From Artisanal to Commodity Production of Buildings

A Study of Organisation of Production and Labour Process in the Building Industry of Kerala - Phase II

K. N Harilal

Abstract

The building industry in Kerala has been witnessing a major process of transformation in the recent past, which in our opinion, could be charecterised as transition from artisanal to capitalist mode of production. Building and buildings, construction materials, 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. The handicraft moorings of production of buildings, the privileged position of artisans, and such other unique features of the artisanal mode are fast disappearing. In its place stamps of capitalist relations are increasingly becoming conspicuous in the industry.

The objective of the present study has been to document and analyse the above process of evolution of building activity in its various dimensions. Some of the important dimensions of these changes in the industry have already been studied in some detail (Anand 1986, Harilal 1986, Gopikuttan 1988, Augusty 1990, Bhatia 1991, Bose and Augusty 1995). The present study has focused mainly on the organisation of production and the labour process in the industry.

The study was undertaken into two distinct Phases. In Phase I, which is already completed, our attempt has been to evolve a conceptual framework, and also to situate the development dynamics of the industry in the larger context of the region's socio-economic transformation. Phase II, the results of which are being reported here, has intended to be an in-depth analysis of the organisation of production and labour process in the contemporary industry.

With the penetration of capital building in Kerala has become a complex process involving a network of intermediaries. The incidence and functions of intermediaries between the owner-customers and the workers, it found, vary across different types of buildings. Therefore, we attempted to document in detail the functions and the role of different layers of intermediaries, according to the typology of buildings. The study also examined

the impact of modern building materials and processes over the craft skills, division of labour, and composition of workers in the industry. Another issue addressed is the problem of control and management of workers, which assumes special importance in the absence of significant technological change and the survival of craft skills in the industry. In this connection we underline the supervisory and managerial role of activity contractors. This is a distinguishing feature of our analysis of the nature of work since most of the existing studies stress only the supply and recruitment functions of activity contractors.

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Introduction

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Phase I: A Summary of Findings

The specific ways in which capital makes its entry, grows and subsumes the labour process are shown to vary widely between countries, regions, and even between shop floors in an industry. 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 organisation of production.

The social reform movement, and the larger process of modernisation of Kerala had effectively removed many a social restriction on the progress of the building process, such as slavery, forced labour, caste-based restrictions on occupational mobility, social taboos on use of modern construction materials, caste specifications on houses., etc. The 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. As a result, the PWD found it extremely difficult to ensure a regular supply of labour. Further, direct employment of large number of casual labourers posed serious managerial problems, for the newly emerged casual workers were relatively free from the traditional obligations of caste and craft. Consequently, the department followed a policy of encouraging contractors. Though direct employment of workers continued, by the middle of the present century the contract system was well established in public works. However, it was the 'building boom' of 1970s that gave impetus to the spread of contract system to the private sector buildings.

The 'building boom' has been very much a part of the unique pattern of the macro economic development of the region since 1970. The windfall gain of the unprecedented boom in remittances, it is hypothesised, has had an influence very much akin to that of the 'Dutch disease'. The remittances boom is known to have triggered a spending boom in the state, which in turn raised the demand, prices and production of non-tradables including buildings. The resource movement effect generated by the spurt in migration, on the other hand, tended to raise the prices of factors of production including wages. Both these effects have been detrimental to the competitiveness of tradable sectors of the economy. The above process, typical of economies inflicted by Dutch disease, has tended to drain the

competitiveness of the productive sectors of the economy, especially sectors exposed to competition from sources outside the state. Interestingly, as the core Dutch disease models predict, the higher prices of non-tradables and factors of production did not adversely affect the prospects of non-tradable sectors including construction for the reason that they are not exposed to external competition. This in our opinion is at the heart of the problem of distorted development of the state; stagnation of productive sectors and unbalanced expansion of certain activities including building. Given the increasingly free atmosphere and as the demand for buildings qualitatively changed, modern materials and techniques made a significant headway 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 traditions of the craft attached to it, necessarily transfers the responsibility of its management to the buyer. Thus the role of a specialist (contractor) to recruit, supply and supervise workers, bargain and control them, co-ordinate their activities., etc, has become almost unavoidable. The increasing complexity of the building process also lends superiority to the contractor as an organiser over the owner customer and the workers.

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 construction labour market in the state, pushing up wages not only in construction but also in interlinked sectors, besides inducing in-migration of Tamil labourers. The building boom induced spurt in demand for construction materials, however, appears to have had varying effects on different input supplying industries. While industries, which are not exposed to competition from outside Kerala benefited, producers of tradable construction materials could not make advantage of the spurt in demand.

Methodology and Data Sources

It was in the light of the above findings that we designed and launched the present phase of the study. While the first phase could draw most of the information needed from

secondary sources, the present phase has had to depend mainly on primary sources. Since building continues to be a highly scattered and unorganised activity, the secondary database is too weak to support a comprehensive study of the industry with special focus on organisation of production and labour process. With a view to fill in the data gap, we have undertaken a primary survey of building sites (72 sites) and workers (90 workers) in the Sasthamangalam ward of the Thiruvananthapuram City Corporation. Our initial idea to draw a representative sample of building sites in the city had to be dropped because it was almost impossible to get a clear idea of the population of building sites in the city. The lack of representative nature of the sites surveyed and the workers interviewed should be underlined here because it is an important limitation of the present study. Our results, obviously, cannot be blown up for larger regions and could only be taken as broad indicators. The survey of building sites was carried out employing two separate sets of questionnaires, one for collecting information on the organisation of production and the other for interviewing the workers. Further, the labour process studies depend a lot on observation and analysis of work on the shop floor. On our part, we have relied on frequent field visits, observation and analysis of work, and in-depth interaction with various participants in the building process.

The report is organised in two Sections. With the penetration of capital building in Kerala has become a complex process involving a network of intermediaries. The incidence and functions of intermediaries between the owner-customers and the workers, it is hypothesised, vary across different types of buildings. In Section 1, therefore, we discuss in detail the functions and the role of different layers of intermediaries, which tend to vary according to the typology of buildings. In Section 2 we discuss the impact of modern building materials and processes over the craft skills, division of labour, and composition of workers in the industry. Another issue addressed in this Section is the problem of control and management of workers, which assumes special importance in the absence of significant technological change and the survival of craft skills in the industry. In this connection we recognise the supervisory and managerial role of activity contractors. This is a distinguishing feature of our analysis of the nature of work since most of the existing studies stress only the supply and recruitment functions of activity contractors.

Section 1

Organisation of Production

Building process in Kerala is no longer a direct interaction between the owner and the artisans, rather it has become a complex operation involving a large number of participants carrying out specific functions. Intermediaries seem to have taken up several functions, which were earlier performed either by the owner or artisans. Besides, the intermediaries also perform new functions that have emerged with modern building process. Notably, in the list of participants identified in our earlier study (Harilal 1986), the speculative builders \ developers were not included. We characterised contract system as the early mode of penetration of capital into the building industry, where the act of selling precede the production of buildings. We have also identified factors hindering the development of full-fledged commodity production of buildings wherein production of building precedes its buying and selling. However, the heavy influx of 'developers' and the spread of 'residential flats' since then have changed the situation significantly. It is now easy to come across any number of developers who construct the building first and then look for customers. Similarly, factory production of doors, windows, etc, has come to stay.

Building construction in the city, as of now, could be seen as involving a combination of the following participants.

(i) The owner-customer
(ii) The speculative builders \ developers
(iii) The contract manager
(iv) The design team
(v) The general contractor
(vi) The activity contractors
(vii) The workers

The owner of a building could be a private individual, a group of individuals, a firm or a government department, which / who make the decision to build and set the requirements

as well the budget. Though owner's involvement in the building process can vary,[1] in all types of buildings, regardless of the way in which construction is organised, the owner is supposed to perform these functions. In the case of a speculative builder he himself is the immediate owner who constructs the building, expecting a future demand for it from the customers.

