpoints, which were unfamiliar and unacceptable to the society at once, and the growth of religiosity accompanied the growing tendency of communalisation of social milieu during the early 20th century itself. This growing religiosity was an immediate response from the traditionalists against the social reform movements and was supported by the colonial policies of creating antagonism and rivalry among different communities to create a safety valve against the anti-colonial mobilizations and increasing disillusionment among different sections of Indians. Hence, the rationalism and their criticisms of conventionalism, though a continuation of the early wave of massive social reform movements, could not influence society much.

The second form of the latter wave of the social reform movement was the community reform movements, aimed at internal reforms in various communities for better socio-economic conditions and to raise voices against

discriminations from within these communities and social elites. As far as the communities being oppressed by the external forces were concerned, their oppressive forces were easily identifiable and resistible through the mobilisation of people against them. Such mobilsation of Pulaya, Araya and other oppressed communities were made possible through organised agitations and they could produce results in the improvement of conditions of people. However, among other groups in which explicit community consciousness was consolidated by the internal elites through intra-community hierarchies and subordination, the convincing of various means of oppression and mobilisations against them was much difficult. It may be the reason for the comparative absence or belated and less influential emergence of such movements among different communities with above-mentioned characteristics including Muslims, Namboothiris, Catholics, etc. Therefore, attempts to reform these communities and eradicate evil practices in them and discriminations both internal and external were met with more powerful counter mobilisations within them. However, such attempts led to opposite results as they at the tertiary level turned to communal consolidations and drew these movements backward.

In this context, the publication of different journals and books gave a new dimension for the democratic debate culture, evolved here along with the process of social reform and renaissance movements. These new publications and 'mediated culture' provided an impetus to the spread of humanism and other new values and helped the attempts of 'humanisation' by revolutionaries. They either contributed articles and other writings to the existing journals or started publications of their own. Through these publications, severe criticisms were raised against existing social order and its institutions. Different opinions including those supporting traditional social systems and conventionalism were also published in these journals, which added to the democratic social formation of modern Kerala. They set fire to larger social reform movements and rationalising traditions, customs and beliefs. These publications in the changing socio-cultural context provided visibility to

traditional 'untouchables' and oppressed class of people through larger debates and discussions on the problems of caste and untouchability. It is interesting to note the oppressed castes being represented in the traditional elite discourses as 'fugitives', began to be considered as humans and published historical and anthropological studies on them.

The growth of the scientific approach on various socio-cultural and economic phenomena was the characteristics differentiating this publication culture from the previous intellectual traditions. This, however, does not mean that the entire society or the social conscience had become scientific by this time; instead, these debates raised such voice creating a proactive social atmosphere in Kerala. They provided modern perceptions on agriculture, industry, utilisation of land and other resources, health, sanitation, hygienic conditions, social formation, etc. Moreover, the second wave of social reforms and anti-caste agitations explicitly stressed scientific rationality and new logic as an arbiter of their logic against them. Instead of the previous textual and philosophic justifications, they interpreted the biological and scientific unity of human species based on the impossibility of inter-species sexual reproduction, compositions of blood and human body, etc.

This debate culture brought an atmosphere of an encounter between traditional and scientific knowledge and their world views. These encounters of two systems provided a chance for the formulation of comprehensive knowledge in society on various aspects including new inventions and discoveries. These scientific knowledge in various fields including astronomy, medicine, geography, technology, anthropology and sociology, etc. were capable of demolishing and replacing the existing conceptions in respective fields. It was made possible not only due to the comprehensive character of this scientific knowledge but also due to the necessity created by the socio-political context, including the colonial administration and the efforts of renaissance movements. However, the process of intellectual formation allied to these social changes was more or less completely confined to the new

middle class. The rest of the society was not directly affected by this formation, mainly because of the absence of a well developed literary culture in this period, inclusive of all sections of people, due to historic conditions of the early 20th century. However, the gradual ascendance of different sections of society into this culture gave the intellectual proliferations a holistic character representing different constituting sections of Kerala society.

