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Aspects of company organization and industrial democracy: a discussion paper

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ASPECTS OF COMPANY ORGANIZATION AND INDUSTRIAL DEMOCRACY:

A DISCUSSION PAPER

by

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ASPECTS OF COMPANY ORGANISATION AND INDUSTRIAL DEMOCRACY:

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INTRODUCTION

1 For a very long time belief in the overriding importance of the technological determinants of the organisation of industrial work tended to close off the subject to economic and sociological analysis. Even the passing of the heyday of "scientific management" led to only limited contributions from the disciplines of economics and sociology to the study of the division of labour, and these tended to be restricted to questions of choice between techniques of production or of organisation which exist independently, or, in the case of sociology to questions of the undesirable consequences of the "fragmentation" of work and the way in which the worst of these might be attenuated.

2 There has, however, been a minority of economists and sociologists interested not in the kind of choice made once the organisational "blueprints" are known but in the factors which are at work in the formation of these "blueprints" themselves. It is fairly clear that if these "blueprints" are determined by the kind of technology chosen then there is not much that economics and sociology can say that is of interest. It is also clear that if there is a "one best way", as Taylor maintained, of organising work for each technology of production then the whole question of work organisation lies pretty squarely outside the realm of industrial democracy. Indeed, one of the reasons for the rather uninspiring nature of much of the work of economists on the economics of labour managed firms is that they have maintained the assumption of a form of technological determinism of work organisation through the use of the production function with its assumption of the existence of a set of fixed combinations of capital and labour for each set of relative prices. The result has been that they have had to concentrate on the distributional rather than the organisational aspects of self-management. The purpose of this paper is not to try to assess the relative merits of theories based on the assumption of the overriding importance of economic and social determinants as opposed to technological determinants but to try and see what the former group of theories might tell us that is of interest to the question of industrial democracy.

It was pointed out earlier that many of these theories have constituted something of a minority movement within the two disciplines and for this reason they are of a rather disparate nature, and their presentation in the context of the debate on industrial democracy will require a fair amount of further development and adaptation.

PART ONE: THE EMERGENCE OF THE FIRM

A THE FIRM AS THE TECHNOLOGICAL CONSEQUENCE OF THE DIVISION OF LABOUR

3 To help the Reader follow the development of this paper it will perhaps be helpful if we give an example of what we mean by technological determinism of work organisation and how it has entered into economic theory. Analysis of the example will also help to illustrate some aspects of the starting point used by the group of economists whose ideas we shall be looking at.

4 Much of the tone of the theories of the division of labour based on the belief in technological determinism flows from the example of the division of labour in a pin factory given by Adam Smith. Although Smith also wrote extensively about the "large scale" division of labour between trades and firms, it was the "small scale" example of the pin factory which seized the imagination of many of his contemporaries, and which has become the example which proves the rule. The basis of his argument was that the division of the process of pin making into a series of separate parts each of which was to become the exclusive domain of one workman was able to increase production far beyond that achieved by the same number of men working individually. The great efficiency of this method of dividing labour was what recommended it. The limit at any moment to the extent of the division of labour was given by the possibility of disposing of the final product, and subject to this limit there was an optimum degree of the fragmentation of tasks for a given process of production. Although the level of demand is a market and not a technological phenomenon, it remains true that the pattern of work organisation itself in this example is chosen in order to maximise the physical output of a set of technical inputs. It is technologically efficient before being economically efficient.

5 The three factors invoked by Smith to explain the dramatic results of the division of labour in the pin factory support this conclusion. These were: the increase in the dexterity of the worker at his task, the saving of time that would be wasted in changing tools and position as he went through each individual step in the production process, and the invention and improvement of machinery to "abridge" the tasks of labour which might result from the concentration on a limited task.

6 Although no claim is made that the writings of Smith are representative of those who assert the predominance of technology in the determination of work organisation, it is worth pursuing Smith's example a little further as it yields some useful insights.

7 One aspect of Smith's pin factory example that has tended to slip by unnoticed, perhaps because it is so obvious, is that the workmen are grouped in a single workshop, under the same supervision, and in the employ of the same man. They are working in a factory. The question then arises as to whether the arguments that Smith invoked to explain the success of the division of labour also explain the existence of the factory with, in Smith's case, a system of supervision and of employment contracts.

8 Although none of the authors we look at question the fact that specialisation is capable of producing dramatic results, all of the reasons put forward by Smith have been questioned with respect to their ability to explain a particular form of industrial organisation. Thus Marglin (1973) for example, asks whether the first type of gain through increased dexterity might not be achieved by the same worker working successive days on successive parts of the production process, each day building up the stocks that would serve him in the next step of production. The same objection might be raised concerning the second type of gain through the reduction of time spent between tasks. Williamson (1975) has asked whether such a system could not be worked by the establishment of a series of market contracts between workers specialising independently in each step of the process, each selling his day's produce to the next man down the line thus establishing a series of open market transactions rather than a series of tasks undertaken under the authority of an employer. The final reason, the invention or improvement of machines, does not stand up very well for different reasons - that the intellectually stifling nature of the minute division of labour described is no atmosphere for encouraging invention. In short, Smith's technological arguments explain neither the existence of the factory, nor that of the relations of subordination and superordination, nor that of the employment contract. On its own the division of labour does not seem to explain the existence of the capitalist firm.

9 Some economists, notably Coase (1937), have gone further to argue that the market can explain the existence of the division of labour and a high degree of specialisation, (or to put it more precisely, they have argued that with a perfectly competitive market there is no need to resort to a non-market force to explain the existence of specialisation). The trouble is, to return to Smith's example, that a factory is not, in any obvious sense, a form of market, and so the economist has the rather perplexing task of explaining in terms of market theory why firms exist in the economy, and what role they play. It is not surprising that a science that has little to say about the very existence of an institution like the firm should have very little of interest to say about problems of industrial democracy.

B THE TRANSACTION AS THE BASIS OF THE THEORY OF THE FIRM

10 How then should the economist approach the explanation of the existence and the structure of the firm so that he does not find that in doing so he is forced to abandon the strongest part of his theory, the theory of markets? The basis for an answer has been put forward by the American labour economist and historian J R Commons (1934) in a presentation of "institutional economics" in which he sought to bring economic theory into harmony with his long years of experience on government bodies in the United States.

11 What Commons set out to do was to discover a unit of economic activity that could at once be an element in legal procedures and an object of social rules and customs. He also wanted an object to which could be applied the key principles he identified in social life: those of "conflict", "dependence" and "order". This meant finding something that could be a unit of conflicting interest of ownership, a unit of mutually dependent interests, and a unit of "orderly expectations". This last element needs some explanation. For Commons "order" was not in any sense static, or a halting of time. It was the essential link between past and future economic and social activity, between present sowing and future reaping. The economic phenomenon of "futurity" (of which debt was the key manifestation) was very closely tied to Commons' concept of order. The unit which comes at the cross-roads of all these requirements is that of the transaction, which Commons defined as the "alienation and acquisition, between individuals, of the rights of future ownership of physical things as determined by the collective working rules of society". (Odd though it may seem, Commons appears to include labour as a "physical" thing).

