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Discussion Paper No. 22
August 2000

Kerala Research Programme on Local Level Development
Centre for Development Studies
Thiruvananthapuram

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English
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First published August 2000
Copy Editing: H. Shaji
Printed at:
Kerala Research Programme on Local Level Development
Published by:
Dr. K. N. Nair, Programme Co-ordinator,
Kerala Research Programme on Local Level Development,
Centre for Development Studies,
Prasanth Nagar, Ulloor,
Thiruvananthapuram 695 011
Tel: 550 465, 550 491
Fax: 550 465
E-mail: krp@giasmd01.vsnl.net.in
Url: http://www.krpcds.org/
Cover Design: Defacto Creations

ISBN No: 81-87621-22-2
Price: in India Rs 40
outside India US$ 5

KRPLLD 08/2000 0750 ENG

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K. N. Harilal, Mathew Andrews*

1. Introduction

> In *Malayali* houses, however, the owners are entirely at the mercy of the carpenter, for he is the supreme authority on dimensions of door frames, the inclination of rafters and their number for the roof, the area of the open yards, the position of the beams and their sections, for every trifling detail has its-own sasthram (science) to be followed. The *Moothasari* or head carpenter who designs the *Nair* house and directs the workmen, has got the whole of *Thachusasthram* rules by heart and now and then he quotes a passage to set the house owner aright
>
> (Government of India 1891:268)

In Travancore, the dominance of handicraft rules, the authority of craftsmen, and their control over the building process, was, even during the end of the nineteenth century, absolute and complete. The handicraft moorings of production of buildings, the privileged position of artisans, and such other unique features of the traditional mode of building in Kerala, had survived till recently; however, in recent decades they have been, and are, fast disappearing. Building activity, type of buildings, materials used for construction, nature of people involved in the industry, and the relations they enter into while engaging in production, have all undergone drastic changes over the past few decades.

Building in Kerala is no longer an activity involving direct interaction between the owner and the artisans. It has become a complex process involving different layers of intermediation. The recruitment of workers and their management are now tasks performed by profit-seeking intermediaries. In some segments of the industry the owner's position has become that of a mere buyer in the market of 'ready to be bought buildings' built by developers.

Labour process in building, as Braverman (1979: 155) suggested in the larger context of evolution of human labour processes, is "assuming an increasingly scientific character as knowledge of natural laws grows and displaces the scrappy knowledge and fixed tradition of craftsmanship". The craft rules and the traditional indigenous style of Kerala architecture are fast fading out of the scene.

ACKNOWLEDGEMENTS: *We are grateful to Dr. K. N. Nair, Programme Co-ordinator, Kerala Research Programme on Local Level Development for his help and encouragement throughout the study. We acknowledge with gratitude Dr. P. R. Gopinathan Nair's contribution in editing the manuscript. We also thank Dr. Thomas Isaac, Prof. G. N. Rao, Prof. K. Nagaraj, and Dr. Babu Ambat for their suggestions and comments. Usual disclaimers apply.*

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The division of labour that removed a substantial share of mental work and destroyed the workers' knowledge of the production process has had adverse implications for the craftsmen's authority and control over the labour process. The artisans have become wage labourers and are increasingly getting liberated off the bonds of caste and craft traditions.

The present exercise purports to document and analyse the process of evolution of the building construction activity in Kerala in its various dimensions with a view to throwing light on the contemporary organisation of production and labour process in the industry. The historical approach would help us understand the laws of motion of the contemporary industry and help resolve the controversies thrown up by recent studies on the industry.

Artisanal mode of building

A stylised presentation of the artisanal mode of building in Kerala, despite the limitations of the understanding of the traditional building process that it entails, would provide a vantage point for appreciating the recent changes in the industry.

One distinguishing feature of the traditional building process in Kerala was the paramountcy of caste-based social customs and traditions. Even during the pre-colonial period, Kerala had developed a stratified, tribute-paying society characterised by a high degree of division of labour. While religion gave an ideological base, the caste system provided the framework for occupational division of labour. The caste-based hierarchical structure of the society had an overwhelming influence on the building process in its various dimensions, such as the type of buildings, composition of materials used in construction, nature of work, and relations among people involved in the building process. The structure continued in existence till about the mid-twentieth century.

Houses belonging to each caste had a common name of identification, also implying their typical appearance, materials allowed to be used in their construction and so on (Government of India 1891: 245-68).

Only *katcha* materials were used in the construction of houses of lower castes. "The quality and size of the buildings diminish as we go down the caste scale. The *Pulaya*'s hut may be taken to be the smallest unit of human accommodation" (Government of India 1891: 268). The institutions and social customs offered stubborn resistance to the development of productive forces. Thus, for example, the British collector of Calicut wrote:

> The walls are generally of laterite bricks set in mud, for lime is expensive and scarce, and till recent years the roof was invariably of thatch. This custom of the country was strictly observed and it was not till after the Honourable English East India Company had settlements on the coast for nearly a century that they were at last permitted, as a special favour in 1759 to put tiles on their factory in Calicut. Palaces and temples alone were tiled in former days.
>
> (Logan 1981: 109)

The artisans, as they belonged to a relatively higher caste group, did not have any role in the construction of houses belonging to the lower castes. "No carpenter's work is invested in a *Pulaya*'s dwelling nor that of a blacksmith. The *Pulaya* is his own architect" (Government of India 1891: 268). The houses or huts of the lower castes were built either by own family labour or by exchange labour of their kinsfolk. Only the upper castes enjoyed the privilege of employing the services of artisans for construction of houses, temples, and other public buildings.

The *Kammalans* (or *Viswakarmas* as they were alternatively referred to) formed the artisan caste, which included six groups, each having a specialised role in the division of labour - *marasaris* (carpenters), *kallasaris* (masons), *kollans* (blacksmiths), *moosaris* (bell-founders), *thattans* (jewellers), and *tolkollans* (tanners). *Thachans*, another artisan caste, were experts in felling trees and sawing them into required sizes (Thurston 1909: 134-35).

Among *Kammalans, marasaris*, and *kallasaris* were the major participants of the building process. However, since wood was the key and the most extensively used construction material, carpenters (*marasaris*) enjoyed a major share of work including that of preparing the design (Aiya, Nagam 1906: 298-303). Apprentices of senior craftsmen did most of the unskilled activities related to particular crafts. For other unskilled tasks, like digging the soil for laying the foundation, agricultural labourers were used.

Workers were either bound by chains of servitude or were restricted by rigid customs and traditions of a feudal character. Unskilled labourers drawn from the ranks of agricultural labourers were virtually agrestic slaves. Even in the case of construction works by government, unfree labour was used. Forced labour for government was mainly through the system of *uriyum* (Jeffrey, Robin 1976: 56-57). The *viruthi* system of land tenure was used to get handicrafts and other artefacts for the government (Aiya, Nagam 1906: 335).

Being skilled workers, *Viswakarmas* enjoyed in general a higher status in the social hierarchy than agricultural labourers. Still, in the old dispensation, they were not free wage labourers in the modern sense of the term. An artisan by virtue of his birth in a particular caste was obliged to offer his skilled services to the society. "The carpenter is held to his trade not only by the caste rules, but because his entire economic, social, and religious life centres in the group; and were he to disobey any of its rules, the result would be not merely the economic sanctions but the social ostracism of himself and his family" (Buchanan 1934: 100). This statement of Buchanan on carpenters in India was especially true of the artisans in Kerala. An artisan used to work for a narrow circle of familiar clients. In addition to his involvement in the construction and repair of buildings he used to make and repair agricultural and household implements for the people in the locality. The society had reciprocal obligations to the craftsmen. Remuneration to the skilled services of the artisans was not one-dimensional in the form of wages. For instance, the artisans were mostly tenants or hutment dwellers of the village landlords.

Even though artisans were employed directly by the customer, the latter had virtually no direct control over the labour process, for it was based on handicraft principles and practices. Through years of application, local craft rules had developed into a coherent body of knowl-

edge, the science of architecture; popularly known in Kerala as *Thachusasthram*. *Thachusasthram* is a collection of architectural principles, which deals with almost all aspects of building construction, starting from selection of plots to house warming and maintenance. Significantly enough, the rules of *Thachusasthram* were closely integrated with astrological principles (Mangal: 1983). Therefore, deviations from the accepted rules, it was believed, would be detrimental to those who use the building or the artisans who had constructed it (Menon: 1929; Achari: 1976). The highly integrated and interdependent nature of *Thachusasthram* principles also seems to have contributed to the need for precision and accuracy. Naturally, the craftsmen were expected to acquire in-depth knowledge and expertise in the handicraft principles besides the entire attendant skills required to put them into practice. It was these critical endowments that bestowed on the craftsmen such authority and control over the labour process as outlined in the census report quoted at the outset.

The privileged position of the craftsmen vis-à-vis that of the owner/customer did not imply, however, lack of discipline in work or absence of co-ordination needed for the smooth progress of the co-operative labour process involved in building construction. The artisan and his work were bound by the craft rules. Further, there was a customary and traditional sequence in which different operations in the building process had followed. Similar was the case with relations among the artisans. Caste and craft principles, including the system of training and apprenticeships, fashioned the patterns of their interaction.

Conceptualising change

The forces of change unleashed over the past few decades have been so overwhelming that the contemporary practices hardly resemble the artisanal mode of building construction that had existed till recently. How did such sharp shifts occur in so short a span of time? How were the social fetters to the development of productive forces, which manifested themselves in the form of restrictions on the use of modern construction materials, and caste and craft taboos on the workers and their work removed? How did capital break the closely-knit relationship between owners of buildings and artisan builders and gain entry into house building? Though the transformation presents itself to be a recent phenomenon, conceptualising this multidimensional process of change is hardly an easy task. It requires an understanding of the dynamics of change both within and outside the building sector.

The period under consideration has been one of overwhelming changes in the society, polity and economy of the state. Taking cue from the literature, the above process of social transformation could very well be characterised as a process of 'modernisation' by which the Kerala society had wriggled out of its pre-capitalist moorings (Ramachandran: 1996; Tharakan: 1998). What Kerala society witnessed over the period, in other words, was a general process of transformation to the capitalist mode of production.

The progress of the 'modernisation project' in Kerala, however, was not uniform across sectors of production and facets of social life. The pace and mode of penetration of capital and its ethos exhibited wide and engaging variations across different lines of economic activity. In this respect, interestingly, the experience of the building industry in Kerala seems to have been unique. It was, perhaps, one of the leading sectors of the economy that long

resisted penetration of capital. The entry of capital and the intermediaries into the building industry could be traced to the turn of the twentieth century when the government initiated several deliberate measures to promote contractors in the public works department (Harilal: 1986). But, till recently, building activity in the private sector, particularly house construction had remained almost completely free of the influence of profit-motivated intermediation.

It took a major macro-economic shock, effected by the unprecedented boom in remittances from abroad, for capital to establish its sway over the building activity. An analysis of the remittances boom, popularly known in Kerala as the 'Gulf boom', and its effects on the economy of the region, especially the quantitative expansion of the building activity that ensued, would help us contextualise the changes in the sector.

The specificity of capitalist development of the building sector is not limited to the late entry of capital into the sector. There exist several reasons to expect the course of capitalist development of the building industry to be different from the general pattern of development of the capitalist labour process outlined in the literature. As we shall be explaining later, the fact that the capitalist transformation of the building sector is characterised by specific features is obvious also in the Kerala experience.

Scope, objectives, and method

The central concern of the present survey is to advance our understanding of the contemporary building industry in Kerala in its various dimensions. The focus would be on the organisation of production, the nature of work, and the dynamics of the labour market viewed in a historical perspective. The characteristic features of the building process in Kerala would be examined within the larger framework of the development of capitalist labour process.