Unlike, these discursive intellectual traditions practical applications of scientific rationality including technology and medicine had an altogether different trajectory, its growth in different fields was sufficient for the spread of 'instrumental rationality'. It was this instrumental rationality that has been mistaken as scientific rationality. With the spread of epidemics and diseases, making the textual traditions ayurveda and various practical herbal medicines ineffective, the curative practices of modern medicine and its vaccination, diminishing the number of death substantially provided a reliable asylum to the stranded people. Therefore, people began to depend on the practitioners of modern medicine for curing their ailments, even without knowing the methodology or theory of this system. They were only concerned with the practical success of the doctors in redressing their grievances as they found them simply an alternative to their ineffective *vaidyas*. This process though led to two different initiations from the part of traditional medicine that is a rejuvenation of itself with modern technology and sophisticated inculcation and the propagations against the success of modern medicine. This process reached its height, especially in the context of anti-colonial movements. However, the increasing influence of modern medicine could not be dismantled; so was the case of automobiles and other technologies. Apart from the industrial mechanisation reducing the risk and time of hazardous labours, the induction of these new technologies and other facilities in smoothening the conditions of life the capable people attracted popular attention and impressions towards them. With the global financial crisis of capitalism in the 1870s, these facilities became accessible to lower levels of society.

Throughout the history of Kerala the actual working class, who engaged directly in the production process and were the most oppressed group during the late medieval and early modern period, were rational in their practice and knowledge. Their untiring engagement with the natural environment made them rational and logical in certain aspects of human life. Various practical knowledge and changes in them can be attributed to them, so it was in the modern period. But their late entry into the literary culture and discursive public sphere, due to historical reasons, make their representation scanty in the literature. Thus the new technologies in the colonial capitalistic context spread here by attracting the attention of all people irrespective of their literary, class and caste based differences. This contributed to the changing perspective and nature of society to an extent.

GLOSSARY

Pattanam	-	Port/market centre (later on town)
Agama	-	derived knowledge
Agneya	-	fire form
Ahithahara	-	unwholesome food
Akasha	-	ether (here) later on sky/space
Ampanam	-	roof
Ampi/Toni/uru/Punai	-	ferry or boat
Anthareeksha	-	ether (here); later on atmosphere
Anumana	-	guess or inference
Apaya	-	water form
Apta	-	trustworthy personal
Aptopadesha	-	instructions of the learned
Ashan	-	teacher in traditonal schools
Atai	-	cooked food
Atu/Atuppu	-	cooking stone
Ayurveda	-	knowledge of life (a medical system evolved in pre-modern India)
Balachikilsa	-	traditional pediatric treatment (here)
Brahma	-	in general discourse it denote the creator God but here it mean the eternal truth and the formless universal being.
Brahmandam	-	a conception of universe in Indian astrology
Brhaspathi	-	Jupiter
Chakatu	-	vehicle (here cart)
Chathan	-	a devil (or a deity to certain people)
Chaya	-	incresing vigour (here)
Chippu/ Elu	-	wooden beam
Chuvar	-	wall

Dhara	-	a type of ayurvedic treatment
Dhatus	-	the conglomeration of five basic elements together (here); elements (later on)
Diwan peshkar	-	An officer equal to sub-collector
Diwan	-	an officer equal to collector in erstwhile Travancore and Cochin
Dosha	-	unequal combinatio of dhatus (here)
Drgganitha	-	traditional astrological calculation emerged in medieval Kerala
Eyil/Mathil	-	Elevated wall
Ghrtham	-	a type of ghee used as medicine
Guarpetha	-	a medicinal plant in Unani and ayurvedic traditions
Hakims	-	practitioners of unani medical system
Hithahara	-	wholesome food
Il	-	habitational site similar to home
Jagath	-	a conception of world in Indian astrology
Kapha	-	phlegm
Karunakan/ kattalai	-	window
Kashayam	-	a herbal decoction used in traditional medicine
Kataikol	-	Churn
Katavam/ Katavu	-	doors
Keezhnadappu	-	sublease
Kesaramadhkarni	-	a medicinal property in Unani tradition
Kol	-	a traditional unit of measuring length or height
Kollan	-	Blacksmith
Kujan	-	Mars
Kurai	-	fragments of meat
Kurumapai	-	houses made of woods and thatched roof with grass.
Kurumpu	-	Houses (especially made of stones)
Kuti	-	settlement or community of several families
Kutumi	-	door linge