He goes on to say that the transfer of these rights must be negotiated. In the definition itself we can see quite clearly the intersection of these different social activities.

12 The basis of Commons' argument is not that starting from transactions rather than from a theory of choice is in some ill defined way more "realistic", but that it creates a set of distinctions of functions that correspond to those made by society. In a full development of the approach it should not, therefore, be necessary to treat legal transactions, or social customs "as if" they were something else. Unfortunately for us, after this point Commons sets off in a rather different direction which is of less relevance to the subject in hand. The "transaction" does, however, provide the key for the economic study of the organisation of production.

13 With the concept of the "transaction" it is now possible to state the problem posed by the emergence of the firm as an economic institution, and the problem is that of discovering why some transactions will take place on the open market, and under what conditions some will cease to be effected on the open market. Given the usual set of constraints on economic actors, it can be seen that the deciding factor will be the relative cost of making the two forms of transaction. To make things a little clearer let us suppose that there are two distinct methods for entering into transactions. In the first, that of reliance upon the open market, the terms of the transaction must be completely defined "ex ante" or before the exchange is made. In the second, making transactions off the open market (within the firm) complete ex ante definition is absent and there is a separate procedure for finalising the terms later. What is being argued is that it is the relative cost of these two methods for making transactions which will decide which will be used. If the relative cost of using the open market were lower for the whole range of transactions to be effected there would be no firms. In fact, there are increasing costs, as will be argued later, attached to the use of both transaction methods so it is to be expected that a mixture of the two will be used. Now it can be seen that anything which affects the relative costs of the two will mean that a number of the transactions carried out under one procedure will then be carried out under the other. Because of this, the transaction approach provides a way of looking at fluctuations in firm size and of analysing policies of mergers and of the decentralisation of production.

A simple example of the kind of factor which might lead to shifts in the way in which transactions are effected would be the imposition of a sales tax on open market transactions. Similarly, certain types of payroll tax would discourage reliance upon the firm and favour reliance upon self-employed workers dealt with on the open market.

14 Factors underlying the variations in costs. Differences in relative cost provide little more than a formal framework and tell us little that is of interest. Of central importance, however, are the factors underlying these costs and movements in them. Looking ahead we shall see that for Alchian and Demsetz (1972) the chief factors acting on these costs are the costs of supervision of the fulfilment of contracts, and of the detection of marginally substandard performance either ex ante or ex post. For Coase (1937) the costs are those of discovering what the relevant market prices are, and such matters as like the incidence of tax on certain kinds of transaction. The importance of the latter is probably not fully recognised, being that part of the relative costs due to what Commons called the "collective working rules of society". One might also mention the costs following from different kinds of income or industrial relations policy. For Marglin (1973), on the other hand, the chief source of economy came with the control of the process of production and the possibility of reorganising production as dictated by the market for the final product without having to "bribe" the workers in order to win the co-operation in such changes. Williamson (1975), and Arrow (1974) develop further the informational costs which cause the relative cost of the two transaction methods to vary. Such then is a sample of the kinds of cost we shall be looking at shortly.

15 Costs and the Problems of Definition of the Terms of Transactions. In this paper we seek to go further, and to argue that it is the definition of the terms of the transactions themselves that is one of the key problems. Indeed, the definition of the substantive content and the procedural scope of the transaction is central to economic activity. This is so because it is through their grouping into categories which can form a suitable basis for transactions that goods and services can enter into economic exchange relationships. This is something that tends to be obscured by the usual paradigm of economic exchange which is explained in terms of parables about the meeting of hunters in some primeval forest who exchange so many fishes for deer, or people buying butter in a supermarket⁽¹⁾.

In both of these parables simplicity of the objects exchanged minimises the importance of definition⁽²⁾, as the substantive terms appear to bear on easily or readily defined objects. Moreover, the examples are ones in which the procedural terms, covered by open market procedures, are relatively less important in relation to the substantive ones than in certain other exchange situations. The transactions approach allows us to take the process of the definition of substantive content and procedural scope into account. This will become particularly evident when we come to discuss the labour contract and the procedures it involves for the completion of the substantive terms of the transaction. For the time being, however, we shall concentrate on the definition of transactions for the open market, and the reason why this method of transacting should be of limited applicability⁽³⁾.

16 Economic exchange takes place between actors who are operating under a number of cost constraints, and who are therefore obliged to make fairly precise calculations concerning the details of the transaction. Lack of precision or general vagueness in the terms of the exchange is likely to make it impossible to keep control over the costs of a process of which each exchange act is but a part. This is why exchange transactions require fairly precise definition. With transactions which are concluded on the open market this definition has to be achieved before agreement is reached. This is what we mean by "ex ante" definition.

17 Requirements to be placed upon the Process of Definition. There are two main requirements to be met by this process. The first is that the degree of precision with which its categories are set out must be such that it offers an adequate basis for the kind of quantification necessary for market exchange. This might be called definition in the "static" sense. The second, which might be called definition in the "temporal" sense, is that the categories offer a basis for sufficiently stable expectations so that the probability of the correctness of the calculation of future liabilities can be worked out, and an appropriate level of contingency arrangements made. In other words, we are concerned with the need to "forecast" or to "predict" which will be the relevant categories. In the first sense of "definition" we are concerned with definition in the present for the present. If we take the case of the organisation of a production project, this merely amounts to the need to decompose, or analyse it into a number of constituent parts that might serve as the basis for market transactions.

In the second sense, the concern is with the definition in the present for the future. The "constituent parts" analysed out must act as predictions of categories of transactions that will need to be realised at some date in the future - predicting categories that will be viable at some planned future date. It is because prediction is so important in this that the question of uncertainty is central.

18 Definition and the Transition between Types of Uncertainty. In dealing with risk-taking and the function of the entrepreneur in economic theory Knight (1957) was led to identify three types of probability situation: "a priori probability" "statistical probability" what he calls "estimates". This last is what he calls "true uncertainty", which is not susceptible to measurement. The first probability situation is not of great relevance to our argument, but the distinction between the second two is of great importance. When talking about the problem of definition with respect to uncertainty we are concerned with the transition from the situation of pure uncertainty which is not susceptible to measurement to that of statistical probability which is open to a form of measurement. We have been arguing that the dependence of market exchange on a high degree of rational calculation means that it needs to be based upon the second rather than the first type of probability situation.

19 Traditionally, economic theory has assigned the function of mediation between these two types of probability situation to the "entrepreneur" who, one might say, specialises in the committing of economic resources to certain ends, or risk taking. His function can be contrasted to that of the "insurer" whose function is that of "distributing risk", offering cover on the basis of the observation of the frequency of certain kinds of event. The insurer's activity is confined to that of statistical probability situations.