Table 1: Sample of Sites

Type	Number
Flat for Sale	6
House for Sale	2
Owners Residence	57
Non-residential	7
Total	72

Source: Survey of Building Sites, 2003

In the study area, we have identified different stages of intermediation and corresponding groups of intermediaries between the owner and the workers. The nature of these different groups of intermediaries, however, differed considerably according to the typology of buildings. For instance, in certain type of buildings some stages of intermedition were found to be completely absent or only at rudimentary stages of development. This necessitates a detailed analysis of the role of different intermediaries and their mode of interaction in the context of different types of building. One major distinction that we make is between speculative and non-speculative building sectors. Developers who develop sites and construct buildings for sale dominate the speculative sector. In the non-speculative sector construction is not for sale. In our sample of 72 building sites, as Table 1 shows eight sites belonged to the former sector, in which six were residential flats and the rest independent residential houses. First we present our analysis of various intermediaries in the non-speculative building sector and then proceed to the organization of production in the speculative building sector.

Intermediaries in Non-Speculative Building

Building activity, like any other human labour process, is purposeful rather than instinctual. Even the "worst of all architects, raises his structure in imagination before he erects it in reality". (Marx, 1978: 174) Thus, the design of the building should be made before the construction can start.

The design of the building attains special importance under contract system, since the agreement of exchange or contract between the owner and the contractor is based on unequivocal and pre-determined specifications of the product made in the design. This is so, for under contract system production always follows the contract or the sale. Therefore, after the initial decisions on the requirements and the budget are made by the owner, design of the building and detailed technical drawings are prepared. Very often, with the increasing formalisation of contractual agreement, the design virtually becomes a paper replica of the actual product, the building.

The design of the buildings is increasingly becoming a product of the formally trained professionals. In the City Corporation area, interestingly, the Corporation rules insist that technically qualified persons, who have received formal training from recognised institutions, should prepare the design. The traditional institutions of apprenticeship among artisans do not enjoy any legal status in the case of designing.

The size of the design team and its nature vary according to the typology of building. In the case of huge buildings, the design team may comprise of structural engineers, civil engineers, architects and draftsmen. Coming to the small and less complicated structures, more often, the design is the product of a single individual. In the case of public sector buildings, the permanently employed technical staff usually does design. For instance, in government buildings, the concerned Public Works Department (Central PWD, State PWD or Public Health Engineering Department) prepares the design with the help of its-own permanent staff, which includes architects, structural, and civil engineers and draftsman. Alternatively, if there are no permanently employed technical personnel, the owner-customer hires the design team on a temporary basis.[2] In our sample of building

sites, all buildings belong to this category. Remuneration and the mode of payment to the design team would depend on the extent of functions accorded to the designers.

As can be seen from Table 2, in the case of small buildings, role of the design team is limited to the preparation of design. In such cases the designer's involvement in the building process, more or less, ends once the design is handed over to the owner. Or at the most the designer / team may make a few visits to the site to clear the technical doubts of the owner or his representative. Designers, in majority of the above cases, are not active or regular in their business. Most of these are cases when the owner approaches an engineer, who is a friend or a relative of the owner, to help him in preparing the design. As such, there is no hard and fast rule regarding the remuneration to the design team. Owner may pay a Lump sum amount as the remuneration or, alternatively, a fixed proportion of the estimated cost of the building.

In a significant proportion of buildings, design team is also entrusted with contract management functions. Here it should be remembered that in the case of government buildings, the Public Works Department does both contract management and designing. Design team when it combines contract management, becomes an active element in the building process with more functions and higher remuneration. To make the above point clear, we shall describe the function of contract management.

Table 2: Role of Design Team

Area of building in Sq./Feet	Plan only	Plan & supervision	Plan, supervision &control of labor	Plan, Supervision, control of labour supply of materials	Total
Between 200&500	2	-	-	-	2
	(100.00)				(100.00)
Between 500	4	1	3	9	17
&1000	(23.53)	(5.88)	(17.65)	(52.94)	(100.00)
Between	7	7	5	7	26
1000&2000	(26.92)	(26.92)	(19.23)	(26.92)	(100.00)
>2000	1	5	2	7	15
	(6.67)	(33.33)	(13.33)	(46.67)	(100.00)
Total	14	13	10	23	60
	(23.33)	(21.67)	(16.67)	(38.33)	(100.00)

Source: Survey of Building Sites, 2003

The Contract Managers

The contract management, it my be argued, is a natural corollary of the contract system. Contractor is expected to execute the work according to the specifications and quality of the product prescribed in the contract agreement. Given the fact that the contractor's profit depends on the difference between the actual cost and contract price, natural tendency of the contractor will be to minimise the actual cost of construction. This can even be at the cost of the quality of work and the product. Thus, the very nature of contract system necessitates constant vigil and supervision on the part of owner to see whether the contractor abides by the contract conditions or not. This is also necessary for assessing and approving the work before the payment is made. With increasing technical complexity of buildings, individual owners my not be in a position to discharge the above function. The same is the case with collective owners. For instance, the general public in the case of public sector buildings, or shareholders in a company cannot directly undertake the contract management functions. Thus the contract management may be considered as one of the stages of intermediation between the owner and real producers, which emerges with the growth of contract system.

In cases where the owner appoints a contract manager, the relationship between the owner and all other participants is through the contract manager. The contract management agency may prepare the design with the help of its own technical personnel. After getting the owner's consent on the design and the estimated cost, contract manager selects, through public tendering or negotiation, suitable contractor or contractors to execute the work and finalises the contract. The characteristic function of the contract manger, as the name itself suggests, is management of the contract agreement. He keeps account of all transactions between the owner and contractors. After properly assessing and approving the work, he makes advances and final payments to the contractor, on behalf of the owner. Further, if two or more contractors are employed, the contract manager coordinates their activities. The involvement of contract managers in our sample of building sites is clear from Table 3.

Table 3: Role of Contract Managers

Plinth Area	Co-ordination by owner	Co-ordination by contract manager	Total
< 200 Sq.Ft	1	0	1
	(100.00)	(0.00)	(100.00)
200-500	3	0	3
	(100.00)	(0.00)	(100.00)
500-1000	6	12	18 (100.00)
	(33.33)	(66.67)	
1000-2000	10	17	27
	(37.04)	(62.96)	(100.00)
>2000	2	13	15
	(13.33)	(86.67)	(100.00)
Total	22	42	64
	(34.38)	(65.63)	(100.00)

Source: Survey of Building Sites, 2003

It is important to distinguish between contractors and contract managers. Their role and interest in the building process differ. Contractors always quote a price for the work and their profit depends on the difference between contract-price and the actual cost of construction. As such, a contractor's endeavour would be to increase productivity of workers and minimise the cost of construction. On the other hand, remuneration to the contract managers, most often, is based on what is popularly known as 'actuals'. Actuals

refers to nothing but the total expost cost of construction. His interest, therefore, is not to minimize the cost of construction.[3] Rather, his reputation and goodwill will depend on the quality and finish of the work.

As the Public Works Department (PWD) avoids direct execution of work it works as a typical contract management agency. The PWD prepares design and detailed estimate of buildings, appoint contractors through competitive tendering, supervises their work and makes payments on behalf of the government. The PWD may also supply some of the materials (cement, iron and steel) and equipments for construction. In private sector buildings contract management is becoming a vocation of self-employed or retired engineers. In many cases they combine contract management with designing. Most of them have permanent offices, with signboards proclaiming that they are building designers and contractors. Though only few among them have substantial investment in construction equipments, their offices are endowed with well-equipped design cabins, and they are also found to help activity contractors to hire construction equipments like mixtures and shutters. Contract Managers are there mainly to monitor the work done by contractors. As such, they do not generally employ workers directly. But, for some special tasks they are seen to employ workers directly on a daily wage basis. Even thouh it is not common some contract management firms also direct investments in construction equipments like concrete mixtures, vibrators, shutters, shovels, pans, etc.