We first present the broad background of the socio-economic transformation in the State, which facilitated development of capitalism and the attendant changes in the building industry. Since the process of modernisation of the region's society is well documented, only an overview of those aspects, which had a direct bearing on the evolution of the building industry, is presented. The social reform movements, and the process of modernisation of Kerala effectively removed many a social restriction on the progress of the building process, such as slavery, attached and forced labour, caste-based restrictions on occupational mobility, social taboos on the use of modern construction materials, caste specifications on houses, etc. Abolition of slavery and other systems of forced labour like *uriyam* (and the *viruthy* system of land tenure) and the consequent shortage of workers coincided with a remarkable expansion of public works in Travancore during the second half of the nineteenth century. As a result, the PWD found it difficult to ensure a regular supply of labour. Further, direct employment of large number of casual labourers posed at that time serious managerial problems since the emerging breed of casual workers was relatively free from the traditional obligations based on caste and craft. As a result, the department seems to have followed a policy of encouraging contractors. Though direct employment of workers also continued to be in vogue, by the middle of the twentieth century, the contract system became well established in public works.

Rapid diffusion of modern technologies, emergence of unconventional materials, and development of capitalist relations of production – characteristics of the more recent decades - need to be analysed against the backdrop of the unique pattern of the macro-economic development of the region. The State has experienced during the past three decades, a disproportionately high rate of growth of its construction sector, especially of the building sector. The rate of growth of the building industry has been far higher than what could be expected, given the state of domestic economy. Incidentally, in terms of the level and the growth of domestic production, Kerala is one among the most backward states in India. But, it is well known that with respect to per capita consumption and the quality of life in general, Kerala is one of the top-ranking States in the country. In terms of the quantitative and qualitative aspects of the stock of buildings also, especially residential buildings, Kerala stands ahead of the rest of the States in India.

Though the unique pattern of development of the State, widely known as the 'Kerala model', has many reasons embedded in the region's history, the enormous boom in external remittances since 1970 has played a decisive role in accelerating it. We advance the hypothesis that the building boom and the stagnation of the goods-producing sectors of the economy since the 1970s as two sides of the boom in remittances, phenomena akin to the 'Dutch disease'.

The conceptual framework – The Dutch Disease model

The framework of 'Dutch Disease' is widely employed to explain the negative effects of an export boom on tradable sectors and the economy at large (Usui: 1996). The 'spending and resource movement effects' referred to in the literature on 'Dutch disease' had, we argue, a major bearing on the course of the region's recent development. The remittances boom is known to have triggered a spending boom in the State. The pumping in of the extra income has tended to bid up the demand, prices, and production of non-tradables including buildings. The resource movement effect generated by the spurt in migration, tended, on the other hand, to raise the prices of factors of production including wages. Both these effects have weakened the competitiveness of the tradable sectors of the economy. The above process, typical of economies afflicted by the Dutch Disease, has tended to erode the competitiveness of the productive sectors of the economy, especially sectors exposed to competition from sources outside the State. This hypothesis would, it is hoped, explain the crisis of the goods-producing sectors of the regional economy of Kerala. Interestingly, as the core Dutch disease models predict, the higher prices of the non-tradables and the factors of production did not affect the prospects of the non-tradable sectors including construction adversely since they are not exposed to external competition. This, in our opinion, explains the problem of distorted development of the State, characterised as it is by the stagnation of the goods-producing sectors and the disproportionate expansion of the sectors (including the building sector) producing non-tradables.

The steadily growing activity of building construction raised the demand for construction materials to unprecedented heights. It was in this context that modern materials and techniques made significant foray into the industry. Regional concentration of the building activity has tended to disrupt the direct links between the owner customer and the workers. The labour power sold without the conventional obligations and the traditions of the craft at-

tached to it, necessarily transferred the responsibility of its management to the buyer (namely, the contractor). Thus a specialist (contractor) to recruit and supply workers, supervise work, conduct wage bargaining, and control and co-ordinate activities of the workers became an indispensable agent in the activity. The increasing complexity of the building process also lent a commanding position to the contractor as an organiser far above those of the owner customer and the workers.

Our estimates of the costs of buildings in Kerala give a general idea on the derived demand for skilled and unskilled labour and for different types of materials. The boom-induced demand for construction labour, since it coincided with large-scale migration of construction labour to the Middle East, is known to have exerted unprecedented pressure on the market for construction labour in the State, pushing up wages not only in construction but also in inter-linked sectors, besides inducing in-migration of workers from Tamil Nadu. The spurt in demand for construction materials appears to have had, however, varying effects on the different input-supplying industries. While industries not exposed to competition from outside Kerala benefited, producers of tradable construction materials were not able to make advantage of the rising demand.

Capitalist development of the building industry involves emergence of intermediaries between the owner-customers and the workers. An earlier study (Harilal: 1986) had identified six different groups of participants in the building process, viz., (i) the owner-customer, (ii) the contract manager, (iii) the design team, (iv) the general contractor, (v) the activity contractors, and (vi) the workers. During the period since 1986, the industry has witnessed several important changes. The contract system depicted as the early mode of penetration of capital into the building industry, in which the act of selling preceded the production of buildings and the factors hindering the development of full-fledged commodity production of buildings in which production of building precedes its buying and selling have undergone transformation. The heavy influx of 'developers' and the spread of 'residential flats' have made it easy for construction of buildings first and finding out customers later. Similarly, factory production of doors, windows, etc., has come to stay.

The impact of the use of modern building materials and techniques on craft-skills, division of labour, and composition of the workforce in the industry have had significant impact on the traditional labour process. The artisan apprenticed under earlier masters in traditional architectural practices and principles of a bygone era and using outdated techniques and materials, is ill-equipped to face challenges of the modern day. Today all technical decisions, including selection of materials, are made on the basis of the principles of modern science and technology rather than customs and traditions of the crafts. The division of labour that has removed a substantial share of mental work related to designing as well as execution of work from the craftsmen has deprived the workers of their knowledge of the production process. This, in turn, has had adverse implications for the craftsmen's command and control over the labour process; in other words, the process has resulted in the deskilling of workers in the industry (Harilal: 1986). The traditional system of apprenticeship has broken down; the period of training of skilled workers has shortened; and the wage differentials between skilled and unskilled workers have narrowed down. It would be interesting to pursue this hypothesis in some depth.

Another important issue we address is the control and management of workers in the contemporary building industry. The question of management is critical because the industry continues to depend to some extent on craft skills and dexterity of the workers. We therefore recognise the need to place the supervisory and managerial role of the activity with the contractors in this fluid context. Several existing studies stress only the supply and recruitment functions of the contractors.

2. Labour Process and the Building Industry

It is in the contributions of Marx, especially in Volume I of Capital, that we see the first exhaustive study of the evolution of the labour process under capitalism. Surprisingly, there has been little continuing body of work in the Marxist tradition on the capitalist labour process since the publication of Capital. The interest of scholars in this line of investigation was revived by the monumental work by Harry Braverman, Labour and Monopoly Capital in 1979. The book sparked off a lively debate as well as a large number of detailed case studies.

Without going into a regular survey of literature, we may identify some major gaps in the existing literature on the labour process. The focus of studies has been on labour processes in manufacturing industries, that too mainly in the context of developed countries. Though there are notable exceptions (Cooper Eugine: 1980; Bhushan Bharath: 1982) the labour process in underdeveloped countries in the process of transition to capitalism remains largely unexplored. Similarly, labour process in non-manufacturing sectors such as agriculture, forestry, mining, and construction are yet to receive adequate attention. Among these neglected sectors, it must be admitted that growing interest is observed on the specificities of development of capitalism in agriculture. The contributions of early writers in this area (Lenin: 1972; Kautsky: 1976) were developed further by several writers (Banaji: 1977 and Shah: 1980).

The specific features of development of capitalism, and the evolution of labour process under its influence, in the building industry are best set out in the backdrop of a discussion on the evolution of labour process under capitalist mode of production in general.

Labour process under Capitalism

Though the fundamental features of capitalist labour process were quite clearly defined by Marx himself, many important aspects remained to be probed in more detail. In what follows, we shall present an outline of the evolution of the labour process under capitalism and highlight some issues pertinent to the present study.

At an abstract level, independent of the particular forms it assumes under given social conditions, labour process may be defined as an interaction between human beings and nature (Marx 1978: 174). Thus defined, labour process is "the everlasting nature-imposed condition of human existence, or rather is common to every such phase" (Marx 1978: 179). But, in any concrete stage of history the labour process is also a social process endowed with characteristic features, of that historical stage. "On entering production relations, persons and productive forces receive the imprint of the form those relations constitute; Negro becomes a slave, a machine becomes a portion of constant capital" (Cohan 1982: 89).

The social form and material content of the production process co-exist and interact. The dominant tendency in the literature has been to accord primacy to the material content (Gorze Ande: 1976). A more balanced view, however, would recognise the influence that the social form would have on the material content. The capitalist relations, for instance, would influ-

ence the technology used in production as well as the material relations among people engaged in production. Though the content and the form of production are distinguishable, their separation is only an abstraction.

What distinguishes the capitalist production process from others is the "immediate unity of the labour process and the valorisation process" (Marx, 1976: 991). Labour process in capitalism is also a process of production of value and surplus value. Purchase and sale of labour is the differentia specifica of capitalist mode of production. In the valorisation process commodities including labour power are used to produce other commodities, the value of which is greater than the input commodities. Thus, labour process under capitalism becomes inseparable from the process of creation of value - the valorisation process.

Control and management of workers

The struggle for control over labour process and the strategies and counter-strategies employed by capital and labour has been a major focus of attention of recent studies in the area. In fact, all social labour processes organised on the principle of co-operation require a directing authority, or established customs and traditions of work as under artisanal production, to ensure co-ordination among the activities of co-operating individuals. But, when the social labour process is directed to serve the needs of capital, the need for control and management of workers and the labour process becomes all the more acute. Thus, the need for co-ordination and control of labour process under capitalist production emerges for two reasons. Firstly, since it is a co-operative labour process it requires a co-ordinating mechanism. And secondly, because it is directed to serve the needs of capital.

The capitalist can buy only the potential to labour (labour-power); realisation of labour is not ensured by the contract for exchange of labour power. "What he buys is infinite in potential but in its realisation it is limited by the subjective state of the workers, by their previous history, by the general social conditions under which they work as well as the particular condition of enterprise and by the technical setting of their labour" (Braverman: 1979: 54).

Once the capacity to labour, or labour-power is sold and bought, it is left to the capitalist to extract maximum labour out of it. Workers get 'alienated' or they lose interest in the labour process with the very act of the selling of labour-power. On the other hand, the capitalist, whose very existence lies in the expansion of capital, takes every means to increase the output of the labour power he has purchased. It is the mutually contradictory interests of the participants that make the capitalist labour process a 'contested terrain' (Richards Edward: 1979). This conflict in the work place in its turn makes it imperative and necessary for the capitalist to control and manage the labourers and the labour process.

The resistance of the workers to the capitalist domination or the class struggle at the workplace is an important factor influencing the evolution of the organisation of production and the work arrangements. Within any given technology there is always a wide spectrum of organisational choices possible. And the choice of the management is moulded through class struggle at the work place. This aspect is all the more important under capitalist mode of production as it is characterised by 'free' wage labour unfettered by traditions and customs.

Formal to real subsumption of labour

Initially, the subordination of labour process to capital does not affect the actual form of production. At first, "Capital subsumes the labour process as it finds it, that is to say, it takes over an existing labour process, developed by different and more archaic modes of production. The work may become more intensive, its duration may be extended, it may become more continuous or orderly under the eyes of interested capitalist but in themselves these changes do not affect the character of actual labour process, the mode of working." (Marx 1976: 1021)

Formally, the capitalist may not even employ the workers. This is typical of the capitalist domestic industry where wage-labour relations have not yet crystallised and the technological base of production continues to be traditional. Thus, in the early stages of capitalist production, organisation of production continues to depend on handicraft traditions and worker's skills. Hence it tends to be subjective in nature. Marx refers to this stage as the phase of "formal subsumption of labour under capital". In this phase, the valorisation of capital takes place through the appropriation of absolute surplus value; that is through lengthening of the working day, lowering of wages, and intensification of work.