20 A clear idea of the entrepreneurial function and its relation to specialist productive functions is offered by Marshall in his illustration based on the building trade:-

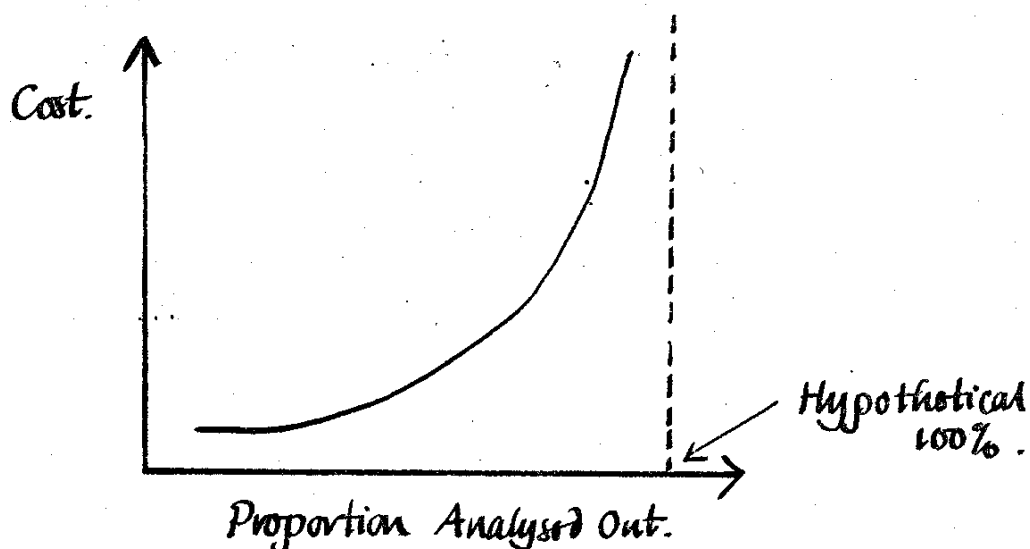
"The division of labour is often carried still further when houses are built not at the expense of those who are to live in them, but as a building speculation. When this is done on a large scale, as for instance in the opening of a new suburb, the stakes at issue are so large as to offer an attractive field to powerful capitalists with a very high order of general business ability, but perhaps with not much knowledge of the building trade.

They rely on their judgement for the decision as to what are likely to be the coming relations of demand and supply for different kinds of houses; but they entrust to others the management of details. They employ architects and surveyors to make plans in accordance with their general decisions; and they enter into contracts with professional builders for carrying them out. But they themselves undertake the chief risks of the business, and control its general direction". ("Principle of Economics" 1920 Bk IV ch xii pp 245-6).

21 Thus Marshall's entrepreneur can be seen to be taking on the initial project for the construction of the suburb, decomposing the project into a number of smaller elements that can be contracted out to specialist architects or builders. The entrepreneur does not need to have the knowledge to trace out each set of tasks in the minutest detail, but what he must do is decompose the project into a number of phases whose linkage through time he can handle and which constitute a viable basis for his own plans and those of the other parties to the transactions. Effectively, he is, at this stage, not detailing particular activities that must be followed through, but he is asking for a series of finished products to be delivered. He wants the plans from the architect, the survey of the land, and the completed houses of a certain specification. The details of the actual activities are left to the particular specialists. As we shall see, this situation is different from that of the labour transaction in which the entrepreneur is not just interested in the delivery of the finished product (by a certain date) but is also concerned with the control of the process of execution as well⁽⁴⁾.

22 Costs and the Process of Definition: the Transition from Market to Non-market. It is now time to turn to the factors affecting the extent to which the open market method of transacting is likely to be used. There are two counteracting tendencies. The first is that of the increasing difficulty of defining categories for transactions out of "pure uncertainty". The second is that of the decreasing economies resulting from the process of defining and contracting out on the open market.

23 We might represent the first situation graphically as follows:-

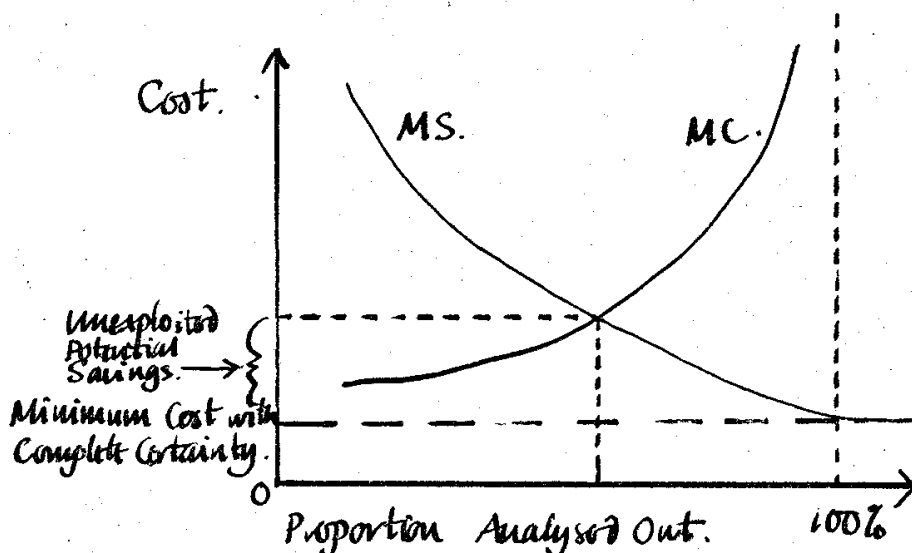


On the vertical axis is represented the cost of defining the "marginal" or "additional" transaction, and on the horizontal axis is the degree of definition achieved. A rough measure of this might be the proportion of total costs covered by eventual contracting out. Hypothetically, there is a point at which the entrepreneur has contracted out every task involved in the project leaving himself in the position of simply orchestrating a set of market contracts.

24 Why should the curve slope upwards? Definition out of uncertainty requires forecasting, indeed, it is a form of prediction of which will be the relevant categories at some point in the future realisation of the project. The project will require organisation through time, and will be divided into phases. If the analysis of each phase taken in isolation had say a 90% probability of being correct, the fact that the phases must follow each other, the correctness of one estimate therefore being dependent on the realisation of the previous phase according to plan, it is easy to see that as the probabilities must be multiplied the likelihood of error on the later phases increases geometrically. If the likelihood of error increases in this way, it is clear that the difficulty attached to definition at each stage will increase after the same fashion.

25 Increasing cost of analysing out categories of task that can serve as the basis of open market transactions is not the only process at work. It seems likely that there are also decreasing savings to be achieved as each successive set of categories is defined and contracted out.

This is because specialisation is subject to economies of scale, and the more limited the market for such specialisation the less it is possible to take advantage of these. We thus have a second curve which can be laid on the first and which represents decreasing marginal savings. There is a lower limit to the marginal savings curve given by the cost of perfectly organised production. The curve starts off at a high level representing the high cost of stand-by resources if a desired level of production is to be maintained with poor planning.



26 Taken together, the processes represented by the two curves suggest that there is a point at which marginal savings from analysis are equal to its marginal cost. We now turn to the question of the significance of this point of intersection, and to the earlier question of the "procedures" used for the definition of the terms of transactions.

27 Returning to the first curve, and to Knight's distinction between "statistical probability situations" and "estimate situations", we can see that either end of the curve is going to be characterised by the predominance of one of these two kinds of probability situation. As the categories for transactions are analysed out, we pass from Knight's "true uncertainty" to his "statistical uncertainty". This is of relevance to the kind of contract setting down the terms of the transaction. If the entrepreneur's work of analysis led to the isolation of areas of absolute certainty he could make straightforward transactions buying a precise service for a certain agreed sum.