General Contractors

The owner-customer can employ either a general contractor to construct the whole structure (i.e. through lump-sum contract) or divide the work among different specialist or activity contractors (i.e. through prime contract). The general contractor may be defined as a person / agency who / which agrees in the contract to take up the total responsibility of building the complete structure. The general contractor may subcontract the work to different activity contractors on his own. However, these activity contractors will not have direct links or responsibility to the owner.

Responsibility of Execution of Work

Before discussing the role of general contractors in the building process, let us try to see the incidence of contract system in general and general contractors (or the system of lump-sum contracts) in particular. Table 4 summarises the results of our enquiry on the responsibility of execution.

Table 4: Incidence of Contract System: Number (per cent) of Sites

	Incidence of Contracts			
Plinth Area	Fully under owner	Partially under contract	Fully under contract	Total
< 200 Sq.Ft	-	1	-	1
		(100.00)		(100.00)
200-500	3	-	-	3
	(100.00)			(100.00)
500-1000	1	5	12	18
	(5.56)	(27.78)	(66.67)	(100.00)
1000-2000	2	8	17	27
	(7.41)	(29.63)	(62.96)	(100.00)
>2000	1	1	13	15
	(6.67)	(6.67)	(86.67)	(100.00)
Total	7	15	42	64
	(10.94)	(23.44)	(65.63)	(100.00)

Source: Survey of Building Sites, 2003

By 'fully under contract' we mean that all the individual operations of the building process are performed under the contract system. Similarly, 'fully under owner' is defined as those cases where all activities are carried out by the owner either by family labour or through direct employment of workers. Consequently, 'partially under contract' is a residual category.

All the public sector buildings, though not represented in our survey, are built fully under contract system. But, what is interesting is the penetration of contract system into the private sector. In our sample nearly 66 per cent of the buildings are built 'fully under contract system'. Another 19 per cent are partly under contract system. Only 10 per cent of the buildings belonged to the category 'fully under owner'. Interestingly, incidence of the contract system increases as the plinth area of the buildings increase.

So far we have seen only whether, in a building site, all activities are performed through contractors or not. Now we shall consider each one of the activities separately. Such a disaggregate analysis is important since even under contract system there are different ways in which the workers may be engaged for the execution of the activities.

Coordination of activities

Before analyzing responsibility of execution at the level of specific activities, let us try to see the mechanism by which coordination of various activities is achieved. As we have seen above, all cooperative labour processes need a mechanism to ensure effective coordination among cooperating workers. We have also noted earlier that development of capitalism tends to transform the simple function of coordination into one of management and control of the workers. However, at this stage we shall be considering only the problem of general coordination among activities in the building process. Here coordination involves time-phasing of different activities and supply of materials to ensure harmonious progress of all activities and hence the building process. This analysis would also help us to see the incidence of lump-sum contract and the general contractors in the industry

In our survey of sites the owner acts as the coordinating agency in 34 per cent of building sites. It should be remembered here that even when contractors perform all activities, the owner might look after the function of general coordination. In such instances of prime contractors, the owner may employ a contract manger to coordinate the activities or he himself will attend to the function of coordination. In our survey of sites contract managers perform the function of coordination in 66 per cent of the sites. As we have noted earlier, the contract manager performs the coordination only when the work is given to different activity contractors through prime contracts.

What is interesting is the relatively rare incidence of lump-sum contracts and general contractors in the private sector. There is not even a single site under lump-sum contract in our sample of sites. This, it may be cautioned, is not to deny the importance of lump-sum contracts and general contractors. In all public and private corporate sector building

sites over-all coordination among activities is performed by the general contractor. Generally, lump sum contracts and general contractors are associated with buildings owned by collective owners rather than individuals.

Whenever the general contractor is involved, the contract tends to be a highly formal agreement based on detailed written documents. Contractors are furnished with all the necessary details regarding the work so as to enable them to quote the prices. And the contract when finalised leaves nothing to the discretion of the owner or contractor. All the details regarding each part of the work including the materials to be used and the time of completion are specified in the contract. It is in the common interest of both the owner-customer and contractor to minimise arbitrariness.[4] Deviation from the contract agreement may be made but only with the consent of all the parties involved in the contract.

Selection of contractors is through negotiation or competitive bidding. In private sector buildings, the most common method is negotiation. Contract manager or the owner consults a selected group of contractors and finalises the contract with one of them. This method, according to contract mangers and many of owners, has got the advantage of avoiding inexperienced and incapable contractors from the fray. Lack of experience and financial weakness of contractors, it is said, may lead to unnecessary delays and therefore cost escalations. Whatever may be the reason, the fact remains that entry into the general contractors occupation is restricted.

This is equally true of building works undertaken by Public Works Departments. Though the departments follow competitive bidding, there are several restrictions on free entry. For instance, let us take the case of the Public Works Department of Government of Kerala. To be eligible to compete for works under the Department, contractors are expected to register with the Department and get licenses. Further, the registered contractors are divided into four classes according to their financial resources and professional experience.[5] In addition to the registration fee, the contractors have to produce solvency certificates issued by the revenue department or bank guarantees, the

amount of which vary for each class of contractors. Contractors belonging to a particular class are not allowed to compete for works for which 'probable amount of contract' may exceed the upper limit for that group.

The general contractors are found to make substantial investments in construction equipments. Though the workers usually bring the traditional tools, in sites where they ate involved the general contractors supply most of the non-traditional construction equipments. They usually own concrete mixtures, vibrators, mechanical hoists, diesel pump sets, trucks and other vehicles, scaffoldings, permanent office building, etc. In addition to this, they invest in fairly large stock of ordinary construction tools, viz., pick axes, shovels, spades, pans, baskets, etc.

One of the striking features of the building activity in the city area is the widespread practice of subcontracting. The general contractors instead of employing workers directly to execute the activities usually farm-out the work to different activity contractors. This, however, is not to completely rule-out the incidence of direct employment of workers by the general contractors. Workers employed directly by the general contractors, or 'muster-roll workers' as they are often referred to, usually do the miscellaneous or sundry jobs, which come up from tome to time. Keeping the stock room, minor conveyances, cleaning, curing of concrete, attending on the contractor and supervisors, minor purchases and repairs, etc., are the tasks normally entrusted to these workers. Besides, the general contractors are found to employ their-own workers to operate mixtures, mechanical hoists, etc., owned by the company. Here it may be recalled that the general contractor supplies material and non-traditional tools to be used on the site.

Further, on every important site, the contract manager / general contractor will have a temporary office manned by some supervisors (agents) or watchmen. The number of supervisors or agents on a particular site may vary according to the importance of the site as well as the stage of work. For instance, while concreting or some other important work is going on more supervisors may be posted to the site. Supervisors employed by the general contractor may give directions to the subcontractors, assess their work, take

measurements and make payments. The widespread use of subcontracting considerably reduces the direct employment of workers by owner-customer, contract manager or the general contractor.

Activity Contractors

Activity contractors are those who specialise in the construction of some specific part or parts of the whole structure of a building. The degree of specialisation, however, may vary among activity contractors, from a single activity to a group of activities. Further, activity contractor may get the work independently from the owner or contract manager or alternatively subcontract the work from a general contractor.

A disaggregate analysis of the responsibility of execution of specific activities involved in the building process reveals the widespread presence of activity contractors and subcontracting in particular, in the study area (See Table 5). There are various alternative ways in which workers can be employed to execute the activities involved in the building process. For instance, (1) the owner, the contract manger, or the general contractor may execute the work through direct employment of workers, or else (2) the activity contractor may be entrusted by the owner, contract manger, or general contractor to employ workers and to execute the work. However, in our survey sites we did not come across intermediation by the general contractor.).