"But when surplus-value has got to be produced by conversion of necessary labour into surplus labour it by no means suffices for capital to take over the labour process in the form under which it has been historically handed down, and then simply to prolong the duration of that process. The technical and social conditions of the process and consequently the very mode of production must be revolutionised before the productiveness of the labour can be increased" (Marx 1978: 298-9).

This era of 'real subordination of labour' and relative surplus value starts with the advent of large-scale factory production and deployment of machinery. Hence, in order to increase the surplus labour, the necessary labour is shortened by raising the productivity of labour whereby the equivalent of value of labour power is produced in less time. "The production of absolute value turns exclusively upon the length of the working day; the production of relative surplus-value revolutionises out and out the technical process of labour, and composition of society"(Marx 1978: 477).

One of the important aspects of the above change from formal to real subsumption of labour under capital is the transformation of the organisation of the labour process. Under the latter stage the subjective principles of organisation of work based on handicraft skill of workers is replaced by objective organisation of work based on machines. The change will also have implications for control of capital over labour process. Simple control strategies adopted by the management would be transformed into more advanced systems of control like technological and bureaucratic control system (Friedman, 1977; Edward, 1979).

In the early stages of capitalist production, control may be effected directly by the employer or his close associates through their personal involvement in the labour process. Here, the control system is informal and could be referred to as simple or entrepreneurial. But, with mechanisation and automation, the control mechanism could be embedded in the technique

used in production, or say, in the technological structure of the firm, such as in the case of an assembly line system (Cartman: 1979: 193-205). Here, the principles of control would get objectified in the machinery and therefore, would attain an impersonal character. The nature and pace of work would no more be dependent on the subjective state of the workers or even the personal or direct interference of the entrepreneur or his managers. Further, management could introduce scientific management techniques to control the workers (Braverman: 1979). The management, through systematic analyses of the labour process, using modern techniques like, 'time and motion studies', would plan and instruct workers in advance, all the details on his part of the work and the time allotted for each task. Each operation or say movement of worker would be guided by the work-charts or guidelines provided and enforced by the management, rather than by traditions of the crafts or discretion and will of workers. Such work rationalisation programmes would remove the arbitrariness and uncertainty over operations and movements by fixed rules and norms of the firm. Under such conditions the control system could be seen as becoming more bureaucratic in nature characterised by the introduction and enforcement of rules. At a point of time or in a firm there could be a mix of different control systems operating.

The stages of simple co-operation and manufacture may correspond broadly to the period of formal subsumption of labour. These stages are prior to the advent of large-scale industry, the latter being the period of real subsumption, or say, specifically capitalist mode of production. But for a relative increase in the number of workers under a capitalist, the stage of simple co-operation is hardly distinguishable from the earlier stages of production like artisanal or petty commodity production. However, simple co-operation is only a prelude to the advent of manufacture, which is characterised by detailed division of labour.

Division of labour and degradation of work

Degradation of work, de-skilling of workers, and the consequent cheapening of labour power are other important themes that dominate the contemporary discourse on labour process. It is important in the context of the above issues to make a distinction between the social division of labour and the detailed division of labour. Social division of labour divides the society into occupations and crafts whereas detailed division of labour, which emerges under capitalist production, divides occupations and individual crafts into component operations, and attaches the worker to the component parts. It also renders useless the labour power in the production of a 'whole commodity' unless it is sold to capital. Detailed division of labour and destruction of all-round skill of workers in manufacture makes co-operation a technical necessity. "If at first, the workman sells his labour power to capital because the material means of producing a commodity fail him, now the very labour-power refuses its services unless it had been sold to capital" (Marx, 1978: 340). The ultimate effect of detailed division of labour under manufacturing is cheapening of labour power itself. "Translated into market terms this means that the labour-power capable of performing the process may be purchased more cheaply as dissociated elements than as capacity integrated in a single worker" (Braverman, 1979: 80).

Contrastingly, cheapening of the labour-power and deficiencies of the detailed labourer becomes perfections of collective labourer. However, the benefits of collective effort and divi-

sion of labour appear to be the virtue of capital since it is capital that brings workers together. Therefore, capitalist becomes an unavoidable part of the production process.

Under simple co-operation and manufacture the organisation of production undergoes significant change with the introduction of co-operation among wage labourers and division of labour at the work place. However, in both these stages, the technical base of production continues to be handicraft. Only under modern factories, where the machine becomes the technical base of production, does production break away from its traditional moorings and assume a specifically capitalist character. Thus, it is at the stage of machinery and large-scale factory production that capitalism puts an end to the skill-based resistance of workers.

The general pattern of evolution of the labour process under capitalism as outlined above would provide, at its best, only a broad framework for appreciating the concrete context at hand. The message emanating from recent studies undertaken in varying contexts unmistakably is not to get trapped in the framework of any rigid model of evolution of labour process under capitalism. The specific ways in which capital makes its entry, grows, and subsumes the labour process are shown to vary widely between developed and underdeveloped countries. Moreover, even within a country or region, the pattern of development of capitalist control over labour process would differ significantly between industries. In fact, there exist several studies, which focus on variations in the strategies of both capital and labour from one shop floor to another in the same industry. Incidentally, it is the possibility of such variability in the course of capitalist development, which calls for and justifies more studies on the nature of work and the organisation of production.

Labour process in building industry

Before taking up the specific case of the building industry in Kerala, it would be in order to outline certain general features of capitalist development in this industry that originate mainly from the very nature of buildings and the physical features of the labour process involved. It is a clear case of physical aspects of a labour process decisively influencing its social dimensions.

Construction of buildings, especially of the larger ones, has always been a complex and sequential process, which demanded combination of a wide variety of materials, skills and labour over a period of time. Therefore, even before the advent of capitalism, building construction had been characterised by widespread use of co-operative labour. This was particularly true in the case of construction of monuments in ancient times. In this connection, Marx cites the gigantic structures of ancient Asia, Egypt, Etrusea, etc., where colossal effects of simple cooperation could be seen (Marx 1978: 315).

Such co-operative and sequential nature of the labour process in building has several implications for its organisation. At first, since each stage is literally built on earlier stages it requires prior planning to time-phase different activities or at least an accepted or customary order in which different activities can proceed. Secondly, like in any other co-operative labour process, building construction also presupposes effective co-ordination among co-operating workers, so that all the workers could work simultaneously and uninterruptedly to contribute to the final product.

However, co-operative labour process in building activity, as it had existed in ancient societies, was not based on capitalist co-ordination and control of the labour process. Capitalist production universally makes use of co-operation as the principle for organising labour processes. But co-operative labour process is not specific only to the capitalist epoch. What is specific to the capitalist mode is universal commodity production characterised by the "immediate unity of labour process and valorisation process". In pre-capitalist societies production was not for market or for profit. Further, it was not the free wage labourer, but the slaves or the artisans, bound as they were by the traditions and customs or other extra economic compulsions, who participated in the co-operative labour.

The commodity production of buildings, i.e., development of speculative construction whereby capitalists expecting a future market produce buildings, emerges, and becomes universal only in highly developed capitalist economies. For speculative building to come up, the social division of labour should have developed to such an extent that it becomes inconvenient for the consumers to involve in the production process.

Building construction, despite penetration of capital into the industry continues to be a highly customer-oriented activity during the early stages of capitalist development characterised by direct involvement of the customer in production decisions. The owner or the ultimate consumer himself continues to make important production decisions on matters such as the type of building, choice of construction materials, and quality and finish of the work.

The continued involvement of owner in the production process may be explained, in one respect, in terms of the nature of the building activity itself. Building is one of the bulkiest, heaviest, costliest, and long lasting of the human products (Richardson *et al* 1968: 21-22). Its costly and long-lasting nature makes production decisions very important for the owning economic units. Long-lasting decisions made on the nature of buildings have their effects for several future decades. Most often, the decisions taken by a generation have effects on future generations; and since building construction is costly, decisions once made are not easily reversed. More often than not, it would also involve substantial proportion of the lifetime savings of the owner-builder.

Further, apart from the constraints imposed by consumers, speculative building presupposes high concentration and risk-taking capacity of capital in the society. For the construction of a building, it being a costly commodity, the capitalist has to invest huge amounts and bear the risk of speculation on future demand. These conditions may not be satisfied in the initial stages of development of the capitalist system.

It is such specific features of the building industry, which make the contract system the viable form of penetration of capital into it during the early stages of development of capitalism. The contractor constructs the building for customers by employing wage labourers and organising the labour process. But, unlike in the case of many other commodities, here the act of selling the product occurs even before the production activity has started. The proposed building is first sold and then produced. Contract is the device by which the selling takes place. The owner or the customer specifies all the important details of the building to be constructed and the contractor agrees to construct it at a price acceptable to the owner. Thus, the owner actively continues to participate in making important production decisions.

However, the owner no longer directly employs the workers. They are employed by the contractor either directly or though sub-contractors. The aim of the contractor is profit. The compulsions of the profit motive, the alienation of workers, and the disintegration of the caste and craft discipline of work, make it imperative for the contractor to control and manage the labour process.

As we have seen in the case of capitalist production in general, the contract system may not, at first, change the technological base of the building process. For instance, it may take over the building process, as handed down by the artisanal production, which is hand-based and skill-dependent. However, even at this level of technological development, the contractor would be constrained to control the labour process so as to generate and maximise profit. He might employ different management strategies like strict supervision of work, intensification and speeding up of work, lengthening of the working day, and more systematic time-phasing of different activities. All these tactics would tend to transform the building process into a contested terrain.

Eventually, with the change in the technological base of the building process, the hand-based and skill-dependent production activity would become increasingly mechanised and science-based. There may arise a tendency towards pre-fabrication of building components and even buildings. Buildings, thus, may become a commodity produced in factories on a large scale by using machines. Mechanisation may take place on the site of construction as well. Different operations performed on site are brought under mechanisation. However, such a transition to specifically capitalist modes of production of buildings would be a long-drawn out process. Radical transformation of the labour process in the building industry would require many pre-conditions to be satisfied. For instance, industrialisation of buildings through factory production of building components and buildings presupposes the following:

(i) the customers are ready to accept highly standardised buildings and components,
(ii) the demand for buildings is sufficiently high and consistent enough to guarantee economies of scale for the pre-fabricating units, and
(iii) the transport and communication network is well developed (Nations United: 1970). Developing countries, however, cannot expect to satisfy these conditions since building continues to be 'custom'-built. Similarly, demand may not be high and consistent enough to facilitate "industrialisation of buildings".

3. Building construction in a milieu of social change

Students of history would be able to pick up at ease numerous concrete examples from Kerala's recent past to illustrate how customs and practices of a traditional social order offer stubborn resistance to the development of productive forces and growth of capitalist relations. We have already seen how the canons of the traditional society deterred changes in the building industry by resisting the introduction of new technologies and modern construction materials, denying freedom of mobility to workers, and tying down the building process by caste and craft rules.

In fact, the hegemony of the caste-based hierarchical rule in Kerala was so complete that there existed hardly any facet of social life untouched by its overwhelming influence. The dominating nature of the hierarchical order needs no elaboration except the statement that even the body language of its subjects, not to speak of more significant aspects of how they lived their lives, were over-determined by it. Naturally, the customs and traditions of the land appeared irrational and crazy to those exposed to the ethos of modernisation. No wonder, Swami Vivekananda condemned this society, at the dawn of the twentieth century, as a 'lunatic asylum'.

The history of Kerala over the past two centuries may be seen as a series of events which broke the hegemony of the traditional order and liberated the people and their lives from its clutches. There exists no universally accepted theory of social transformation; nor is there a consensus on the role played by different agents. From the point of view of our study, we would emphasise the point that social transformation in this region has been the result of a multitude of factors: the environment of industrial revolution and changes thereafter in Europe with which this land held strong trade relations; colonialism; spread of western education; agrarian reforms initiated before and after independence, social reform movements; national liberation movement; peasant and working class movements.