In fact this is rarely possible, and most contracts will have contingency clauses. Williamson (1975) described such contracts as "contingency claims contracts". These can be used where the probability situation is of the statistical nature, and where it is not too complex. The building speculator might conclude a contract with the building firm so that the agreed sum should vary according to the strength of the foundations of individual houses required by the type of soil underneath. However, as the degree of uncertainty increases, this kind of contract become a less and less suitable way of regulating the transaction. In any case this kind of contract cannot be used after the point given by the intersection of the two curves because the reasoning on which they are based implies that a sufficient degree of definition is not going to obtain thereafter. This is the domain par excellence of the labour contract, and it is to this that we now shall turn.

C THE LABOUR CONTRACT AND TRANSACTIONAL FLEXIBILITY

28 Earlier in the paper we remarked that the firm was not in any obvious sense a form of market, and in some respects the nature of the labour contract reflects this. The fact, that there is very often no written formal agreement stating the terms of the transaction complicates the problem of its interpretation. If, and this is no neutral assumption, we are right in seeing the transaction involved in labour supply as one coming under the "off-market method" as it emerges from the discussion of "open market method" then we may infer that certain constraints upon the form of procedure accompanying the method used apply, and ^{that} these may provide one of the bases of the analysis of employment relationships and the kind of organisational structure associated with them⁽⁵⁾. These constraints bear on the problem of ex ante definition and the consequent need for a level of flexibility in arrangements. There is, however, a limit on the degree of flexibility possible as the employment relationship is to a considerable extent a calculative one on both sides implying the necessity of some basis for the calculation of reward. For this reason some kind of categorisation system is needed, and the degree of commitment cannot be regarded as unlimited. There is some form of labour market from which employees must be recruited initially and this reinforces both the need for some degree of "labelling" of skills, and the limits on the degree of flexibility the entrepreneur may be able to obtain.

29 In this paper we look at three main "procedures" which may be used as alternatives to the ex ante defined transaction. In each of these the terms of the transaction are not defined exhaustively at the moment of recruitment, but there is a procedure through which definition of the terms at any given moment may be fixed, and it is this procedure used which provided the key for the interpretation of the internal structure of the firm. We shall argue later that being "ideal types" these procedures will only very rarely exist in isolation, although the nature of their internal coherence will mean that in cases where they are to be found together they will not simply "coexist" side by side, but that one of them will tend to be "dominant" in any given situation. But this bridge, like that of the scope of individual procedures, will be crossed when it is reached.

30 In the case of the first type of procedure, the sale of labour is seen as being regulated by a "sequential spot transaction" which is as one writer described it "a continuing implied renewal of contracts at every minute and hour, based on the continuance of what is deemed, on the employer's side to be satisfactory service, and, on the labourer's side what is deemed to be satisfactory conditions and compensation". The second sees the contract regulating the supply of labour as one "whereby the factor, for a certain remuneration... agrees to obey the directions of the entrepreneur within certain limits" (COASE 1937) it is a contract in which the transaction is incompletely defined, with authority relations completing the circle. The third is somewhat similar to the second in so far as the terms of the contract are not completely defined, but in the place of regulation by an authority relationship, there is regulation by a power relationship. For the purpose of this paper we define a command supported by an authority relationship as one for which obedience is forthcoming because those in a position of subordination believe the command to be legitimate. In the second case there is no such belief, and obedience is forthcoming because subordinates can see no practical alternative, the group issuing the orders being in a position to inflict a penalty which outweighs the advantages of not obeying. The one thing all three of these have in common is the element of flexibility which enables the entrepreneur to continue in his position as risk-taker and organiser adapting output to changes in conditions in the market for his product. Indeed, as has been implied, each form of transaction can be seen as a way of preserving the flexibility needed.

PART TWO: ORGANISATION STRUCTURE: SUPERVISORY, AUTHORITY AND POWER RELATIONSHIPS

31 A. THE SUPERVISORY HIERARCHY, AND THE "CONTINUOUSLY BARGAINED" OR "SEQUENTIAL SPOT" TRANSACTION

The absence of relations of subordination from a situation ruled by "sequential spot transactions" is not difficult to understand. The terms of each successive spot transaction are settled by a form of continuous negotiation between employer and employee, and bargaining takes place between formal equals which is the opposite of the formal inequality of the relations of subordination of the authority and the power hierarchies. In any case, if each movement is settled by an implicit negotiation, then there is no call for the issuing of commands.

32 Alchian and Demsetz (1972) introducing their article on the internal organisation of the firm presented matters in much the same way:-

"To speak of managing, directing, or assigning workers to different tasks is a deceptive way of noting that the employer continually is involved in renegotiation of contracts on terms that must be acceptable to both parties".

Alchian and Demsetz's argument differs in some respects from that of the present paper in that they base their explanation for the existence and the nature of the firm not on uncertainty and problems of the definition of transactions, but on the inability of the market to measure the productivity of individual factors in certain circumstances, the chief of which being that of joint output from the work of a team like that of a team of men loading a lorry. The differences can, however, be exaggerated as the inability of the market to evaluate individual productivity contributions in such circumstances is also a question of definition of transactions. If the terms of the transaction could be defined easily in such a situation, it would also be possible to measure individual productivity.

33 The inability of the market to monitor individual effort in such cases will, according to these authors lead to a tendency on the part of individual workers to give short measure, or to "shirk". "Shirking" will occur because leisure is preferred to work, and because each member will feel he is losing out if he thinks others are "shirking" and he is not. To counter this tendency they argue that some non-market form of monitoring is necessary, and the economic problem as they define it is that of finding the form of monitoring which involves the lowest costs.

34 Consistent with their idea that the firm involves no disciplinary powers other than those applied by the market⁽⁶⁾, they argue that the monitor should be the only agent to be party to all the other contracts, and that he should have the power to renegotiate their terms, and if necessary to terminate them unilaterally. Being the agent who is party to all the contracts it is the monitor who should allocate the other parties to the different positions in the "team" and who should select new members. The function of the monitor then is to see that "shirking" is avoided, and to screen new members to ensure that they have the appropriate productivity characteristics when they join. The monitor, they argue, is accepted because people prefer to work efficiently and take home a higher wage. (This assumption, which is questionable, is important as without it it is by no means obvious that the monitor can fulfil his functions without recourse to non-market powers).

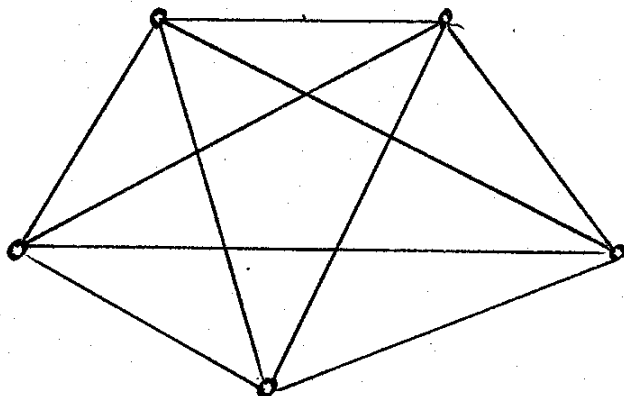
35 The next step of the argument is to see who should fulfil this monitoring function. In other words, if the function of the firm is that of monitoring productivity in "team production", what should be the most efficient structure within the firm? Three possibilities will be looked at, and they will be explored in a little depth because they are also of some relevance to the authority and the power models. The three structures will be "peer group " self-supervision, simple hierarchy, and extended hierarchy. In each case the structures will consist of "flows" of information between elements of the structures, and in the monitoring case the information will bear on work performance and factors relevant to the renegotiation of contracts.