Table 5: Skill Category and Labour Relations

Skill Category	Labour Relation						
	Owner daily wage (1)	Owner through activity contractor (2)	Contract manager daily wage (3)	Contract manager Activity contractor (4)	Design team contract (5)	Contractor on contract (6)	Total (8)
Masonry works	11 (17.19)	10 (15.63)	11 (17.90)	32 (50.00)	30 (46.88)	2 (3.13)	64 (100.00)
Carpentry works	9 (14.29)	13 (20.63)	5 (7.94)	36 (57.14)	33 (52.38)	3 (4.76)	63 (100.00)
Centering / concrete works	8 (12.70)	13 (20.63)	2 (3.17)	40 (63.49)	36 (57.14)	4 (6.35)	63 (100.00)
Flooring works	5 (7.94)	16 (25.40)	2 (3.17)	40 (63.49)	36 (57.14)	4 (6.35)	63 (100.00)
Plumbing works	9 (14.29)	12 (19.05)	3 (4.76)	39 (61.90)	34 (53.97)	5 (7.94)	63 (100.00)
Painting works	8 (12.90)	13 (20.97)	5 (8.06)	36 (58.06)	32 (51.61)	4 (6.45)	62 (100.00)
Wiring works	9 (14.52)	12 (19.35)	2 (3.23)	39 (62.90)	35 (56.45)	4 (6.45)	62 (100.00)
Total	59 (13.41)	89 (20.23)	30 (6.82)	262 (59.55)	236 (53.64)	26 (5.91)	440 (100)

Source: Survey of Building Sites, 2003

The data presented in Table 5 clearly bring out the relative importance of different ways in which labourers may be employed to execute the activities. The practice by which the owner-customers employ workers directly and execute the work is rare across every skill category considered. Even when the owner retains the overall responsibility of coordination, the work is given out on prime contracts to the activity contractors. In fact, the contract managers or even the general contractors farm-out most of the important activities to the activity contractors.

Widespread practice of subcontracting and the relatively rare occurrence of direct employment of workers by the owner customers/ contract manager/general contractors make the activity contractors the predominant direct employer of workers. In the case of highly specialised activities like, bar-bending, wood-work, laying mosaic, plumbing, and painting, the activity contractors themselves own and bring most of the tools and equipments necessary for production.

Regardless of whoever he may get the work from, the activity contractor is found to be in charge of execution of the work at pre-determined unit prices. Employment of activity contractor usually is based on an informal, and most often, an oral agreement, which centers on the unit rate at which the activity contractor agrees to do the work.[6] Thus, in addition to the wages for his-own manual work the difference between the price agreed to in the contract and the expenditure incurred by him to complete the work also contributes to the activity contractor's earnings. As such, the activity contractor is directly involved and interested in the organisation and control of the labour-process.

Considering the prominent and key role played by the activity contractors in the organisation of work we have tried to collect more information on them.

Another important characteristic of activity contractors is their small size measured in terms of turnover, total capital and number of workers employed. Most of the activity contractors

are skilled workers turned contractors, running their 'one-man business'. On an average, an activity contractor employed only seven workers on the date of our interview with them. Small scale of operation of the activity contractors and their low capital base should be understood in the following context. The activity contractor need not spend or keep money for the building materials, since their supply is the responsibility of either owner, contract manager, or the general contractor. Secondly, though final accounts are settled after the completion of work, the immediate client (owner, contract manager or general contractor) makes daily or weekly advances to the activity contractors. These two practices in the industry reduce the working capital requirements of the activity contractors.

Coming to investment in capital assets, it should be noted that most of the traditional tools (in the case of masonry and carpentry) are owned, maintained and brought by the workers themselves.[7] Further, most of the activity contractors who subcontract the work from general contractors get the required equipments from the general contractors. In addition to all this, the presence of a fairly efficient hire market for construction equipments like shutters, poles, concrete mixtures, vibrators, etc., reduces the pressure on activity contractors to invest in these assets.[8]

Thus, the organisation of work, in the industry, as it persists today, permits the activity contractors to enter and remain in the industry without large investments in capital assets or working capital. Any experienced worker, with some initiative and leadership qualities can probably convert himself into an activity contractor. Relatively easy entry into his profession, it may be reasonably assumed, makes the activity contractors occupation highly competitive.[9]

Here it should be cautioned that the activity contractors are a heterogeneous group. Capital requirements and average number of workers employed differ among contractors specialising in different trades. For instance, earthwork and painting, given the level of technological development, require very little investment in fixed capital assets. Whereas all the mosaic contractors interviewed are found to own at least one mosaic machine, market price of which

comes to around Rs.7,000. Similarly, all the plumbing contractors and those who specialise in the preparation of form-work, bar-bending and concreting will have to supply shutters and other tools at least when they get the work directly from the owner. Similarly, concreting work requires more workers to be employed at a time, compared to laying of mosaic or plumbing.

Further, the activity contractors specialising in a common trade or activity themselves can differ in their relations with the client. This is particularly so in the case of activity contractors specialising in earthwork, masonry and concreting. Some of these specialist contractors are found to be permanently attached to particular contract manager or general contractor. During our field trip we could see several of such activity contractors who had been working for years on with a single contract manager. In such cases, the contract manager supplies all the capital assets and working capital required for the work. Such activity contractors are found to have relatively high annual turnover despite insignificant investment in capital assets and working capital. They appear more to be employees of the parent firm than independent contractors. But even in such cases the activity contractors get the work on the basis of unit rates specified in the contractual agreement with contract manager / general contractor.

Speculative Builders

In Phase 1 we characterised contract system as the early mode of penetration of capital into the building industry, where the act of selling precede the production of buildings. We have also identified factors hindering the development of full-fledged commodity production of buildings wherein production of building precedes its buying and selling. 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 relatively more developed capitalist economies. For speculative building to come up, the social division of labour should develop to such an extent that it becomes inconvenient for the consumers to involve in the production process.

Buildings, in spite of penetration of capital into the industry, might continue during the early stages capitalist development to be a highly customer oriented activity characterised by direct involvement of the customer in production decisions. The owner or the ultimate consumer himself might insist on and continue to make important production decisions such as the type of building to be built, choice of construction materials, quality and finish of the work, and so on. The continued involvement of owner in the production process may be explained, in one respect, in terms of the nature of building itself. Most often, the decisions taken at present may bind even the coming generations, and since it 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. Further, apart from the constraints imposed by consumers, the speculative building presupposes a very high concentration and risk taking capacity of capital in the society. Building being a costly commodity, the capitalist should invest huge amounts to construct it and bear the risk of speculation on future demand. These conditions may not be satisfied in the initial stages. It is such specific features of the building industry, which makes the contract system the viable form of penetration of capital into the industry during the early stages of development of capitalism in building.

As we have seen in the case of capitalist production in general, the contract system may not, at first, change the technological base of 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. Eventually, with the change in the technological base of building process, the hand based and skill dependent production would become more mechanised and science based. There can be 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 construction as well. Different operations performed on site can be brought under mechanisation. However, this transition to the specifically capitalist mode of production of buildings would be a long drawn out process. Such radical transformation of the labour process in building industry would require

many pre-conditions to be satisfied. For instance, industrialisation of buildings through factory production of building components and buildings presupposes;

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

Even though it has been a long drawn out process of evolution, speculative building appears to have started making a strong presence in Kerala, mainly in urban areas. In Thiruvananthapuram city corporation area there are around a dozen active groups in the business of residential flats and villas. Even though the level of their activities has declined since the real estate boom of the early 1990s, the speculative building continues to be a strong and perhaps growing component of the building sector. This is evident form our survey of sites, in which there are eight out of 72 sites belonging to the speculative category. The relatively lower number of sites in the speculative category is misleading. In fact, the eight sites in the speculative category account for around fifty per cent of the total plinth area of all the building sites surveyed.