A detailed analysis of these factors and their role in social transformation is beyond the scope of the present overview. However, the general environment of social change is outlined in the first section focussing primarily on aspects pertinent to the modernisation of building activity and the emergence of the contract system.

The building boom experienced in the State since the mid-1970s, which paved the way for the spread of the contract system is examined under the 'Dutch disease' framework in the second section.

In the third section, we present the principal features of the building boom in Kerala and delineate the causal relationship between the enormous expansion of building activity on the one hand and the rapid spread of modern technologies and capitalist production relations on the other. In the Appendix, we would also attempt an overview of the modern building process, focussing primarily on the physical aspects, and draw the implications of the changes for the organisation of production in the industry.

Emergence of the contract system

Even after the entry of capitalist features into many other lines of production, construction, especially construction of buildings, continued to follow traditional relations. The government departments executed even the public works directly either by employing artisans or using traditional modes of forced labour. It was hard to find any work in the construction sector organised and executed for profit making. The tribe of contractors was yet to make its presence even during the late 1860s.

The emergence of the contract system in the building industry may be traced to the last quarter of the nineteenth century when the government of Travancore began to entrust work in the Public Works Department to contractors. The contract system began to be considered essential for efficient management of public works. The emergence of this system should be viewed as a part of the larger process of social change - often described as a modernisation process - that the Travancore society witnessed from the mid-nineteenth century (Ramachandran: 1996; Tharakan, P.K. M: 1998).

Commercialisation of the economy, spread of education, and the various social reform movements gradually removed the restrictions imposed by the caste-based traditional society, paving the way for the emergence of 'free labour' and occupational mobility. It facilitated the emergence of a casual labour force. The evolution of modern agricultural labourers in Kerala, from among the attached/servile communities to modern casual wage labourers is well documented (Jose A. V: 1980; Saradamoni: 1981). Though it would have been an extremely fruitful enquiry we have desisted from the temptation to document the evolution of casual workers in the building industry. Such an enquiry will have to be set in the background of the milieu of socio-economic changes in the State and more specially the social reform movement among *Viswakarma* and *avarna* communities in general, as well as the evolution of the building process and technology in Kerala.

By the turn of the century social restrictions on the use of building materials and caste specifications on houses permitted to be built, had declined to a large extent. Roofing tiles made significant headway into building construction. Slavery had been formally abolished before 1860 (Saradamoni: 1981: 1-10). The 1860's saw the government giving up the system of forced labour, *uriyam* (Jeffrey 1976: 56-57). The *viruthy* tenants were relieved from their conventional obligations (Jeffrey: 1976: 154-155). In building activity the extra-economic links between the artisans and the customers got weakened enabling them to become free from customary craft obligations. These conditions favoured the emergence of wage labour in construction activities.

The abolition of *uriyam* and the consequent shortage of workers coincided with the phase of rapid expansion in public works. Since the formation of the Public Works Department in 1860, the number and value of public works in Travancore increased rapidly (Velupillai: 1940: 153-168). As a result, the Department found it extremely difficult to ensure timely and adequate supply of labour. Mr. Barton, Chief Engineer, PWD, Travancore remarked:

> Another case of serious difficulty has been the sudden cessation of the sys-

> tem of forced labour, which from time immemorial was the rule in Travancore and was maintained till recently. Coolies refused to work and bandies (carts) to ply for hire, in the belief that they are prohibited by sirkar orders, or, often times simply to demonstrate the power of their new position.

To overcome these problems and ensure regular supply of workers, the Department had to offer high wages and other facilities (Jeffrey: 1976: 90-93; Baak: 1999). For example, Mateer (1883: 235) noted that in 1859 in south Travancore the PWD, which carried out canal works in the region, had to pay a little over two *annas* (an *anna* was one-sixth of a rupee) to attract ordinary workers when agricultural labour was attainable for an *anna* per day. These difficulties, however, do not appear to have prevented the state in Travancore from taking up more public works programmes. By 1865-'66, nearly 10,000, *Ezhava* and other lower caste *coolies* were working on daily wages with the Public Works Department (Jeffrey, 1976: 91).

However, supply of workers was not the only problem faced by the PWD. The direct employment of large number of casual labourers posed serious managerial problems, as no effective mechanism of control and management of workers and the labour process existed.

> "The entire absence of contractors, not only for the construction of any portion of the works but even for the supply of the most ordinary materials required by the Department make labour extremely hard. We have to make our own bricks, quarry the stone, dive for the shells and burn lime, and even to fell the timber for the works".
>
> (Government of Travancore, 1866: 91)

Thus, the Department undertook most of the works by employing workers directly. Here, it should be mentioned that the newly emerged breed of casual workers was free from extra-economic compulsions and traditional obligations like in the earlier days. Direct employment of these workers, necessitated a large number of supervisory staff involving huge expenditure for the government. Further, the system of large-scale muster rolling was prone to corruption (Government of Travancore, 1879: 127-129). As a result, the Department switched to a policy of encouraging contractors.

Though direct employment of workers continued, by the beginning of the twentieth century, the contract system had established itself firmly in the public construction sector. At present the Department seldom employs labour directly for execution of construction work. According to the PWD Manual (1970), "building works are undertaken departmentally, by employing daily labour, only if no contractor is available or if it is found more suitable" (Government of Kerala: 1970).

But the contract system used to be confined almost entirely to the government and the corporate sector. It was in the past two or three decades that the contract system spread to the building activities in the household sector. Though the category of 'owners by employing workers directly', continued to dominate the household buildings sector, the contract system

had become an important way of organising construction even by 1981 (Table 3.1).

Table 3.1 Percentage distribution of construction works by construction responsibility (*1980-'81*)

Name of construction		1	2	3	4	5	6
New	Rural	4.12	27.95	2.45	65.48	7.43	100
Buildings	Urban	2.04	32.01	10.91	55.04	13.93	100
	Total	3.88	28.40	3.37	64.35	9.24	100
Addition,	Rural	5.03	32.55	10.45	51.97	2.24	100
Alternation or	Urban	1.16	35.57	15.15	48.12	5.41	100
Improvement	Total	4.68	32.82	10.87	51.63	2.53	100

Notre: 1: Owner with household labour; 2: Owner with paid labour; 3: Fully under contractor; 4:Mixed category; 5: Of Col 4, partly under contractor; 6: Total

Source: Report on the Survey of Household Construction Activities in Kerala 1980-'81, Department of Economics and Statistics, Government of Kerala.

In 1980-'81, nearly 11 per cent of the new buildings in the household sector in urban areas in the State was constructed completely under the contract system. In another 14 per cent of the new buildings, the contractor was involved at least partially. Interestingly, in the urban areas of Thiruvananthapuram district, about 30 per cent of the new building works was done under the contract system (Government of Kerala, 1985: 35). Further, in the case of renovation and improvement of buildings, the proportion entrusted with contractors was even higher. Obviously, there were significant rural urban differences in the influence of the contract system.

The 1986 survey (Harilal: 1986) conducted in the Thiruvananthapuram city corporation area, indicated that the practice of the owner directly employing workers on a daily wage basis was rare and confined mostly to small residential buildings. The system by which the entire construction responsibility is entrusted to a general contractor through a prime contract had not become popular in 1986. But, even when the owner performed the function of overall co-ordination, the preferred mode of execution was that of farming out the work on piece rate to several activity contractors. The owner's role in recruiting and supervising workers has declined further since then. In 1986 the incidence of 'developers' was insignificant even in the Thiruvananthapuram city corporation area. Residential flats were yet to gain currency in the housing scenario of the State. It was even believed that the Malayalis would not adapt themselves to the culture of living in flats. The period since then has seen, however, the emergence of large numbers of residential flats, thriving real estate business, and growth of speculative building.

Dutch disease syndrome and the building boom: a hypothesis

Windfall incomes might cause problems. They might even lead to the most unexpected outcome of de-industrialisation of the economy. That the windfall gains could turn out to be a development curse is now well recognised in the literature, especially in the context of pri-

mary commodity booms. The literature on 'Dutch disease' and the 'resource curse thesis' underline such backwash effects of a primary commodity boom (Corden: 1982; Neary V. Wand van Wijnbergen: 1986).

Dutch disease economics is named so after the experience of Netherlands in the 1960s, when the country experienced the boom of natural gas discoveries. The more the Netherlands developed its natural gas production, the more depressed its manufacturers of traded goods became. Even the windfall price gains of the two oil shocks that followed were reported to have contributed to the slump of industry (Lindbert: 1986). Interestingly, as later studies proved, the Dutch experience was no exception. Dutch disease models were found to have general applicability in the context of oil exporters, and countries experiencing primary export boom (Kamas: 1986; Fardmanesh: 1991; Usui: 1996). Further, more recent studies show that the economics of Dutch disease could be applied to explain the adverse effects of windfall inflow of external income form other sources as well (Thimothy: 1998).

The building boom in Kerala since early 1970s, and the background of the unprecedented structural shifts in the regional economy, in which it has occurred, is best explained using the framework of Dutch disease economics. That the regional economy of Kerala witnessed some major structural shifts during the period is widely acknowledged in the literature. One of the major and most noted aspects of this change in the economy has been the long drawn out stagnation of the commodity- producing sectors (Tables 3.2 and 3.3). The period, as a result, has also been characterised by a general slow down in the growth of domestic production, measured in terms of the net state domestic product (NSDP). To elaborate, the trend growth rates of primary and secondary sectors and NSDP have been negligible or negative during 1975-1987. Significantly enough, as Tables 3.2 and 3.3 show, the non-tradable sectors of the economy, which include mainly construction and services, have not been affected by the stagnation. They continued to register higher growth rates to claim increasing shares in the NSDP. The construction sector increased its share from around 3 per cent till 1975 to above 9 per cent since then. The construction boom is also found reflected in its share in the total workforce of the regional economy. The share of construction in the workforce of Kerala increased from less than 2 per cent in 1971 to 4 per cent in 1991. The overwhelming importance that the construction sector has come to enjoy, as reflected in its unusually high share in the NSDP, it needs to be noted, does not appear to have been normal given the present stage of development of the state's economy. Interestingly, the data presented in Table 3.2 suggest a plausible revival in the growth performance in recent years, especially in the commodity producing sectors, to which we shall return later.

Table 3.2 Trend growth rates of different sectors in Kerala economy

Sector	Period I (1965-'75)	Period II (1975-'87)	Period III (1987-'97)
GDP	3.21	1.99	6.00
Primary	2.23	-0.86	4.57
Secondary	4.71	1.65	6.31
Tertiary	4.24	4.06	6.96

Source: Period I (Kannan and Pushpangadan: 1990). Periods II & III are our own estimates. (Growth rates significant at 1 per cent level)

Table 3.3 Share of different sectors in NSDP

Year	Primary sector	Agric-ulture	Secondary sector	Manufa-cturing	Const-ruction	Tertiary sector
1960	55.98	53.42	15.24	12.45	2.27	28.78
1965	55.91	53.94	14.47	10.87	2.92	29.61
1970	49.44	46.44	16.32	12.46	2.92	34.24
1975	45.55	41.07	17.57	13.30	3.23	36.88
1980	39.23	33.85	24.37	13.90	9.02	36.4
1985	34.64	31.27	25.55	13.28	11.91	39.82
1990	32.91	28.90	26.35	15.72	9.67	40.74
1995	36.72	32.92	23.91	13.52	9.30	39.38

Source: Government of Kerala, Economic Review, various years

How do we account for the construction boom and the strange pattern of structural change in the Kerala economy? The dominant tendency of studies in the area has been to take a partial view and study individual sectors separately. For instance, there have been important attempts to explain stagnation in industry and agriculture (Subrahmanian and Pillai: 1987; Subrahmanian: 1990; Kannan and Pushpangadan: 1990; Shanthakumar and *Nair*: 1999). Similarly, efforts have been made to explain the boom in the construction and other non-tradable sectors (Gopikuttan: 1988). What is conspicuously missing is an integrated approach, which is sensitive to the structural relationship of growth performance among different sectors of the economy. The existing studies appear to have treated the stagnation in commodity-producing sectors and the remarkable growth of the non-tradable sectors as mutually independent and separate phenomena. What is perhaps disturbing is the failure of the existing studies to take into account the plausible effects of the remittances boom on the structure and growth of the regional economy. Incidentally, the external remittances are reported to have accounted for about a quarter of the State's income during the late 1970s and the 1980s (Krishnan: 1994). The approach of the existing studies has been to treat the boom in remittances as a boon, which did not have anything to do with the crisis in the commodity-producing sectors, but helped in moderating the adverse impact of the crisis.