36 The Informational Efficiency of Different Supervisory Structures.

The analysis of these structures depends upon a distinction between "messages" and "channels of communication". A "message" is any piece of information that might be sent between two elements of the structure. A "channel" is like a piece of capital equipment specialised in the carrying of such messages. Like capital equipment, it reduces the cost of the task it is meant to facilitate, in this case the transmission of messages, but it requires a certain initial investment. This means that channels have to transmit a certain number of messages in order to reach their "break even" point. The group structure consists of a structure of channels, and as we shall see, different structures involve different numbers of channels.

Serge-Christophe Kolm (1969) described the economic problem involved in the choice of structure as being that of minimising the combined cost of messages and channels. (It may be that the relative cost of channels is such that the optimal solution is reached by first minimising their number, or it may be that the relative cost of individual messages is so high that it is their number that must be minimised first, or the relative costs might require some intermediate solution). Following the logic of the Alchian-Demsetz approach, we can see that the difference between the peer group and the hierarchical structures will lie in the difference between structures in which there is some specialisation in informational tasks, and those in which there is none.

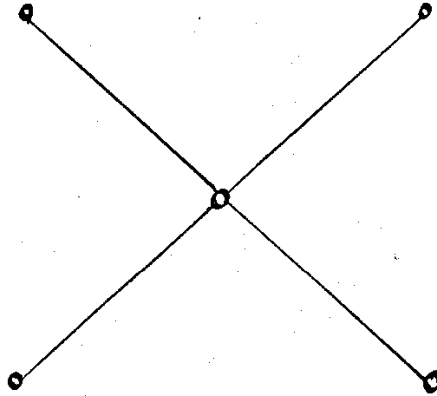
The "peer group" structure, which might be represented as follows:-



is one in which complete co-ordination of the group's effort is assured by the existence of information channels linking each member to every other⁽⁷⁾.

37 Drawing some of these strands together we can see that in the peer group structure there is no specialisation in informational tasks. In Alchian and Demsetz's terms there is no specialist monitor. For these two authors monitoring by the group as a whole is less efficient partly because the detection of "shirking" is difficult and admits specialisation, and partly because the number of channels in which information flows is great and so the reaching of decisions is time consuming, time that is needed for production.

38 If we compare the "peer group" structure with that of the "simple hierarchy" using the "wheel" representation employed by Williamson (1975) we can see the economy in the number of channels required for the transmission of information.



39 Arrow (1974) has summarised the case for the centralisation of information flows as resting on (i) the superior efficiency of joint over separate decisions together with (ii) the fact that the information required for reaching optimum decisions is dispersed, (iii) that the transmission of information is costly, and that (iv) this cost can be reduced by transmission to a central point at which it is "sorted" and retransmitted to the points at which it is needed.

40 Kolm (1969) takes this a little further, extending the arguments in favour of the simple hierarchy to those of the extended one. On the assumption that the relative cost of channels is sufficiently great to warrant their minimisation, Kolm arrives at the conclusion that a tree structure is the most economical kind of network. He is able to show that the centralised tree structure both minimises the number of channels, and given this, it then minimises the number of specific messages necessary for general co-ordination. He then shows that the result, given his initial assumptions of relative cost, applies generally to structure containing more than three elements.

41 We are now in a position to return to the argument of Alchian and Demsetz who use a similar piece of reasoning to support the case for the "specialist monitor" as opposed to the self-monitoring peer group. On grounds of informational economy they favour the hierarchical structure for the purposes of monitoring, but this structure makes the task of monitoring the monitor himself very difficult. It also makes it very important because marginally substandard performance by the monitor will be magnified by the general fall off in performance in the firm. Because information is highly centralised in the monitor no one else in the firm is really in a position to evaluate his performance. The two writers suggest that at this level the only efficient form of monitoring is that of "self-monitoring", and to guarantee the effectiveness of this the "self-monitor" should take "residual claimant" status, that is he should be in receipt of the residual when costs are subtracted from income, profits.

42 Some Reservations on the Efficiency of the Hierarchical Structure. How does this approach stand in relation to the earlier part of this paper dealing with the function of the entrepreneur, and the problem of defining out market transactions? Alchian and Demsetz built their case for non-market monitoring on the problems of assessing individual productivity in team production. In other words, informational problems lay behind the need for internalising certain market transactions. Now, hierarchical structures were efficient when it came to minimising the number of channels and the number of messages. It is easy to think of channels as telephone lines down which people speak, but telephone lines give the kind of direct communication to be found in the peer group structure, and not the indirect kind found in hierarchical structures which depends on the relaying of messages by successive elements. All communication requires a code or a language, and the more the language is to be used in messages that have to be relayed the better the definition of its terms has to be. The definition of the terms of this language brings us back again to the problems of analysing out the categories which are to serve as the basis of the language, and of the work descriptions embodied in the renegotiated contracts.

43 If we return to the example of team work given by the two authors, that of a team of men loading, we might wonder how a supervisor standing by would change things. The best person to tell whether the man lifting up the other end of a packing case is doing his share is the man sharing the task.

More generally, if the nature of the work is difficult to define except by doing it, the arguments used against the peer group structure might be turned round. Instead of four men being supervised from a distance by one specialist we have each of the five men being "supervised" by the four others. Whereas the specialist supervisor may not have had direct experience of the work and so may know its ins and outs less well, the workers making up the peer group will be intimately acquainted with its every detail.

44 Much work group activity falls within the realm of what Williamson, Wachter and Harris (1975) have called "idiosyncratic exchange". In such exchange the transactions are of an extremely heterogeneous nature with the result that the relevant job details cannot be identified and codified easily (or without cost). It is an area in which "on the job training" is very widespread, with the consequent tendency towards the formation of internal labour markets of the kind described by Doeringer and Piore (1971).

45 As a final remark it might be said that one of the implications of on the job training is that the information may never become codified in such a way that management can store and redistribute it. The information necessary for doing the job is contained within the work group, and new employees can only learn the job if the work group members are prepared to pass on the information.

46 It is also worth adding that the problem of management access to information of the way jobs were executed was at the heart of Taylor's "scientific management" with its concern for detailed analysis, and precise measurement of the contents of individual jobs. Management participation, if not complete control of restructuring also meant that the language describing the job was of necessity one which was accessible to management, and one which they could, if need be, communicate to new employees without co-operation from the existing work force.

47 For these reasons alone, the Alchian-Demsetz argument needs to be regarded with some scepticism. This is not to deny some of the informational virtues of hierarchical structures. All that we are saying is that the very strong form in which Alchian and Demsetz have presented the "supervisory" theory of the firm's structure, excluding any reference to authority, or to power, runs into difficulties once we turn over the stone of costs and try to see what problems lie underneath it.