Lokam	-	world (here a particular conception of universe in Indian tradition)
Mahavishwam	-	larger world (here- a traditional conception of universe)
Manai	-	houses made of mud bricks (later on houses of social elite like Namboothiri were specifically denoted by this term)
Marmachikilsa	-	a kind of traditional Indian treatment (especially for physical wellness)
Maruku	-	market centre
Maryada	-	a social and moral code pertaining to each community.
Mastagi	-	a medicinal property in Unani tradition
Navarakkizhi	-	an ayurvedic massage treatment
Nidana	-	cause
Nirguna	-	generally denoting worthless, but in the Philosophic epistemology it extents to formlessness and independence of soul from different tastes.
Notuttal	-	process of exchange
Nukai	-	yoke
Ophim	-	opium.
Ozhukai	-	cart
Pallikkoodam	-	school (here- traditional educational institution for lower caste pupils)
Panchabhootha	-	five basic five entities or elements involvings both matters and qualities in Indian Shastra tradition.
Parahita	-	traditional Indian system of astrological calculation
Parthiva	-	earthly form
Pathikam	-	a unit in ten divisions
Pattom	-	lease of land for cultivation
Pitha	-	bile

Pizhichil	-	an ayurvedic massage treatment
Polichezhuthu	-	reassessment of lease
Poojayuduppu	-	A festive occasion in Travancore Sree Padmanabha temple in which the king himself participate
Porkollan	-	A blacksmith engaged in making war implements like sword, arrows etc.
Prakopa	-	deranging of balance
Prakrithi	-	generally meaning nature but in Indian philosophic tradition it has wider meaning to include the whole system of universe.
Pramana	-	trustworthy sources of information
Prasara	-	spreading
Punam	-	slash and burn cultivation in the hillocks
Purusha	-	a conception of ancient Indians more or less similar to universal soul
purva rupa	-	prognostications of disease
Rasa	-	organic sap
Rupa	-	generally meaning shape but in philosophic context it denote various aspects and dimensions of a phenomenon
sankhya	-	philosophic tradition of ancient India
Shakuna	-	a person or object seen at first
Shala/ Madom	-	traditional educational institution for elite pupils
Shastrikal	-	a person who is well versed in traditional knowledge and Shastra (here in Hindu law)
Sirovasti	-	an ayurvedic massage treatment
Sooryan	-	sun
Tachan	-	carpenter
Tachushastra	-	traditional system of carpentric knowledge
Tanthra	-	technique
Tarai	-	floor, base

Tejaprayoga - application of light (here x-ray)

Ter - charriot (here cart)

Timil, Nedum timil, Kodum timil- varieties of boats mentioned in Sangam Literature

Tina - a crop

Tinnai - a half wall(probably seatable)

Todu - small stream

Tozhil - labour (here specialised labour)

Triguna - three basic characteristics according to Indian traditional conception of universe.

Ulai - hearth

Ulakkai - larger stick used for husking rice and grinding cereals.

Un - meat

Unchor - rice cooked with meat

Uru - settlement

Uzhichil - a massaging treatments

Vaidya - traditional medical practitioner

Varaku - a crop

Vastu - a traditional Indian system of knowledge on construction, position etc.

Vatha - air/gas

Vayaviya - air form

Vazhakkam - structured codes or customs

Vinai - labour (here unspecialised labour)

Vishwam - world (here- a traditional conception of world)

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