The framework of open economy macro-economic models of the Dutch disease economics would help us overcome the above limitations and to initiate a structurally sensitive analysis of the impact of the remittances boom. Balakrishnan (1999) has already used a Dutch disease model to account for the decline in food production in Kerala. On our part, we find the Dutch disease economics eminently suitable to explain the crisis of the State's economy in general and more importantly the disproportionate growth of the construction sector.

The Dutch disease syndrome is explained in terms of two symptomatic effects of an export boom, viz. the 'resource movement effect' and the 'spending effect' (Fardmanesh: 1991). The expansion and increased profitability of the booming sector would bid up the prices of factors of production. The resulting contraction of non-booming tradable sectors due to the heightened competition for factors of production is referred to as the 'resource movement effect'. The spending of the extra income from the export boom tends to bid up prices of

non-tradable goods vis-à-vis tradable goods and hence also raise the real exchange rate leading to an erosion of competitiveness of the tradable sector. The spending effect refers to the contraction of non-booming tradable sectors on account of the appreciation of the real exchange rate. In short, the economy would experience a rise in the prices of factors of production and non-tradables, and an expansion of the non-tradable sectors of production as well as a contraction of the non-booming tradable sectors. The tendency for the prices of factors of production and non-tradables to increase cannot but adversely affect non-booming tradable sectors, which are exposed to external competition.

A cursory look at the data presented in Tables 3.2 and 3.3 would indicate a close correspondence between the predictions of the core Dutch disease models and the pattern of structural changes in the Kerala economy since the mid-1970s. As predicted by the models, the commodity-producing sectors, which are exposed to external competition, stagnated, whereas the non-tradable sectors, including construction, grew at higher rates.

There is also evidence to suggest that the Dutch disease pattern of structural changes in the Kerala economy was caused by approximately the same set of factors and that the direction of causation has been the same envisaged in the literature on resource boom economics. Most studies on wage movement in Kerala have noted a steady rise in the level of real wages since 1970 (Baby: 1996). The rise in wages seems to have had its origin in the construction sector (Harilal: 1986; Prakash: 1998). Between 1975-'76 and 1995-'96, the real wages in the construction sector nearly doubled. The pressure of construction wages is reported to have resulted in sympathetic movements in the wages of other sectors as well, thanks to the phenomenon of wage relativity (Krishnan: 1991). The period is also known to have been one of a general increase in land prices (*Nair*: 1989). Given the high pressure of booming external income, the prices of non-tradables also showed an upward trend (Prakash: 1998).

The upward trend in the price of factors of production and non-tradables would have had an adverse impact on the non-booming tradable sectors. A comparison of wages between Kerala and Tamil Nadu shows that in Kerala wages as a proportion of Tamil Nadu wages increased from 73 in 1975 to 184 in 1987 (Fig. 3.1). This may be taken as evidence of the impact of the boom in the external sector on the competitiveness of the tradable commodity-producing sector. There is no dearth of empirical evidence to prove that the rise in wages had actually affected the Kerala industry (Albin: 1990). More clinching evidence comes from the widely noted migration of traditional industries to the neighbouring States (Oommen: 1979).

The impact on the construction sector and other non-tradable sectors in general is also fairly clear. The 'resource movement effect' and the consequent increase in the prices of factors of production tended to bid up the cost of production in the non-tradable sectors, including construction. This must have affected the growth performance of the non-tradable sectors adversely as it had happened in the case of the commodity-producing sectors. But, this was not because of two important reasons well anticipated by the Dutch disease economics. First, the 'spending effect' of the remittances boom had raised the demand for non-tradables. This, as many studies on migration had shown, is particularly true of the construction sector, which is said to have attracted a significantly high proportion of the Gulf income (Kurien: 1978; Prakash: 1978; Mathew and *Nair*: 1978). Second, and more importantly, non-tradables,

by definition, are not exposed to external competition. Construction industry, needless to say, enjoys a relatively localised and insulated market

Another important aspect of the Kerala experience is the marked revival of the growth path of the State economy in general and the commodity producing sectors in particular during the post-1987 period. The trend growth rate in NSDP during 1987-'97 is found to be more than three times that recorded during 1975-'87. More importantly, the commodity-producing sectors, (Santhakumar and *Nair*: 1999) which were under the grip of stagnation, have also begun to look up significantly.

While the diagnoses on stagnation in the existing literature have not been of much help in explaining this revival, it is unravelled in the framework proposed in the present study. What appears to be happening at present is the beginning of a reversal of the process, which was set in motion in the mid-seventies. This reversal may be explained on the one hand by the immunity that the economy might have acquired over time to the Dutch disease syndrome and the weakening of the remittance boom, on the other.

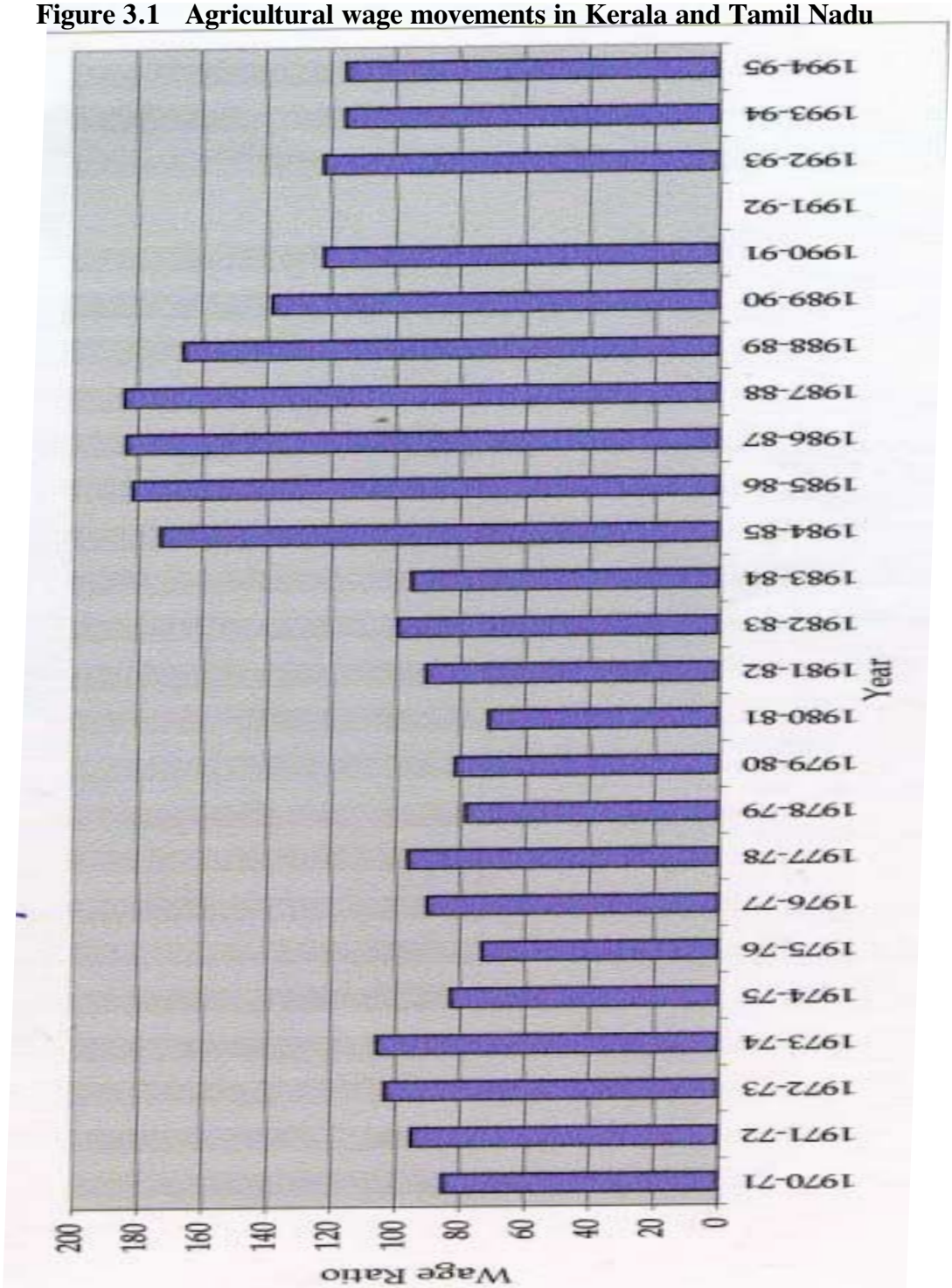
As the data on wages presented in Figure 3.1 reveals, the slowing down of the remittances boom appears to have reduced the pressure on wages. The wage-relative between Kerala and Tamil Nadu shows a clear decline in the post-1987 period. Interestingly, the turnaround in the growth of the commodity-producing sectors coincides with the observed wage movements. Thus, the construction boom in Kerala needs to be seen as part of the larger process of structural change in the regional economy. Its dynamics is better understood in the background of the remittances boom on the one hand and the crisis of the commodity-producing sectors on the other.

Linkage effects of the construction boom

The construction boom since the mid-1970s is known to have had significant derived effects on the sectors linked to it in various ways. Among the derived effects of the boom, its impact on the wage movements, not only in the construction sector but also in interrelated labour markets, is widely recognised (Krishnan: 1991). As we have already mentioned, the shortage of construction labour, caused by the twin phenomena of the boom in construction sector and the simultaneous migration of construction workers, is known to have resulted in significant in-migration of labourers from Tamil Nadu. The construction boom had, as already reported, its impact on the land market too. Here, however, we would focus on the impact of the boom on the input-producing industries.

With a view to delineating the linkage effects on the input-producing industries we have undertaken a survey of building sites in 1999. One major limitation of the survey is that the selection of sites was not based on scientific sampling techniques. We could not adhere to the sampling rules because there was no guarantee that we would get reliable information on the cost of construction from the sites that would come in the sample. Several owners of new buildings were found reluctant to divulge the kind of details that we sought. Even in cases in which the owners were forthcoming, all of them were not in a position to recollect the details of costs item-wise that the present study required. Naturally, therefore, we had to search and find out newly-constructed buildings, whose owners kept detailed accounts on the construc-

Figure 3.1 Agricultural wage movements in Kerala and Tamil Nadu



Note: Wage ratio is the difference between agricultural wages in the two States, normalised by the Tamil Nadu wages.

tion expenditure and were ready to share the information. The results of the survey revealed considerable variation in the cost of construction across different types of buildings, in terms of cost per unit area as well as the composition of the construction expenditure. For instance, the cost per unit area was found to increase with the plinth area of the building. Similarly, the composition of the cost was found to vary significantly according to the technology employed, materials used for different purposes, etc. We have tried to ensure that the sample of buildings covered by the survey represents different types of buildings. The choice of the number of sites included to represent different categories of buildings, however, was arbitrary. It is clear that an extensive study, covering an adequately large sample of buildings, chosen on the basis of scientific sampling techniques, would be required to arrive at reliable estimates on the cost of construction.