However, emergence of speculative building does not appear to have made any radical shift in the organization of the labour process. Interestingly, even in the speculative sector the activity contractor is the predominant immediate employer of the workers. In the case of two independent residential buildings being built in the Sasthamangalam ward the owner-developers are seen to be employing workers directly without the intermediation of activity contractors. They apparently maintain an attached workforce, members of which work almost regularly for the respective owner-developers. But in the case of residential flats,

which dominate the construction scene in the area, the developers who own the projects rarely employ workers directly. They are all having a core team of permanent employs drawing monthly salary. But the core team is entrusted with the job of construction management. The firms have attached activity contractors, specilised in different trades. The work is entrusted to the activity contractors on the basis of prime contracts.

The Logic of Subcontracting

The activity contractor constitutes the basic unit of contractual organisation of production in the building industry. He is the most common immediate employer of workers in the industry. He recruits and supplies labourers and supervises their work.

In building industry, given its present organisation, the labour requirements vary considerably from time to time. Number of workers required at different stages of work on a site itself may differ significantly. Added to this, there are seasonal and other fluctuations in the general construction activity itself.[10] Further, since the work sites are geographically scattered, the work itself is mobile. Therefore, firms operating in the industry should be able to adjust themselves to the fluctuations. They should keep an optimum number of labourers and capital assets.

It would require frequent hiring and firing of workers. Contract manager / general contractor by subcontracting the work, shifts the above burden to the activity contractors. In the context of growing militancy and trade unionism among workers, this strategy attains added significance. By attaching activity contractors to the parent firm, the general contractor may also ensure adequate and timely supply of workers. The severe competition among the activity contractors ensures that the unit rates of subcontracts remain at a low level. The activity contractors are forced to increase their self-exploitation as well as the exploitation of workers, just to remain in business. Thus, subcontracting enables the industry to reduce the cost of construction.

The developer/ contract manager/ general contractor by farming out the work at predetermined rates, not only avoids the problem of direct control and management of workers but also guarantees himself a profit margin. At the same time, as explained by Braverman,

> "While the attempt to purchase finished labour, instead of assuming direct control over labour power, relieved the capitalist of the uncertainties of the latter system by fixing a definite unit cost, at the same time it placed beyond the reach of the capitalist much of the potential of human labour that may be made available by fixed hours, systematic control, and reorganisation of the labour process" (Braverman, 1979: 62)

We have already discussed in detail the barriers to such radical transformation of the labour process in building industry. The building industry is still in the early stages of transition to capitalist mode of production. Consequently the contemporary labour process in the industry, despite many changes that have come about, continues to bear imprints of the past. These constitute the theme of discussion in the next Section.

Section 2

Nature of Work in the Industry

In the previous Section we have discussed in detail, the different stages of intermediation and the nature and role of corresponding groups of intermediaries in the contemporary building industry. Thus, we have covered some of the important aspects of organisation of production and particularly that of contract system in the industry. Here, it may be noted that the social organisation of production constitutes only the formal structure of the labour process. Therefore, our attempt in this chapter would be to concentrate on the nature of work in the industry or on the labour process as such.

First, we discuss the nature of work under artisanal mode. We proceed then to examine the salient features of the labour process in the contemporary industry in contrast with the artisanal mode and discuss the role of activity contractors in the control and management of labour process.

Traditional Labour Process

The distinguishing characteristic organisation of building construction in Kerala, as we have seen earlier, was the absence of wage labour relations and the paramountcy of caste based social customs and traditions. Though the artisans were directly employed by the customer, the latter had virtually no direct control over the labour process which was based on handicraft principles.

Through years of application, the local craft-rules had developed into a coherent body of knowledge, 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 plot, soil testing, location of buildings, to house warming and maintenance, on everything related to building construction it has its own rules. These principles were popular and more or less universally accepted in Kerala. The extent of influence and sophistication that this art had attained is evident from the existence and popularity of several books on the subject.[11] Some of these books like *Manushyalaya Chandrika* of the 16th century A.D. are popular even now among Kerala carpenters.

Rules of *Thachusasthram* which were described in books in versus, were closely integrated with the astrological principles. (Mangal, 1983 & Vasu Achary 1976) Therefore, deviation from the accepted rules, it was believed, would be detrimental to those who use the building or the artisans who had constructed it.[12] Such a belief in the handicraft rules demanded a high level of precision and accuracy at all stages of the building process. The highly integrated and interdependent nature of *Thachusasthram* principles also seems to have

contributed to the need for precision and accuracy. Once the basic para-metric decisions on the building were made, it is said that all other details automatically follow. (Mangal, 1983 & Menon 1929: 51-132)

Naturally, the craftsmen were expected to acquire an in-depth knowledge and expertise in the handicraft rules. Besides, he should be perfectly at ease with measurement units, numbers and calculations. Further, application of the craft-rules in the actual process of work required manual skill and dexterity. As the traditional craftsmen combined all these abilities, he became an authority on the building process. According to the Census Report of 1961,

> "In Malayali houses, however, the owners are entirely at the mercy of the carpenter, for he is the supreme authority on the 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 the *Thachusasthram* rules by heart and now and then quotes a passage to set the house owner aright". (Census, 1891: 268)

The above statement shows the importance of craft rules and the role of craftsmen in the traditional building process. Wood being the most important and extensively used material, the carpenter used to design the buildings. Masons would be supplied with the measurements of the roof structure and other necessary details. Laying out the foundation and building the walls to suit other aspects of the structure were the responsibility of masons. As may be understood, the craftsmen used only traditional tools which they themselves carried and the labour process was purely hand based.

For becoming an artisan, given the high level of skill and expertise that the society demanded from him, it needed years of hard and intense training. Freshers used to get trained by one of the elder relatives; most often an uncle or father. All experienced workmen, however, helped the boy in his learning process. The institution of apprenticeship seems to have been very strict with respect to quality. It demanded rigorous training and, therefore, determination and dedication on the part of trainees.[13]

Apprentices used to cook, wash, and carry tool boxes for their masters. The system of instruction and teaching was not systematic and learning was essentially through doing. Initially, he would be assigned with some respective and less skilled tasks. A mason's apprentice, for instance, used to prepare and carry mortar and laterite. Same was the case with the carpenter-trainees. And the period of apprenticeship used to be a real testing time for the youngsters, for the masters used to abuse and even physically torture them even for simple mistakes. The *muzhakkol* or the measuring rode, as people say, was used for both measuring and beating the apprentices. Further, it took a very long period, say on an average seven to ten years, for one to become a carpenter or mason. And to be recognised as a *Moothasari* or *Kanakkan* (head carpenter) or head mason it took even a long period.

Here it may also be mentioned that apprenticeship was a highly caste-based institution. Apprentices were selected only from among the members of the *Viswakarma* community.

To conclude, in the traditional building process, the work was based on handicraft rules and the artisans, as the authorities of these rules, had their control over the labour process. To be more precise, while on work, the workers were their own masters. And finally, we have also noted that the apprenticeship played an important role in the building activity, for it regulated supply and quality of the work-force in the industry.

The Continuity and Discontinuity in the Labour Process

The diffusion of modern building materials as well as the demand for modern types of buildings have had significant impact on the traditional labour process. The traditional artisan apprenticed in the architectural practices and principles evolved in the context of the old social set-up and the traditional construction materials, was ill-equipped to face the new challenges.

Traditional craftsmen by virtue of years of experience and inherited wisdom from ancestors had acquired the necessary working knowledge of various properties of commonly used traditional materials like wood. Besides, the *thachusasthram* contained instructions on numerous permutations and combinations of traditional materials which could be safely used. (Menon, 1929: 63-108) Further, as practitioners of the art the craftsmen, learned most of the commonly used combinations of building materials, almost by heart, with or without knowing the scientific significance or rationality behind such combinations. With the help of this wealth of knowledge, the senior craftsman could plan structural and aesthetic details of a building. It is in this background that we should see the introduction of modern building materials with their immense structural potentialities.

Structural properties and possibilities of modern construction materials differ widely from that of locally available traditional materials.[14] For instance, cement, iron and steel and their combination in re-inforced cement concrete have entirely different functional properties compared to that of wood. Thus the modern construction materials and techniques are alien to the traditional craftsmen.