Subject to their assumption that people prefer to work at maximum efficiency and to take home a maximum wage rather than work for a lower wage in a more relaxed way, the Alchian-Demsetz approach works if there is no problem connected to the language in which the information is going to be expressed. The other two forms of theory of the internal structure of the firm avoid this controversial assumption and to some extent get round the language problem.

D CONCLUSION

48 The Reader will probably have noticed that our own approach is in some respects a little more general than that of Alchian and Demsetz. Their approach focusses on the problems of supervision or of monitoring, while our own centres on the problem of the definition of the object of the transaction. The form of continuous negotiation associated with the "sequential spot transaction" is one way of overcoming the problem of definition and of allowing a great deal of flexibility. While this negotiation takes place between equals the two approaches are consistent. (We deal with an inequality of power in the context of the third procedure). Moreover, the form of continuous negotiation associated with this procedure does create problems of monitoring as the transaction is only fully defined in close proximity to the task to be carried out. In the loading example, quoted by Alchian and Demsetz, it is open to doubt whether the task could have been defined usefully at a level higher than that of foreman. It is doubtful, therefore whether the execution of the task could be assessed effectively at any high level, at least until the undesired consequences it was hoped to avoid have actually occurred (when the damaged goods arrive). Furthermore, the problems of definition of the terms of the transaction is going to place a heavy burden upon the structure of the information flows within the firm as different levels in the hierarchy are going to need to know how large a margin for negotiation they have so that the terms they agree to will not upset the rest of the organisation.

49 Running through this approach can be seen a certain coherence which applies to the nature of the sanctions used, the way the terms of the transaction are set, and the use as far as possible of market procedures. Continuous spot negotiation gives rise to a series of implicit very short-term transactions which tends to focus interaction as far as possible on the substantive issues of a work-wage bargain, with a minimum of attention paid to specific procedures, and maximum use made of ordinary market procedure, that is of the threat of non-renewal of contracts and of buying or selling elsewhere.

This coherence, as we shall see, is quite different from that of the procedure based on the authority relationship, or that based on the power relationship.

B THE HIERARCHY OF AUTHORITY AND THE INCOMPLETELY DEFINED TRANSACTION

50 Unlike the interpretation of the hierarchical structure of the firm given by the previous two authors, the authority interpretation does rely on the use of sanctions which are not to be found in normal open market transactions. The Reader will remember Commons' definition of the transaction as "the alienation and acquisition ... of the rights to the future ownership of physical things, as determined by the collective working rules of society". Having explained the nature of the contract in question, and the reasons for its adoption, we shall then argue that the authority relationship cannot be understood in pure market terms, and that recourse must be made to the "collective working rules" that Commons spoke of.

51 Coase (1937) holds to the distinction made between the market and the firm:-

"Yet in the real world, we find that there are many areas where this (the price mechanism) does not apply. If a workman moves from department Y to department X he does not go because of a change in relative prices, but because he is ordered to do so".

Coase argues that reliance on relative prices does not work because of the problem of discovering what these prices are. This problem can be very easily brought round to those of definition and uncertainty, as these are usually the reasons for the difficulty in ascertaining the costs Coase is talking about.

Coase goes on to explain that the labour contract is:

".... one whereby the factor, for a certain remuneration ... agrees to obey the directions of an entrepreneur within certain limits".

The reasons for adopting the incompletely determined form of contract from the entrepreneur's point of view have been fairly thoroughly dealt with. We might characterise the "sequential spot transaction" as one which concentrates on "substantive" issues, of immediate task content and of rates of pay, relying on the market for providing the form of "procedure"⁷. The incompletely determined transaction, on the other hand, involves less precise substantive bargaining but lays more stress on the "procedure" according to which the rest of the transaction is to be determined during its execution. The question is whether

the procedural element can be derived from purely market considerations in the way the monitoring function was, or whether it is necessary in explaining to turn to the "collective working rules of society".

52 The Source of the Authority Relationship Lies outside the Market. If the procedure is taken to define the limits within which entrepreneurial directions are to be issued and followed it is difficult to see how it can be set down in an individual market negotiated contract given that the very reason for setting up the incompletely determined contract was that it would be extremely costly, or perhaps impossible to predefine the tasks to be accomplished.

53 An alternative market solution that is less vulnerable is that a set of laws was created, after the manner of ordinary contract law establishing a model authority relationship so that this kind of flexibility might be taken advantage of. Everyone agreed to this law so that they could enter into this advantageous form of relationship. This is indeed true of some of the "collective working rules", the ^{but} difficulty is that authority relations extend beyond the market both spatially and temporarily, and as Alan Fox (1971) has argued, people obey authority not because they are paid to but because they believe it is "right" to do so:-

"... From childhood we are all trained in obedience ... As children we are urged to obey our parents, teachers, policemen, and public officials simply because they are parents, teachers, policemen, and public officials ... we are usually left in no doubt that we ought to obey, that it is right for the functionary to expect our obedience ..." p 45-6.

The problem is that authority lies with the values which lie behind our substantive choices, and that to explain authority in terms of these substantive choices is really to deny that authority is a value concept. This is not to say that all procedures are value oriented, many are substantively oriented, but that it is a mistake to explain value oriented procedures exclusively in terms of the substantive gains they might produce.

54 It appears then that there are fair grounds for rejecting both "market" interpretations of the authority relationship, first of all because defining the limits within which the entrepreneur can issue his directions raises the very problem of definition that this type of contract was meant to overcome, and secondly, because the market type of explanation for the origin of the authority relationship empties it of its value orientation.

55 The Authority Relationship has its Basis in Social Values. That authority belongs to the realm of social values neither entails that it cannot be used to reinforce relationships within the firm, nor that it be universally shared. Moreover, it does not imply that the entrepreneur or even the workers he employs are being "irrational". What we have with the incompletely defined transaction subject to authority is the solving of an economic problem through the use of the collective working rules of society (which includes the regulatory function of social values).

56 Unlike the case of supervision and monitoring, that of authority knows no equivalent to the "peer group" structure. Embedded in the concept of authority is that of hierarchy, and it is to this that we now turn. The informational advantages of hierarchical structure may explain why authoritarian hierarchy has adapted fairly easily to use in economic institutions, but they are not central to all types of authority.

B THE NATURE OF THE AUTHORITY STRUCTURE AND ITS LINKS WITH HIERARCHY

57 Authority rests on a belief in its legitimacy which applies to the commands issued from a position endowed with authority.

58 The belief upon which such legitimacy is based is held by those in a position of subordination. Like beauty, it exists, so to speak, in the eye of the beholder. In this respect authority is different from power which can be imposed unilaterally from above.

59 Authority is a structural phenomenon because it involves at least two roles, those of subordinate and of superordinate. As such it cannot be a personal attribute like intelligence or training. A person is endowed with authority by his position in this structure.