Notwithstanding the limitations, the results of the survey presented in Tables 3.4 to 3.6 may be used to draw certain broad generalisations on the input requirements of the building industry. Table 3.4 gives data on the costs of materials and workers in building construction, according to activities. Around 70 per cent of the cost is accounted by materials and only the rest by labour. The lion's share of the labour cost is accounted for by skilled workers (Table 3.5). The importance of the derived demand for construction materials needs to be emphasised. From each rupee spent on building construction, around 70 paise goes to the materials-producing industries. The State-wide Survey on Household Construction Activities undertaken by the Department of Economics and Statistics of the State government in 1980 had also come with similar findings (Table 3.7). According to that survey, the proportion of the cost of materials was even higher - nearly 80 per cent. The major input-producing industries that benefit from the derived demand originating in the construction sector are indicated in Table 3.4.

Table 3.4 Material and labour cost across activities (*in percentage*)

Category	MC	LC	Other	Total
Design & Supervision	—	—	1.04	1.04
Foundation & Basement	6.23	2.97	0.17	9.37
Laying of Bricks/Laterite	12.74	3.16	—	15.92
Belt, Lintels & Sun Shades	3.56	1.17	—	4.73
Plastering	4.15	3.84	—	8.00
Doors & Windows	12.77	3.26	—	16.04
First Floor	2.54	0.84	—	3.38
Roofing	8.60	3.05	0.53	12.18
Flooring	7.27	2.14	—	9.40
Water & Sanitation	3.66	0.78	—	4.44
Electrification	3.94	1.09	—	5.03
Painting	2.44	0.97	—	3.41
Well & Latrine	—	—	4.13	4.13
Others	1.09	0.30	1.54	2.93
Total	69.01	23.59	7.40	100.0

Mc = material cost; Lc = labour cost
Source: Survey of Building Sites, 1999

Table 3.5 Break-up of material cost (*in percentage*)

Cement	13.69
Steel	6.24
Sand	5.34
Metal	2.91
Wall materials	9.89
Rubble	2.89
Door & window materials	12.42
Other Material Cost	14.21
Total Material Cost	67.58

Notes: Wall materials include laterite blocks, burnt bricks, cement hollow blocks, and cement bricks; Door & window materials include wood and factory produced frames; Other material costs include tiles, marble, mosaic, ceramic and other tiles, sanitary and electrical materials, and painting materials (Compilation based on a smaller sample). Source: Survey of Building Sites, 1999.

On account of the difficulties already mentioned, we have not been able to collect data on the cost of materials at the desired level of disaggregation. But the results of the Survey on Household Construction Activities presented in Table 3.7 could be used to fill in the gaps. From Table 3.5 it is clear that cement and steel together account for about 20 per cent of the total construction cost. Tiles, marble, mosaic chips, ceramic tiles, sanitary and electrical materials, paints, etc., would come to around another 14 per cent. According to the Survey of Household Construction Activities (1980), the share of cement, steel, stone chips, sanitary fittings, electrical fittings, paints, etc, accounted for about 20 per cent of the total construction cost. Both the surveys reveal the predominance of wood in the composition of the construction cost. The expenditure on wood constituted as high as 18 per cent in the 1980 survey. In the present survey, the cost was lower – only around 12.5 per cent. Granite blocks, bricks, sand, etc., account the rest of the cost.

Table 3.6 Break-up of labour cost (*in percentage*)

Unskilled labour	6.03
Skilled labour	12.13
Centering/Scaffolding	1.97
Other labour cost	4.36
Total Labour Cost	24.49

Notes: Skilled labour includes masons, mosaic/marble workers, barbenders, concrete workers and carpenters; other labour cost includes filling, leveling, excavation, electrification and painting etc. (Compilation based on a smaller sample).

Source: Survey of Building Sites, 1999.

The framework of the Dutch disease economics outlined earlier would help us put forward some interesting hypotheses regarding the linkage effects of the building boom on the input supplying industries. Following the logic of the Dutch disease models, we find that the derived demand of the construction boom would have been more helpful to industries sup-

plying non-tradable inputs than those producing tradable inputs, of the construction sector. Industries in Kerala producing tradable inputs of the construction sector, viz., steel, cement, sanitary wares, electrical equipment, paints, etc., appear to have shared the boom-induced demand with suppliers from outside the State. The higher prices of the factors of production and the non-tradables in Kerala would have affected the competitiveness of the Kerala industry adversely vis-à-vis its outside competitors. This fact would explain as to why the linkage effects of the construction boom were weaker than expected.

Table 3.7 Percentage distribution of construction expenditure

(*Household Sector 1980-'81*)

Item	**New Buildings**		
	Rural	**Urban**	**Total**
1. Stone	10.63	14.00	11.01
2. Stone chips	1.31	2.11	1.40
3. Bricks	8.98	6.83	8.74
4. Sand	2.45	2.97	2.51
5. Cement	9.50	13.85	9.98
6. Lime	0.39	0.27	0.38
7. Wood	18.95	12.10	18.24
8. Roofing tile	6.36	3.47	6.04
9. Flooring tile	0.09	0.23	0.11
10. Roofing materials	0.71	0.27	0.66
11. Iron and steel	4.72	10.04	5.31
12. Sanitary fittings	0.35	0.60	0.38
13. Electrical fittings	1.54	1.54	1.54
14. Paint and varnish	0.37	0.22	0.35
15. Labour-skilled	15.09	11.99	14.74
16. Labour-unskilled	5.74	5.09	5.67
17. Other	12.82	14.41	12.94
Total	100.00	100.00	100.00

Source: Report on the Survey on Household Construction Activities in Kerala 1980-81, Directorate of Economics and Statistics, p.13.

However, the derived demand must have immensely benefited the Kerala industries producing non-tradable inputs such as sand, laterite blocks, bricks, rubble, prefabricated components, etc. It is not that the high cost structure of the Kerala economy does not affect production of the latter group of materials. But, their bulky nature and their high transportation costs, tend to insulate such industries from outside competition. Here again a caveat is necessary. The construction boom since the 1970s is known to have exerted immense pressure on the sources of some of the above materials in Kerala, causing environmental problems and driving up costs several fold. This is particularly true of brick-making and sand-mining. On account of such pressures generated by the sustained expansion of construction activities, the

tendency to transport even such bulky materials from the neighbouring States was observed in some cases. For instance, in Kanyakumari district of Tamil Nadu, industries supplying sand, bricks, and tiles to Kerala are said to be thriving.

'Building Boom' and the spread of the contract system

The building boom thus constitutes the background for the spread of the contract system to the household sector. It remains to be explained, however, as to how the boom helped the spread of the contract system. To answer this question it is necessary to understand some important features of the building boom, that, we consider, have contributed to the spread of the contract system and hence to the penetration of capital into the industry.

There is no dearth of evidence, as the data on net State domestic product and the distribution of workforce presented in the previous section show, to prove that the State has been witnessing a construction boom since the mid-1970s. However, we do not have industry-wise disaggregated data on production or employment necessary for a study of the growth of building construction activity. The available evidence, however, seems to indicate that building construction has been an extremely important component of the rapidly expanding construction sector in the State.

Table 3.8 Growth of occupied residential houses and Census houses in Kerala

Period	Number of occupied residential houses	Decadal addition	Percentage increase	No. of census houses	Percentage increase
1901	1170164	-	-	-	-
1911	1311931	141767	12.20	-	-
1921	1451833	139902	10.66	-	-
1931	1696978	245145	16.89	-	-
1941	1963334	266356	15.70	-	-
1951	2201227	237893	12.10	-	-
1961	2754183	552956	25.12	3380464	-
1971	3361880	607697	22.06	4561185	34.93
1981	4195315	833435	24.79	5881075	28.94
1991	5330450	1135135	27.06	8071960	37.25

Note: Census houses include residential and non-residential buildings. Source: Census of India 1961, 1971, 1981, and 1991

Number of occupied residential houses in Kerala has registered a sharp and steady increase after 1951 (Table 3.8). The decadal growth rates peaked during the period since 1961. Of the 41,95,315 houses enumerated in the 1981 census 8,33,435 (20 per cent) were those added during 1971-'81. The net addition to the stock increased to 27 per cent during the decade between 1981-'91. Similarly, the number of census houses, which includes both residential

and non-residential buildings, grew by 35 per cent during the 1960s, by 29 per cent during the 1970s, and by 37 per cent during the 1980s.

The data on the number of occupied residential houses or census houses given in Table 3.8 would not give, however, any idea regarding the replacement of or improvements to, existing buildings. The data on the age structure of houses (Table 3.9) could be used to obtain a better picture of the boom in the building sector. According to the Survey on Housing and Employment in Kerala (1980), out of 40,65,863 houses listed, 4,39,508 (10.8 per cent) houses were not older than two years. A major proportion of these new houses might have come in the place of old houses i.e., replacing the old stock.

Table 3.9 Age structure of houses in Kerala (1980) (*in percentage*)

Districts	**Total**	**Below 2 years**	**2-30 years years**	**Above 30 years**
Trivandrum	444573	11.3	60.99	21.81
Kollam	479513	10.4	74.26	15.34
Alappuzha	405020	13	68.24	18.76
Kottayam	274179	11.2	68	20.8
Idukki	167739	13.7	76.75	9.55
Ernakulam	401457	11.2	71.7	17.1
Thrissur	393439	11.4	66.64	21.96
Palakkad	340139	7.5	66.81	25.64
Malappuram	340291	9.8	67.25	22.95
Kozhikode	389933	10.4	69.95	19.65
Kannur	429580	9.9	68.75	21.35
State	4065863	10.8	69.33	19.87

Source: Report of the Survey on Housing and Employment in Kerala (1980), Directorate of Economics and Statistics, Government of Kerala.

4. Technological and Organisational Change in the Building Sector

Traditionally, the craftsman used to work for his local clientele with whom he was bound by a network of customary relations and traditions. Clients and craftsmen were usually known personally to one other. But, as the self- dependence of the village economy got weakened, and villages got increasingly connected with the external world, the bonds of village life in general and the local artisan-clientele links in particular also tended to get disrupted. Regional concentration of building activity observed in recent decades has further weakened the direct links between the owner-customer and the workers in the building sector.

The growth rate of buildings has been higher in the urban areas than in the rural areas (Table 4.1). The proportion of urban census houses to the total number of census houses increased from 15 per cent in 1960 to 18.5 per cent in 1980 and to 26 per cent in 1990. Further, the impact of the remittances boom as well as of the building boom triggered by it was not uniform across regions. For instance, there were some important migration pockets in which construction activity became hectic. These pockets drew workers both from within the State and from the neighbouring States. In fact, the period since the mid-1970s witnessed significant in-migration of Tamil workers into the construction sector of Kerala (Anand: 1986).

The situation was complicated by the scarcity of building workers in the State, caused primarily by the out-migration of the construction labourers to the Gulf countries on the one hand and the expansion of the domestic demand for construction labourers triggered by the building boom, on the other. The scarcity of building workers naturally got reflected in the rising wage rates of the building workers since the mid-seventies.

Table 4.1 Rural-urban difference in the growth of Census houses

Growth in number of Census houses			
Period	**All-Kerala**	**Rural**	**Urban**
1961-1971	34.93	32.96	46.06
1971-1981	28.94	25.41	47.14
1981-1991	37.25	24.73	92.2

Source: Brochure on Housing Statistics, 1982, Directorate of Economics and Statistics, Government of Kerala, p.3, and Census of India, 1981 and 1991

The disruption of the traditional links between the workers and the customers on the one hand and the scarcity of workers on the other has made it difficult for the owners to find timely and adequate supply of workers. Further, in a large number of cases, persons who wanted to construct buildings did not have the time and the proper connections to mobilise workers. The transmission of information on job opportunities became, in these circumstances, difficult without the help of intermediaries. This was particularly so in the absence of alternative labour market institutions.