De-skilling

Today all technical decision including selection of materials are made on the basis of the principles of modern science rather than customs and traditions. Thus, labour process in building activity in Kerala, as Braverman suggested in the larger context of evolution of human labour process, is "assuming an increasingly scientific character as knowledge of natural laws grows and displaces the scrappy knowledge and fixed tradition of

craftsmanship" (Braverman, 1979: 155) In short, the craft rules and the traditional indigenous style of Kerala architecture are fading out of the scene. Now, people rarely consult the *thachusasthram* for designing their buildings, nor are they prepared to provide for the rigid restrictions of the *thachusasthram* while constructing the house.

Thus, as of now, the craftsmen are not expected to be bothered with the technical, structural and aesthetic problems involved in the building process. The task of designing the building has become a job of specialists or professionals. Each worker, regardless of the activities in which he specialises, would be given specific instructions to finish the tasks assigned to him by an engineer or a contractor. He need not know how his share of the work would contribute to the whole structure or how the building would look like after the work is completed. Similarly workers do not have any choice in the selection of materials and their combination. For instance, the concrete workers do not decide how many bars of what size are to be put in the re-enforcement or what should be the proper mix of concrete. Same is the case of mason or carpenter who often work with the materials selected and issued by the engineer or contractor, to execute the work according to the specific instructions from above.

Thus the workers as a whole increasingly deprived of the mental work involved in the building process. This is particularly true of design, which was performed earlier by the senior carpenters in traditional Kerala. However, the progress in division of labour between mental work and manual work is an ongoing process. In some rural areas of Kerala, the carpenters still enjoy the privilege of designing, at least in the case of small buildings. The autonomy and responsibility of workers and their share in the decision-making are generally higher in the case of small buildings.

The division of labour that removed a substantial share of mental work related to design and even execution of work from craftsmen has considerably destroyed the worker's knowledge of the production process. Naturally, this has adverse implications for the craftsmen's authority and control over the labour process.

The process of deskilling is reflected in the breakdown of apprenticeship, the traditional institution of craft-skill reproduction. In traditional building process, the apprenticeship system controlled the quality and supply of new workers. But since the level of skill and knowledge that the industry requires from artisans has considerably declined, the institution of apprenticeship has shrunk in its importance. While in earlier times, it took seven to ten years for a fresher to acquire a mason's or a carpenter's skill, in the contemporary industry the apprenticeship period has come down to around three or four years. This is evident from Table 6 which relates the experience of workers, in terms of number of years worked in the industry, and the wage rates. The data clearly show that the newly recruited workers in the contemporary industry claim and obtain a full-fledged skilled worker's pay within three to four years. This is particularly so in the case of masons

Here it may be mentioned that the scarcity of skilled and experienced workers in 1970s also had contributed to the breakdown of the apprenticeship. Due to the scarcity of experienced workers, owner customers and contractors were forced to employ less experienced and less skilled workers. Especially, since they are more interested in the quantity of work completed rather than quality or finish of the work,

Table: 6 Years of Work Experience and Wage Rates (Rs. / day)

Type of workers	Less than 3 years	Three to five years	Five years and above	Average wage for all	Number of workers interviewed
Carpenter	180.00	183.33	198.18	193.13	16
Mason	168.33	190.00	188.71	187.00	35
Unskilled Labour	158.33	161.67	167.26	164.78	46

the contractors found it convenient and cheap to employ less experienced workers.[15] Break down of the traditional caste based system of apprenticeship is further evidenced by the heterogeneous caste-composition of building workers (See Table 7). In our sample of building workers, out of 35 masons interviewed nonr belonged to the viswakarma community. However, except for three one carpenters all the sixteen of them interviewed were viswakarmas. But Christian and Hindu Nadars, Ezhavas and even upper caste Nairs were found working as masons. Such a situation could not have been imagined fifty or sixty years ago in Kerala.

Table 7: No. of workers by Religion and Caste

Labor division	Religion	Caste							Total
		No Caste	Ezhava	Muslim	Nadar	Nair	SC	Viswakarma	
Mason	Hindu	3 (13.6%)	7 (31.8%)	-	-	6 (27.3%)	6 (27.3%)	-	22 (100.0%)
	Christian	-	-	-	11 (91.7%)	-	1 (8.3%)	-	12 (100.0%)
	Muslim	-	-	1 (100.0%)	-	-	-	-	1 (100.0%)
	Total	3 (8.6%)	7 (20.0%)	1 (2.9%)	11 (31.4%)	6 (17.1%)	7 (20.0%)	-	35 (100.0%)
Carpenter	Hindu	-	-	-	-	-	-	13 (100.0%)	13 (100.0%)
	Christian	-	-	-	2 (100.0%)	-	-	-	2 (100.0%)
	Muslim	-	-	1 (100.0%)	-	-	-	-	1 (100.0%)
	Total	-	-	1 6.3%	2 (12.5%)	-	-	13 (81.3%)	16 (100.0%)
Unskilled labour	Hindu	3 (10.3%)	8 (27.6%)	-	-	10 (34.5%)	7 (24.1%)	1 (3.4%)	29 (100.0%)
	Christian	-	-	-	13 (92.9%)	-	1 (7.1%)	-	14 (100.0%)
	Muslim	-	-	2 (100.0%)	-	-	-	-	2 (100.0%)
	Total	3 (6.7%)	8 (17.8%)	2 (4.4%)	13 (28.9%)	10 (22.2%)	8 (17.8%)	1 (2.2%)	45 (100.0%)

Source: Primary Survey, 2003

Table 8: Movement of wage differentials between skilled (Carpenter & Mason Grade I) and unskilled workers

Year	Money Wages						Ratios			
	Carpenter		Mason		Unskilled (Male)					
	Urban (1)	Rural (2)	Urban (3)	Rural (4)	Urban (5)	Rural (6)	Col.(1)/(5)*100	Col.(3)/(5)*100	Col.(2)/(6)*100	Col.(4)/(6)*100
1965-66	5.54	5.03	5.41	5.01	3.31	3.00	167.37	163.44	167.67	167.00
1970-71	8.63	8.19	8.73	8.20	5.71	5.40	151.14	152.89	151.67	151.85
1975-76	13.78	13.30	13.80	13.25	9.31	8.48	148.01	148.23	156.84	156.25
1978-79	15.70	15.23	15.68	15.37	10.42	9.86	150.67	150.48	154.46	155.88
1980-81	19.33	18.66	19.36	18.75	13.07	12.30	147.90	148.13	151.71	152.44
1985-86	40.67	40.91	42.01	41.10	25.70	25.31	158.25	163.46	161.64	162.39
1990-91	56	57	56	56	37	37	151.35	151.35	154.05	151.35
1992-93	71	69	70	68	49	46	144.90	142.86	150.00	147.83
1997-98	150	147	149	146	104	101	144.23	143.27	145.54	144.55
2000-01	184	182	183	181	130	133	141.54	140.77	136.84	136.09

Source: DES

Table 9: Movement of wage differentials between skilled (Carpenter & Mason Grade II) and unskilled workers

Year	Money Wages						Ratios			
	Carpenter		Mason		Unskilled (Male)					
	Urban (1)	Rural (2)	Urban (3)	Rural (4)	Urban (5)	Rural (6)	Col.(1)/(5)*100	Col.(3)/(5)*100	Col.(2)/(6)*100	Col.(4)/(6)*100
1965-66	5.54	5.03	5.41	5.01	3.31	3.00	167.37	163.44	167.67	167.00
1970-71	8.63	8.19	8.73	8.20	5.71	5.40	151.14	152.89	151.67	151.85
1975-76	13.78	13.30	13.80	13.25	9.31	8.48	148.01	148.23	156.84	156.25
1978-79	15.70	15.23	15.68	15.37	10.42	9.86	150.67	150.48	154.46	155.88
1980-81	19.33	18.66	19.36	18.75	13.07	12.30	147.90	148.13	151.71	152.44
1985-86	40.67	40.91	42.01	41.10	25.70	25.31	158.25	163.46	161.64	162.39
1990-91	56	57	56	56	37	37	151.35	151.35	154.05	151.35
1992-93	71	69	70	68	49	46	144.90	142.86	150.00	147.83
1997-98	134	129	134	130	104	101	128.85	128.85	127.72	128.71
2000-01	159	161	161	161	130	133	122.31	123.85	121.05	121.05

Source: DES

Composition of the Work Force

The introduction of modern construction materials and related construction techniques also have affected the composition of work force in the industry. Absence of appropriate data renders a detailed examination of the phenomenon difficult. We shall, therefore, confine ourselves to certain tentative suggestions.