60 An authority structure is an ideological phenomenon by virtue of the fact that it rests upon beliefs, and the ideology applies to the whole structure. The distinctions of material reward and quality of treatment (in the material sense) although not without importance, are secondary in relation to this. What hierarchical structure adds is the ordering of the "social space" on which the different members of the authority structure are placed. The social space on which the members are set is created by the ideology underlying a particular form of authority, and is defined in terms of this. Social interaction between the members takes place on this space. Physical space may support such social

space, but it is no more the essence of this than the managing director's room on the top floor is the essence of his position in the firm. Through the way hierarchical structure orders the members on this social space it helps to support the authority. It does this by structuring the interaction between members by means of certain rules restricting contact. The restriction of contact helps to maintain the differentiation of roles within the structure.

61 The specialisation maintained by this differentiation helps to protect the beliefs on which the authority is based by shielding them from the kind of empirical experience that might falsify and lead to the loss of faith in these beliefs. Appearances are more easily preserved when knowledge of a failure is incomplete and somewhat dispersed.

62 The hierarchy of authority shows itself to be a very different creature from the communicational hierarchy looked at in the previous section. Whereas the communicational hierarchy appeared in a context of monitoring, reallocation, and of renegotiation, the authority hierarchy permits a degree of flexibility in the labour contract by grafting a part of the social value system onto a transaction whose terms are not completely defined. As we shall see later, in the final section, its implications for industrial democracy policy are rather different. Before pressing on to look at the "power" hierarchy, it will perhaps be useful to look at the types of authority hierarchy that might be of relevance. Consideration of these will only be fairly sketchy as it is hoped to deal with these more fully in another paper on worker orientations and industrial democracy.

63 Different Types of Authority Structure and the Values on which they are Based. There are many possible ways of distinguishing different types of authority but the one most consistent with the approach adopted so far is that of setting out from the type of belief on which authority rests. Max Weber (1921) outlined three such types of belief: a 'rational' belief in the legality of the commands given; a belief in the legitimacy of the commands based on immemorial tradition; and finally, belief in the exceptional characteristics of the person giving the command. These three types of belief give rise to "rational-legal" authority, "traditional" authority, and to "charismatic" authority.

64 "Rational-legal" grounds come closest to the economist's market explanation for the emergence of a new social institution. They are based on calculations of material advantage, but apply to the acceptance of a particular order or a whole system of roles, rather than to each command taken individually. Weber associated this kind of authority with a hierarchically organised bureaucracy in which bureaucracy represented a rational form of the division of organisational labour, while hierarchical structure represented an efficient way of co-ordinating this. Some of the drawbacks of this kind of authority structure have already been dealt with. The Reader will remember the difficulties posed for the informational theories by the problem of finding a language in which the information could be communicated. He will also remember our objection to the market explanation of the institution of authority, that it was a value phenomenon, and as such lay behind substantive choices. Weber himself remarked that authority based entirely on rational legal grounds may not be that stable as the continued acceptance of the social institution required a continuing convergence of the interests of the different parties participating in it.

65 As one would expect, obedience to authority for reasons of "immemorial tradition" is not accompanied by a very precise demarcation of functions nor is it associated with the application of the universalistic criteria in matters of selection and of functioning that were to be found in the "rational legal" form with its hierarchical bureaucracy. The kind of relationship that prevails is "diffuse" that is there is no rigid separation between the post and the person filling it, personal or kinship oriented favours are common, and precise quantification of interpersonal exchange is absent.

66 The third type of belief we wanted to look at very briefly was that in the exceptional characteristics of a leader. Weber defined "charisma" as "a certain quality of an individual personality by virtue of which he is set apart from ordinary men, and treated as endowed with supernatural, superhuman, or at least specifically exceptional powers or qualities". What is important is not the objective existence of such qualities, but how the person is actually seen by those subject to his authority.

67 If we return briefly to the role of the entrepreneur as described by Marshall, or by Knight, and reflect on Knight's categorisation of types of probability situation we can see that the entrepreneurial function is to some extent a charismatic function. The entrepreneur, it will be remembered was

working in the area of uncertainty that was more it resistant to rational analysis. Indeed, Knight's contrast between the salaried manager and the entrepreneur is quite relevant. The difference lay in the fact that the functions of the manager had been defined before he was given the job. (Of course, they will only have been defined to the extent that the employment contract predefines duties and not totally defined). The entrepreneur, on the other hand, has just this task of definition, his own tasks being quite undefined beyond that of analysis and commitment of resources.

68 The fact that "charisma" is not an objective quality but one that is attributed by followers places it on the borders of rational action, in the same way that the entrepreneurial function is on the borders of rationalised probability and non rational "estimates". There seems then to be some reason, at least, for thinking that the entrepreneur might exercise a form of charismatic authority. They are in the situation in which success justifies itself. If something is successful it requires no further explanation. Failure is as damaging to this kind of authority as success is self-reinforcing.

69 However, the number of truly charismatic leaders in the history of industrial development is not very great. Everyone can point to men, the power of whose character bore them to success, men like Henry Ford, or Brunel, Krupp, or Rockefeller, and perhaps even men like Slater of Slater-Walker before his fall. These men were nevertheless a minority, and charismatic authority would not be of great importance were it not for the ways it is, as Weber put it, "routinised", that is the way it was transformed into a stable and viable form of organised authority. Much of Weber's own analysis was historical, and so was inevitably concerned more with the way in which charismatic political or religious leaders gave birth to lasting forms of political organisation, but the relevance of his analysis extends beyond this. He focused on the way in which the "problem of succession" was faced, and how the "mantle of authority" was passed to followers many of whom could not claim to have brought about the initial successes that led to the first leader's being attributed with charismatic qualities. The creation of a hierarchical organisation is one way in which this can be achieved as it does restrict contact between levels, it differentiates members, and does, as was suggested earlier have the effect of concealing a certain amount of lack of success, which might if widely recognised disabuse those in positions of subordination to the "successors".

70 Conclusion. Enough has been said in the context of this paper to give an idea of the way "authority" differs from "monitoring-co-ordinating". The incompletely determined contract which is complemented by an authoritarian co-ordination, then, involves the entry into a network of authority relationships. This can only work in so far as the authority is recognised as legitimate by those entering into it. However, as authority relationships pervade the whole of our society, it would be wrong to think of the individual worker as choosing ab initio whether or not to recognise the authority exercised by his employing organisation each time he changes job. Indeed, it is the general social training in the recognition of authority that Fox (1971) referred to that makes its inclusion in the spirit of the labour contract a viable means of introducing flexibility into this kind of transaction.

C INCOMPLETELY DETERMINED CONTRACTS AND THE POWER HIERARCHY

71 The third form of transactional arrangements we wanted to discuss was that in which flexibility was maintained by means of the incomplete determination of the terms of the transaction supported by a power relationship. Whereas obedience was forthcoming in the authority relationship because the command was regarded as "legitimate" (provided it fell within certain limits) obedience is forthcoming in the power relationship because one party is able to force the other to comply. This is neither to say that force is used on every occasion, nor that such power does not obtain obedience only within certain limits. Because we are dealing with the use of power as a means of gaining compliance for the organisation of production for economic ends it is fairly safe to say that the main constraint on the use of power will be its cost compared with the benefits supposed to accrue to its use.