Further, with the disintegration of the traditional ways of building, the tasks of mobilising workers, of bargaining with them on wages and working conditions, of making them work

and co-ordinating their wok, have tended to become too cumbersome for individual owners. Moreover, as already mentioned, the labour power sold, without the conventional obligations and traditions of the craft attached to it, has of necessity, transferred the responsibility of its use, at whatever level of efficiency, to the buyer. In other words, management of workers and overseeing of their work have become the responsibility of the buyer of labour-power. Individual owners, as they are not specialists in the industry, are not equipped to take up successfully these functions nor are they, in general, in a position to spend time on the building process beyond a point.

Thus, the role of a specialist (contractor) to recruit workers, bargain with and control them, supervise and co-ordinate their activities, etc., has become unavoidable in the building industry. The above tasks of recruiting workers, and controlling the labour process have been gradually taken over by the contractor with his motive for making profit through different ways of management of workers and their work.

New materials and modern technology

The quantitative increase in building activity in Kerala had also a qualitative dimension. The nature of buildings, uses to which buildings are put, the composition of building materials and the building technology in general have undergone changes considerably over time. These changes, we would argue, have also been instrumental in facilitating the entry of capital into the industry.

Emergence of the modern building process reflects changes in the pattern of demand of the society for buildings. One of the important aspects of these changes has been the shift in favour of non-residential buildings. As may be seen from Table 4.2, construction of non-residential buildings including factories, workshops, work-sheds, hotels, shops, business houses, offices, restaurants, etc., has grown at a faster pace than construction of residential buildings since the 1960s.

As a result of the shift in the pattern of demand, the proportion of census houses used exclusively as residences to total census houses declined from 81 per cent in 1960 to 73 per cent 1970, 69 per cent in 1980, and 65 per cent in 1990. This shift in demand in favour of non-residential buildings and in some instances to high-rise buildings implied widespread use of modern construction materials and techniques. For instance, without the introduction of cement, steel, reinforced cement concrete (R.C.C), and beam and pillar frames, construction of the so-called 'sky-scrappers' would not be possible (Bowley, 1966: 171 & 333).

Change in the nature of demand was not limited, however, to the shift in favour of non-residential buildings. Residential construction in Kerala had also undergone a significant transformation during the past quarter of a century. It was a period of transition from conventional to modern houses, often referred to as 'western type' houses.Thus, a significant change in the pattern of demand in favour of houses built with modern construction materials and techniques is obvious. Given the limited scope of our study, we shall not enter into the controversial area of the reasons for this change. Considerations of cost efficiency, conven ience, comfort, and even luxury, might have induced it. For instance,

Table 4.2 Census houses by uses

All uses	1961	%	1971	%	1981	%	1991	%
Vacant at the time of house listing	287973	8.52	386615	8.48	409550	6.96	684015	8.49
Residence	2739867	81.05	3332515	73.06	4059540	69.03	5212510	64.67
Shop-cum-residence	10527	0.30	8390	0.18	27485	0.47	24385	0.30
Workshop-cum residence	3789	0.11	20975	0.46	108290	1.84	93555	1.16
Hotels, Sarais,Dharma Salas, Tourist Homes,Inspection Houses	2604	0.08	6220	0.14	7805	0.13	29365	0.36
Shops barring eating houses	141682	4.19	203045	4.45	263175	4.47	366040	4.54
Business houses and offices	21299	0.63	35575	0.78	56050	0.95	95210	1.18
Factories, workshops, work sheds	54576	1.61	91185	2.00	152260	2.59	223775	2.78
Restaurants,sweet meat shops, eating places	61573	1.83	82670	1.81	88155	1.50	89270	1.11
Places of entertainment, community gathering	2261	0.07	10645	0.23	18650	0.32	23560	0.29
Places of worship	—	—	—	—	73265	1.25	84895	1.05
Others	54318	1.60	383350	8.41	616850	10.49	1133525	14.06
Total	3380469	100.0	4561185	100.0	5881075	100.0	8060105	100.0

Source: Census of India, 1961, 1971, 1981, and 1991

relative increase in the price of traditional materials like wood and increase in the wage of carpenters might have made the modern materials a cheaper alternative. Similarly, introduction of modern materials for electrification and plumbing, and the use of new generation sanitary wares, etc., could be justified on grounds of consumer comfort.

But, it would be unrealistic to attribute all the changes that had happened to consumer's rationality. It is well known that some of the changes in architectural practices in favour of modern materials and techniques are not at all cost-effective. This may be particularly true when we account for social costs (Kannan and Spence: 1975). It may also be noted that alternative modes of building, using locally available cheaper materials and cost-saving techniques, though available, have not proved attractive to the extent they should have (Government of Kerala: 1974). It would not be unrealistic, therefore, to conclude that distorted notions of modernisation and demonstration effects also have contributed to the shift in the pattern of demand for houses.

Diffusion of modern construction materials

Increasing demand for non-residential buildings and modern residential houses resulted in the widespread use of modern construction materials. Traditional building technology in Kerala was based mainly on locally available materials like wood, bamboo, leaves, straw, cane, laterite, mud, unburned bricks, etc. In Travancore, only a negligible proportion of houses had either terraced or even tiled roofs till about 1891. Even as late as in 1941, only 12 per cent of the houses in Travancore had terraced or tiled roofs. Similarly, in 1941, 42 per cent of the houses had mud walls while 9 per cent of the houses had wood as the basic material of wall. In another 19 per cent of the houses, walls were built of 'cadjan' leaves. Therefore, one may safely conclude that up to 1941, even tiles and burnt bricks, not to speak of cement and steel, were sparsely used for house building (Table 4.3).

Table 4.3 Distribution of houses by type of roof (*in percentage*)

Types of Houses	**1875**	**1881**	**1891**	**1941**
Terraced	0.01	0.01	0.00	0.10
Tiles	0.42	0.50	0.75	11.00
Thatched (1) Cadjan	78.37	76.55	83.26	77.40
(2) Straw	20.11	22.41	15.84	NA
Other materials and houses under construction	1.08	0.53	0.15	11.50
Total	100.00	100.00	100.00	100.00

N.A. indicates Not Available

Source: (i) Census of India, 1891, Travancore, Part 1, p.268; Census of India, 1941, Travancore, Part 1 & 2, p.30.

The second half of the twentieth century witnessed dramatic changes in the situation (Table 4.5 and 4.6). By 1960 tiles became popular and as many as 24.8 per cent of the census households had tiled roofs. However, other modern materials like cement, iron and steel,

Table 4.4 Distribution of houses by wall material, 1941 (*in percentage*)

Material	%
Cadjan	19.0
Mud	42.1
Laterite	18.4
Brick	3.2
Wood	9.0
Other Materials including unspecified	8.3
Total	100.0

Source: Census of India, 1941, Travancore, Part 1 & 2, p.30.

plumbing materials, asbestos sheets, aluminium, mosaic chips, glass, modern sanitary wares, etc., seem to have taken more time for their diffusion. Though the above materials were sparsely used even earlier, it was during the past three decades, that they got widely diffused in the State.

Table 4.5 Distribution of residential census houses by predominant material of roof 1960 and 1990, Kerala (*in percentage*)

Period		1960			1990		
Material		Total	Rural	Urban	Total	Rural	Urban
A	Grass, leaves, reeds, bamboo, thatch, mud, unburnt bricks, or wood	74.1	76.9	56.7	25.2	28.1	16.9
B	Tiles, slate, shingle corrugated iron, zinc or other metal sheets, brick and lime concrete & stone & all other materials	25.9	23.1	43.3	74.8	71.9	86.1
B1	Tiles, slate shingle	24.8	21.9	42.7	57.1	57.2	56.7
B2	Corrugamted iron zinc or other metal sheets	0.5	0.6	0.1	0.1	0.7	0.8
B3	Asbestos cement sheets	0.4	0.5	N	2.0	2.0	2.4
B4	Brick and lime	N	N	N	1	0.1	0.1
B5	Concrete and stone	0.1	N	0.5	12.5	9.6	20.7
B6	All other materials	N	N	N	2.3	2.3	2.3
C	Total	100.0	100.0	100.0	100.0	100.0	100.0

Note: N indicates negligible and N.A not available.
Source: Census of India, 1961, 1971, and 1991

The proportion of residential census houses having roofs built of traditional materials - grass, leaves, reeds, bamboo, thatch, mud, unburned bricks, or wood - has come down from 74 per

cent in 1960 to 25 per cent in 1990 (Table 4.5). Correspondingly the use of modern materials for roof purposes increased. That the proportion of houses with 'concrete and stone' as the predominant material of roof rose to about 10 per cent in the rural areas and to nearly 21 per cent in the urban areas deserves special mention.

Similar is the case of the predominant material used for the wall. In 1960, only 36 per cent of the total residential houses had walls built of modern materials like burnt bricks, G.I sheets or other metal sheets, stone, and cement. The proportion increased to 63 by 1990 (Table 4.6). Though the process has been faster in the urban sector, the diffusion of modern materials appears to have happened both in rural and urban areas. The survey of housing and employment in Kerala (1980) indicates that during the seventies there had been a drastic reduction in the number of houses using traditional materials. The proportion of huts in the total number of houses had come down from around 50 per cent in 1971 to 24 per cent in 1980.

Table 4.6 Distribution of residential census houses by predominant material of wall, Kerala

Year and Category		Grass, leaves, Reeds or bamboo, mud unburnt bricks, wood	Burnt bricks, GI sheets or other metal sheets, stone, cement	All other materials	Total
1961	Total	637	362	1	1000
	Rural	659	339	2	1000
	Urban	496	503	1	1000
1971	Total	600	398	2	1000
	Rural	631	368	1	1000
	Urban	422	577	1	1000
1991	Total	354	627	19	1000
	Rural	393	588	19	1000
	Urban	245	737	18	1000

Source: Census of India, 1961, Vol. VII, Kerala, Part IV, A&B; Census of India, 1971, Series 9, Kerala, Part IV, Housing Report & Tables.

The survey on household construction activities in Kerala (1980-'81) that gives the percentage distribution of building construction expenditure has also thrown up interesting information (Table 4.6). In the case of new buildings, of the total construction expenditure, which include labour cost also, expenditure on cement alone constituted roughly 10 per cent. Another 10 per cent of the total expenditure was incurred on stone chips, iron and steel, sanitary fittings, electrical fittings, paints and varnish.In urban areas,the expenditure on modern materials is higher than in rural areas. For instance, in the former, cement, iron, and steel together constituted 24 per cent of the total construction expenditure.In rural areas the corresponding proportion was only a little higher than 14 per cent.

The introduction of materials and techniques alien to handicraft production has contributed, to a significant extent, to the break down of the practice of artisanal production of buildings on the one hand and to penetration of capital into the building industry on the other. A brief account of the modern building process is given in Appendix I.

With the transition to the modern building process, sophisticated and costly equipment and tools come into use. For instance, consider roofing. 'Thatch-on-timber', or 'tiles-on-timber' roofs involved little more than the use of traditional carpentry tools, which the artisan himself owned and brought to the site. The RCC roof, however, requires form-work, pans, shovels, concrete mixtures, vibrators, mechanical hoists, etc. Even if no mechanical devices are used, wooden shutters or steel shutters, poles to support the form-work, pans, shovels, etc., cannot be dispensed with. In the case of the making of the beam and pillar frames also, the same is the case. Similarly, for raising of scaffolds for construction of walls, and for plastering and painting them, initial investment is necessary. Thus the modern building process involves substantial investment in equipment and tools.

The owner-customer or the workers in the various construction activities would not, or cannot afford to make investment on them. In such a situation, the entry of an intermediary agency, which can afford to buy and to make effective use of them by employing workers of the requisite skills on a repetitive basis, becomes natural and inevitable.