The modern construction materials are generally factory produced materials which are ready for use in construction. These materials replaced not only the locally available unfinished materials but also the work and workers involved in preparing the traditional materials. Cadjan leaves, for instance, have to be put in water for one or two days and then plaited before they can be used for thatching. This was mainly done by agricultural labourers and particularly women. With the introduction of tiles and RCC, the role of women engaged in plaiting and the thachers have significantly disappeared from urban areas. Similar is the case of burnt bricks replacing granite, laterite or mud. Granite, laterite and mud should be made into suitable blocks to make them amenable for construction. This involves service of specialists or experienced masons. Similarly, with the spread of saw mills, members of the caste called *thachans* who used to fell and saw trees do not any more enjoy a role in the building process.

Introduction of modern construction materials, on the other hand, have introduced several new trades and skills into the building process. New trades employing workers, such as concrete workers, bar benders, centering and shuttering workers, plumbers, mosaic masons, wire-men, and painters have emerged as independent occupations. Further, with the divorce of designing and planning from the artisan occupations, formally trained engineers, architects and other technical personnel have become an unavoidable part of the work-force in building industry. Parallel to this, the traditional occupations particularly that of carpenters have gone down in significance. In traditional building process, the carpenters used to design the buildings and construct the wood-skeleton of roof and walls when they are made of wood. But, as of now, the carpenter's job is increasingly limited to the construction of doors and windows. The share of labour input of carpenter in building construction has consequently declined.

Another important development has been the rising importance of unskilled workforce in the industry. Earlier, carpenters and masons themselves or their apprentices used to undertake many of the unskilled jobs. Though agricultural labourers were also used to perform such jobs, they were not a part of the construction industry. The incidence of unskilled work has significantly increased in modern construction. Consequently, in the urban areas, the presence of large number of workers who almost exclusively depend upon the unskilled works involved in the building process is prominent.

Finally, with the growth of wage labour relations, profit motive and contract system, one may note an increasing presence of supervisors either appointed by general contractors or in the form of activity contractors. The former, however, normally do not participate in the manual operations. Similarly, in many work sites, we have 'workers' appointed by contract managers whose functions we have explained in the previous chapter.[16]

The Survival of Carpentry and Masonry Craft Skills

So far we have discussed some of the important changes in the labour process in building activity. There is an increasing trend towards conscious application of natural laws and modern science in the production process. However, the consequent process of deskilling, which we have noted, is far from complete.

Despite the introduction of new materials, the construction process largely remains in its traditional technological moorings. Mechanisation and use of machinery have made very little progress in the building industry. However, this is not to deny the use of few hand based power tools by some carpentry contractors, concrete mixtures, vibration and hoists in the construction of big buildings or fairly widespread use of mosaic machines.

We would still maintain that the capitalist transformation of the labour process is far from complete. This point will be clearer when we examine the work of two important occupations in the industry viz., carpentry and masonry.

Hand held power tools used in carpentry for cutting, sawing, planning etc., though operate faster, demand no less skill and expertise from the carpenter than what was needed earlier for the same operations. (Reckman, 1979: 96) Further, even these tools are yet to be widely used. What would have really affected the skill dependence of carpentry, the factory production of doors, windows, wooden members of thatched or tiled roofs, is yet to make any significant progress. Thus, though the carpenter is 'relieved' of the responsibility of design or technical and structural problems involved in building, once the measurements of a window, door or a beam is given, he works almost like his predecessors in earlier times. He works with his tools and sets the pace of the work. He decides how differently he should proceed to plane this piece of wood, where to drive the nail, how neatly to cut two pieces so that their joint is smooth, strong and so on. Thus, while at work, even now, the carpenter should make several decisions, for which he depends on his-own knowledge of the craft traditions rather than rules or work charts prepared by the management.

Coming to division of labour, through it is true and important that mental work associated with design and coordination among activities is no longer the responsibility of craftsmen; apart from that, it remains at a rudimentary stage of development. In carpentry work-shops attached to building sites, the activity contractors may use a proper mix of fully skilled workers and apprentices by attaching the latter to repetitive and less skilled tasks. Though this saves skilled hours for the contractors, it does not necessarily succeed in permanently attaching workers to particular tasks. When a particular phase of the work is finished or when the worker changes his contractor or site he may get a chance to try his hand on other tasks. Thus, the specialisation is in carpentry as a trade or occupation rather than on particular parts of it like planing, sawing etc.

The picture is not, in any way, striking different in the case of a mason's work. Unlike what has been reported from may other areas, in Trivandrum city we could see only masons but not brick layers, stone workers or plasters. On a site, in a particular day, a mason may be laying bricks or doing only plastering. But he is not attached to any of these tasks. It may be that the high mobility of workers among sites, typology of buildings

and contractors give even freshers a chance to acquire all the ingredients of a mason's skill. Further, given the causal nature of employment in the industry, it may not be advisable for a worker to be a narrow specialist if he is to get continuous employment. However, here it may be noted that all masons may not be capable of working with granite blocks. Granite work requires special skill and those who possess are known as rubble masons. But rubble masons would undertake other masonry tasks also.

Here again, the present day masons need not bother about the load bearing capacity of the wall that he constructs, its thickness, rationality behind using a particular material for it and so on. But apart from that, the work of mason, whether it is brick laying, plastering or some other task, remains as it was fifty years ago. This, however, is not to deny the fact that at present he uses burnt bricks and cement mortar more often than not laterite stone, unburned bricks and clay or lime mortar. It may be possible that compared to the artisanal system, he is more closely observed at his work and under more pressure to finish the work on time, since the activity contractor's profit directly depends on his efficiency as well. What is said here about a mason's trade may be applicable for carpenters' and even workers belonging to other trades.

Thus, intra-craft division of labour or the splitting-up of crafts into independent occupations have not made any significant progress in the industry. However, introduction of modern materials and related new trades and the system of activity contracting appear to have contributed to the increasing division of labour. Here it may be, noted that the activity contractors and their workers specialise in different activities. Over time, the new trades have established their occupational independence. Let us, for instance, consider the shift from thatched or tiled roof to RCC roofs. At the early stages of the diffusion of RCC roofs, both carpenter and mason had a role to play in its construction. While carpenters were involved in centering and shuttering (form-work) masons were associated with laying, compaction and leveling of the concrete. This is so, even now, in certain rural areas. but in our study area, rarely did we see a skilled carpenter or mason working on the above jobs.

Activity contractors who specialise in concreting, do not employ skilled carpenters or masons. Laying, compaction and leveling of concrete is done by unskilled and semi-skilled concreting workers who move from site to site to do the same work. Similarly form-work is prepared by 'centering and shuttering' workers rather than skilled carpenters. It is not that the carpenters or masons are incapable of performing the above tasks. Rather, as the contractors humorously put it, the work does not need the 'sophistication and precision' of a mason or a carpenter; it would only unnecessarily delay the work. Thus concreting and preparation of form-work have become independent occupation in the industry. Thus, major source of increasing specialisation and division of labour in the industry has not been the subdivision of traditional crafts. The point we wish to emphasis is that when it comes to the actual manual operations, the principle of organisation of labour process remains more or less subjective, which to a great extent is based on conventions of handicraft and manual dexterity rather than modern science and mechanical power.