The introduction of new materials and related independent trades like plumbing, wiring, barbending, laying of mosaic, fitting of sanitary wares, etc., has increased the organisational complexity of the building process. The function of co-ordination has become increasingly important. It involves co-ordination of a large number of workers specialising in different trades, a wide variety of materials, and costly instruments of production. Concrete mixtures and vibrators should not lie idle. The supply of materials should not delay any part of the work; the centering and shuttering workers should finish their job before bar benders start with their operations; and both should finish work before concreting is started. Depositing of concrete and its compaction should be done with maximum speed before the process of setting of cement starts. Masons should prepare the floor for the mosaic workers to come-in; the walls when finished should have made provisions for electrical fittings, plumbing, carpentry work, and so on.

The increasing complexity of the building process gives prominence to the building specialist, viz., the contractor, in the capacity of an organiser; the owner-customer and the workers working directly under him, have become virtually tales of yore. Owner-customer is an inexperienced person as far as the tricks of the trade are concerned. On the other hand, workers, with increasing specialisation and division of labour, are incapable of overall supervision and co-ordination of the work. They would not also be in a position to mobilise the resources to finance the investment on the various equipment and tools required under the modern dispensation. In short, a variety of factors has contributed to the transition from artisanal to the capitalist process of production of buildings, a transition which has been due to inevitable circumstances and which would seem irreversible.

Appendix I

The modern building process

Foundation and Basement

Once the building is conceived of and the design made, execution of the work commences. Excavation and laying of the foundation is the first step in the building process. Depth of the foundation and the techniques used in building construction would differ according to the load-bearing capacity of the soil and the type of the structure to be built. It has now become a common practice to lay a layer of concrete at the bottom of the excavation. This is particularly true of buildings with roof built of reinforced cement concrete (RCC). For big buildings reinforcement would also be done. Depending upon the soil conditions piling might also be resorted to.

Foundation, then, is raised to the floor level of the building by constructing the basement. Granite or laterite blocks with suitable mortar are used for this purpose. Burnt bricks with cement are also becoming popular.

Construction of walls

Laterite or burnt bricks are the common materials used. This marks a transition from unburnt bricks, wood, bamboo, reeds and leaves. When laterite is used, each block should be given proper shape before they are laid. Bricks on the other hand are available ready for use after wetting.

Width of the wall will depend upon the material used and the weight it is expected to bear. Here the spread of the beam and pillar (both made in R.C.C) frame-technology may be mentioned. Beam and pillar frame practically renders walls functionless as far as the function of load bearing is concerned. In such cases, walls are referred to as 'curtain walls'. This marks one of the important breakthroughs in the field of building technology, which made the construction of high-rising buildings possible. Usually the beam and pillar frame technique is used for high-rising buildings. But in Kerala, it is not uncommon to see its use even for smaller buildings (say two-storied). This, it is often justified, would enable the future extension of the building.

For construction of walls, beyond the reach from ground, temporary staging is necessary. Scaffolding or temporary staging is done using bamboo and other wooden poles. With the vertical growth of buildings in Kerala, preparing these stages has become an important element of the building process. For laying of bricks, plastering and painting the wall, the same scaffold is used.

With the introduction of RCC roofs, woodwork is getting increasingly limited to windows, ventilators, and doors. Wood pieces are generally bought from sawmills in convenient sizes and brought to the site. Woodwork, most often, is done in one temporary shed on the site or in one of the rooms of the unfinished building. Another factor affecting the share of woodwork and therefore, the carpenters is the use of pre-fabricated doors and windows.

Flooring: Ground is raised to the floor-level of the building by filling earth. After ramming and compacting of the soil, a thin layer of concrete is laid. After the concrete is levelled, cement plastering is done to finish the flooring work. If tiles are to be put, after concreting a thin layer of mortar is put to fix the tiles. Marble and granite are also becoming popular floor materials.

For mosaic floors, a thin layer of concreting using mosaic chips as the aggregate is done on the levelled cement concrete. Then the floor is ground and polished using mechanical devices, popularly known as 'mosaic machines'.

Roofing: By now, it may be clear that the roofing techniques in Kerala had changed from the 'thatch-on-timber' and 'tile-on-timber' systems to that of reinforced cement concrete. This may be regarded as the most visible of the technological changes that have occurred with far-reaching effects.

The first step in the construction of R.C.C roofs is the preparation of form-work. In Kerala, this is popularly known as *thattadikkal* or centring and shuttering. Form-work is a temporary stage to place the reinforcement and concrete. After curing of the concrete is finished, when setting and hardening of the RCC is over, the form-work is dismantled. Wooden or steel shutters are used to prepare the form-work. Mostly, cheap and half-seasoned timber (eg. mango-trees) is used for the purpose. With good maintenance, steel shutters can be used up to about 50 times before repair becomes necessary. Whereas wooden shutters cannot normally be reused more than five or six times. Further, steel shutters take less time and labour to assemble. Steel shutters are widely used for the construction of large buildings though wooden shutters are more common.

Most commonly, round steel bars of various diameters are used for re-enforcement. Cutting of the bars is usually done by hand-sheers or chisels. Bars are bent by the use of two vertical pins driven on a thick piece of timber, which is held firmly on a stand or table. Sometimes welding is used to make joints. These bars after they are bent and cut into convenient and required shapes are wired together on the form-work.

Water, cement, sand, and crushed stone are mixed in a proper ratio to prepare the concrete. Both machine-mixing and hand-mixing are popular in Kerala. For smaller buildings, involving very little concrete work, machine-mixing is not preferred. Hand-mixing is done on a clean platform, with shovels.

Mixing is often done on the ground and hence the concrete should be conveyed to the roof. This is often done through a group of labourers arranged as a chain, which extends from the mixing place to the roof. This row of men and women and often children passes the filled pans to the roof and the empty pans back to the bottom. In the construction of high-rising buildings mechanical lifts (hoists) are used to convey materials including concrete.Soon after mixing, the concrete should be placed on the form-work and compacted properly, for the concrete is not generally allowed to be disturbed once the setting of cement hascommenced. Normally, within a maximum time of one-and-a-half hours after mixing, the compaction should be over.

Compaction is done to ensure maximum strength to the RCC by expelling air bubbles entrapped in it during mixing. Compaction is done either by hand using steel rods or by mechanical vibrators. Levelling and finishing of the surface is also done soon after compaction.

To keep the moist of the concrete, surface of the R.C.C is kept wet by pouring water for 7 to 9 days after concreting. Reinforced cement concreting, or ordinary cement concreting, as we have seen, is not limited to the construction of roof. Laying of foundation, flooring, building of the beam and pillar frame, construction of staircases and sunshades, etc., also involve concreting. In addition to these basic activities, the modern building process involves various other complementary operations like, painting, plumbing, wiring, and fitting of sanitary wares.

End Notes

[1] The houses they live in are their own, but the house sites belong to another person (agency) from whom it is leased in for annual rent. The blacksmith or the carpenter may occupy the site free of rent, but he is expected to attend to some of the minor repair works for the landlord such as making ploughs or putting of small fences. Aiyar (1925)

[2] Despite strong family ties with the disciples the masters were very strict towards the students. There are numerous popular folktales in Kerala to indicate how strict and stingy the masters were in imparting trade secrets to the apprentices. For instance in one of such famous stories (the story of *Perumthachan*) one master craftsman went to the extent of killing his own son out of professional jealousy (Sankunny, Kottarathil: 1974)

[3] For reviews on Braverman's book, see: Elger, Tony (1979) Aronowitz, S (1978), Coombs, R (1978) Brecher, Jeremy, and the Work Relations Group (1979), Wood, Stephen (1982), and Nicholas, Theo (1980).

[4] We would not, however, deal with more recent trends in the development of capitalist labour process. Even though the recent trends, such as the use of information technology for controlling labour process, are of great importance, they do not appear to be of much significance in the context of the present study.

[5] For a concise and elegant discussion of the relationship between technology and work organisation, See Marglin.A. Stephen. (1976). For technologically deterministic explanation of work organisation, See, Kerr, Klark, Dulop, John, T., Harbison, Frederik, and Myres, C.A., (1973).

[6] For detailed documentation of the interaction between class struggle and organisation of production see Isaac Thomas (1984).

[7] 'The sporadic application of co-operation on a large scale in ancient times, in the middle ages, and in modern colonies, reposes on relations of dominion and servitude, principally on slavery', (Marx, 1978: 316).

[8] The mainstream of the popular movement for social change in Kerala was the '*Ezhava* Social Reform Movement'. For details, see Velayudhan, P. S (1978), Isaac T.M.T and Tharakan P.K.M, (1986), and Chandramohan (1987). Other caste groups are also known to have witnessed similar reform movements during the period. On social reform movement among *Pulaya* community, see Saradamoni (1980). See Jeffrey (1976) for a study of social and political history of *Nair*s. Even though the movement was relatively weak, the *Viswakarma* Community is also known to have a process of reform (Krishnan Achari: 1984; Harilal: 1986:143-149).

[9] Government of Travancore. 1866. *Report on the Administration of Travancore* for the year 1865-'66, p.91.

[10] The Report on Household Construction Activities provides two mixed categories, viz., partially under owner and partially under contractor and treats them as mutually exclusive categories. However, definitions of these categories are provided neither in the report nor in the instructions to enumerators. Government of Kerala (1985): *Report on the Survey of Household Construction Activities in Kerala 1980-'81*, Directorate of Economics and Statistics, Thiruvananthapuram.

[11] Interestingly, this disproportionately higher growth of the construction sector had occurred when the regional economy as a whole was experiencing a crisis and stagnation in growth. The impulse for growth in the construction sector does not appear to have come from the growth of the regional economy. Further, the 9 per cent share of the construction sector in Kerala appears to be too high when compared to the rest of the country.

[12] According to the Housing and Employment Survey (1980), Thrissur district led in sending its people outside the State followed by Alappuzha and Malappuram districts. Among the taluks, Chengannur and Tiruvalla in Alappuzha district and Chavakkadu in Thrissur district were the leading taluks in sending their residents outside the State. Government of Kerala, (1982): *Report of the Survey on Housing and Employment 1980*, Directorate of Economics and Statistics, Thiruvananthapuram, pp.44.

[13] For a detailed study on the migration of Tamil workers to Kerala's Construction industry, see, Anand S., 91986): 'Migrant Construction Workers - A Case Study of Tamil Workers in Kerala', M.Phil dissertation, Centre for development Studies, Thiruvananthapuram.

[14] We do not have a clear picture on the occupational distribution of emigrants from Kerala to the Middle East. However, available evidence indicates that a significant proportion of them are construction workers. According to a study by Weiner (1982), construction workers formed the single largest category among the Indian workers in the Gulf region. In 1979, according to the Labour Bureau estimates, of the 23,415 Indian workers in Bahrain 11,807 (50 per cent) were engaged in the Building and Transport sector. Similarly, in Iraq, in 1982, 83 per cent of the Indian workers were employed in the Building and Transport sector (Labour bureau 1984: 331-332). If the single largest category on Indian workers in the Middle East is in the construction sector, this may be true of migrants from Kerala as well. This conclusion is supported by the findings of the Housing and Employment Survey. According to the Survey Report, 56 per cent of the outmigrants from Kerala had only less than secondary level education. Government of Kerala.

[15] Wages in the construction sector in Kerala had registered sharp increase during the seventies. (Harilal: 1986: 142-173).

[16] Achuthan, A and Balagopal T.S., (1985) '*Keralathinte Thachusasthram*' (Mal.), Mathrubhumi Weekly, May 5-11, pp. 26-31. Also see, 'Building made easy', The Hindustan Times (1974): Editorial, 5th May.

[17] Of the 40.7 lakhs houses canvassed in the Housing and Employment Survey 9.7 lakhs or 23.8 per cent were huts. Government of Kerala, (1982): op.cit., p.12-13.

[18] For a similar argument, Reckman, Bob (1979): 'Carpentry Craft and Trade' in Zimbalist, Andrew (ed.), Case Studies on the Labour Process, Monthly Review Press, New York, p.97.

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