Activity Contractors and Control of Labour Process

The low level of mechanism and division of labour and survival of craft skills have significant implications for the management and control of labour process. We have already discussed one of the important functions performed by activity contractors, the most common immediate employers of the workers, viz., the recruitment and supply of workers. It is an aspect that has been widely noted and discussed in the literature. But, there has not been an adequate treatment of yet another equally important function undertaken by the activity contractors - the control and management of the labour process.

Since the production, by and large, continues to be handicraft based, the employer cannot depend upon machines or automatic assembly lines to set the pace of the work. Objective conditions for the bureaucratic control are also absent. As such, the ways to extract more work from the workers are limited mainly to the intensification of work which would require direct involvement of employers in the labour process.

For instance, let us take the construction of RCC roofs. It involves a large number of workers. Conveyance of concrete, in most of the sites, is effected through a row of workers which extends from the mixing place to the roof-top where concreting is done. Besides these workers, there will be workers engaged in depositing, compacting and leveling of concrete. Yet another group of workers will be assigned to supply sand, stone pieces, water and cement to the mixing place. All these workers will slow down the entire process. Thus, speed of each worker is crucial for the efficiency of the collective worker.[17] Concrete mixtures, vibrators or even mechanical hoists cannot ensure this. Supervisors will have to physically exert themselves, by shouting and instructing, and running all over the site to control the workers. The control is unstructured, direct and personal.

The characteristic features of the activity contractors make them eminently suitable for undertaking such control strategies.

Given the social origin of activity contractors, their experience as skilled workers and the fact that majority of them continue to participate in manual work, prompt us to suggest that the nature of the activity contractor is more of a head worker or a gang leader rather than that of a capitalist entrepreneur. Activity contractor maintains a small group of workers and the number of workers normally do not go beyond what is directly manageable. He recruits the workers from among relatives, friends and neighbours and maintains a very close personal relationship with them. On the site recruitment of workers is very rare and if at all present, it is limited to unskilled workers. Some of the contractors are also found to advance lean season loans to workers. Workers, generally, move from site to site with the activity contractor.

It is also interesting to note that the activity contractor often tries to take the workers into confidence by discussing with them, how difficult it is to get new works and how low are the piece rates offered to him.

His experience as a skilled worker and constant presence at the work sites enable the activity contractor to observe and asses the performance of each worker and if required

intercede directly. And if anyone's performance is not satisfactory, he may use a wide variety of tactics ranging from advice and inspiration to abuse and harsh discipline. At times it may also end up in firing the recalcitrant worker. Through his personal demonstration he is capable of correcting the mistakes or speed up the work.

The activity contractor behaves and operates as one among the workers. But at the same time, he is an employer responsible for completing the work at pre-determined unit rates. In this context, it is also important to bear in mind that due to the nature of building activity the workers are normally paid on a daily wage basis. It increases the pressure on the control and management functions of the activity contractor.

The activity contractor's intervention in the labour process bears the marks of his twin-character, both as an employer as well as an experienced worker. Like most of the employers, he enjoys the important right to hire and fire workers by using which he imposes the needed discipline over them. At the same time, as an experienced worker, as a concerned relative, friend, neighbour and patron he commands obedience and respect from the workers.

Thus, the institution of activity contractors and the control strategies adopted by them are closely related to the technology in use, extent of division of labour and work practices in the industry.

Notes

[1] Generally speaking, the owner's involvement in the building process can vary from a system where he fulfills all the functions in the building construction through his own or family labour to the other extreme where the owner purchases a fully finished building. However, both these extremes are rare in our study area.

[2] 'Design competition' is yet another method to select proper design for the building. In this method, the final design is selected through competition in which a large number of designers are allowed to participate. This method is claimed to increase the quality of the design. However, it was absent in our sample of building sites. For a discussion on the relationship between nature of the design team and technological progress See Bowley, Martin., (1966): **The British Building Industry - Four Studies in Response and Resistance to Change**, Cambridge University Press, Cambridge, pp.169-180 and 355-358.

[3] This, however, does not mean that the contract manager can escalate the cost of construction at his will. Cost of construction cannot go beyond he prices quoted by the contractors. Here, it may be noted that the contracts are finalised with the consent of the owner.

[4] Anything left unspecified or vague in the contract-agreement may lead to misunderstanding and disputes later. For instance, the Kerala P.W.D. maintains separate office and a Chief Engineer (Chief Engineer - Arbitration) for settling such disputes.

[5] P.W.D. Manuals, however, do not give any criteria to judge the financial resources and professional experience of the fresh applicants. As such, the classification of n applicant is left, more or less, to the discretion of the licensing authority.

[6] Unit rates are fixed for specified pieces, such as for one window, for one door, for hundred bricks to be laid, for one sq. ft. or area to be plastered, for one cu. ft. of earth-work, for one tonne of bars to be bent and so on.

[7] Workers generally come to the site with their tool boxes. For instance, the carpenters maintain and bring their set of chisels, hammers, sleaker, hand saw, files, measuring rode, screw drivers. etc. Similarly masons bring heir-own ladles, hammers, plumbline, cord etc. The habit of working with one's own tools, however, is declining. The younger generation of artisans had already switched from wooden tool boxes to modern brief cases and even lighter tool packets.

[8] In Trivandrum city there are several shops engaged in this business. Owner-customer or activity contractor can hire concrete mixtures, vibrators, shutters, poles, pans, baskets, etc., from these shops.

[9] General contractors and contract mangers often complain against the heavy rush of activity contractors seeking fresh jobs.

[10] Building activity is considered to be prone to business and seasonal fluctuations. See for a detailed study of building fluctuations, Richardson, W. Harry and Aldoroft, H. Derek., (1968): **Building in the British Economy between Wars**, George Allen and Unwin, London, pp.213-268.

[11] "Of the ancient writings in India dealing inter-alia with architectural science the most ancient one appears to be Matsyapurana attributed to 450 A.D., Brihad Samhitha of Varahamihira of 550 A.D., Manasara assigned to somewhere between 500 and 700 A.D., Silparatna of the Gupta Period and quite a large number of treatises of importance. So far as Kerala is concerned, the treatises on architecture can be traced to Thantra Samuchaya of Chennas Manakal Narayanan Namboodiripad of 15th century. The Manushyalaya Chandrika which deals exclusively with domestic architecture written by Thirumangalath Neelakantan somewhere in the 16th or 17th

century A.D. is perhaps more popularly followed in the construction of houses for dwelling purposes". Government of India, Census of India., 1961, Kerala, Vol.VII, Part IV A & B, p.129.

[12] Most of the books on 'Thachusastram give detailed descriptions on the ill-consequences that may be caused by the non-compliance of accepted rules of construction. See for instance, Parameswara Menon.K, (1929) (ed.): Manushyalaya Chandrika, Thachu Sasthram (Mal.), Bhasha Parishkarana Committee, Sree Ramavarma Grandhavali, and Vasu, Achary, V.K., (1976): Greha Chithravali - Silpa Sasthram, (Mal.) Vidyarambham Press, Alleppey.

[13] Despite strong family ties with the disciples, the masters were very strict towards the students. There are numerous popular folk tales in Kerala to indicate how 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 son out of professional jealousy. See Samkunny, Kottarathil., (1974): Itheehya Mala, (Mal.), Kottarathil Sankunny Smaraka Committee, Kottayam, Vol. I.

[14] For a detailed discussion on structural properties of building materials, See Khanna, P.N., (1958): Indian Practical Civil Engineers' Handbook, Engineers' Publishers, New Delhi.

[15] See Anand, S., (19986): 'Migrant Construction Workers - A Case Study of Tamil Workers in Kerala', M.Phil Dissertation, Centre for Development Studies, Trivandrum, pp.86-88.

[16] See Chapter 3, Section 1 of the present study.

[17] One of the techniques adopted by the activity contractors to speed up the concreting work is paying higher wages and benefits to those who mix the concrete and load baskets and pans.