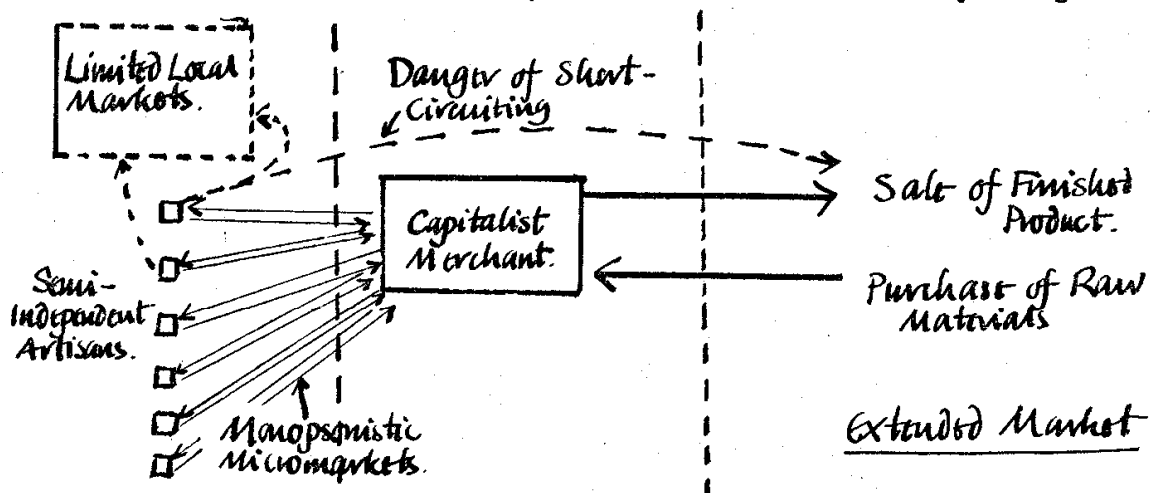
72 In the following section we shall begin by looking at the way in which the use of power relations in the firm might serve as a substitute for a set of market transactions as described in a study of the transition from the artisan based "putting-out system" to the factory system of production. We shall then come on to some of the implications of the power hypothesis in terms of the formalisation of work place relations, and in terms of the development of bargaining as a means of obtaining flexibility.

73 Power Relationships and the Emergence of the Firm. Before looking at Marglin's historical case study it is necessary to establish its relevance given that the approach of both Alchian and Demsetz, and that of Coase was of a purely theoretical nature. Their question concerned the conditions under which an

institution like the firm should "emerge" from a competitive market, and they all focus on the transactional difficulties that might lead to "market failure" and the way in which certain institutions might overcome these. Marglin (1973) as we shall see focuses on the historical emergence of one of the key features associated with the firm, that is the factory based organisation of production. Marglin is also interested in transactional difficulties and the gains which were offered to the entrepreneurs. In this respect Marglin's account is much more than an interesting anecdote. It openly challenges the neglect of questions of power and control as determinants of work organisation of which most economists are guilty.

74 Marglin's (1973) study of "the origins and functions of hierarchy in capitalist production" was based on an historical analysis of the passage from the "putting out system" of weaving with its set of market transactions between merchant and artisan, to the factory system of production with its substitution of the contract of employment for previous set of market arrangements. We can best understand the nature of Marglin's argument by looking at the weaknesses from the capitalist merchant's point of view and seeing how the factory system was meant to put this right.

The weakness of the putting out system can best be illustrated by a diagram.



Under these arrangements the merchant usually mediated between the extended market and the artisan, providing the artisan, who may or may not have owned his loom, with his raw materials and agreeing to buy his entire output which he would then sell at his own risk, keeping any profit. As can be seen, the situation was not particularly advantageous to the artisan who dealt with the merchant on a monopsonistic micro-market (the merchant being the buyer). In addition, the merchant had a virtual monopoly of information on the extended product market, the artisan at best knowing the much more limited market for which he might do work "on the side".

75 The situation was not however ideal for the merchant as there were weaknesses in the transactional system. The merchant did not supervise the artisan weavers directly and as a result he had little control over theft of materials for work done on the side, and he could not prevent a certain amount of short-circuiting of his mediating position between the artisan and his market.

76 Marglin argues that the essential change with the shift to factory organisational was not technological - it can be argued that the creation of a viable form of factory organisation was a precondition for the subsequent technological developments - and that the factory represented the first step in a process of removing control over the process of production from the workers and transferring it to their employers. This transfer of control remedied a number of the defects of the previous system. Much of the possibility of theft of materials no doubt stemmed from the artisan's need to put his raw material into condition for weaving, and to sort out the waste material. If three pounds of cotton raw material produce usually between two and a third and two and two thirds pounds weight of finished product then scope for "pilfering" for work on the side is considerable, and potentially a serious inroad into the merchant's profit margin. The centralisation of work into the factory under centralised supervision could control losses of this nature. Grouping into a factory also gave the employer some control over the rate at which work was done.

77 Throughout the first part of the nineteenth century one of the big complaints employers had, even with the improved supervision of the factory was that workers would earn as much as they felt they needed and then pack up. Under the "putting out" system the only control the merchant had over the rate of working was through the price he paid for the finished articles, and only by lowering the price could he force the artisans to increase output. Other devices might be used, but insofar as these required a positive effort of enforcement, they were probably less efficient from the putter-outer's point of view than direct factory supervision.

78 In Marglin's model the relationship running through the hierarchical structure of the firm is one of power rather than authority, or of monitoring. Exaggerating slightly, one might say that whereas the authority hierarchy required acceptance of commands by subordinates, in the power hierarchy the subordinate needs the approval of his superior for the continuance of the relationship.⁸

79 Looking over Marglin's argument it can be seen that both of the chief factors he mentioned as being important in the employer's gaining control over the process of production itself, that of reduced theft and that of increased control of the level of production are relevant to the earlier analysis of the role of the entrepreneur. The first factor increases the entrepreneur's control over costs, and the second, his control over the rate of production.

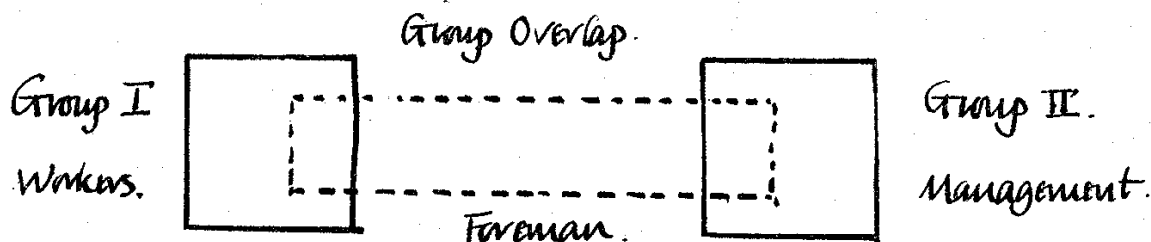
80 Power as the Basis of Procedure and the Internal Structure of the Firm. Hierarchy works in three main ways in this hypothesis. First of all it has some of the communicational advantages dealt with earlier. Secondly, it can be said, and this is an important part of Marglin's argument, to reinforce the position of the entrepreneur by dividing up, and structuring the work force. Thirdly it results in a system of control over resources that employees need, and whose with-holding can serve as a sanction or an incentive.

81 This aspect of power is of very great importance in the context of relations within the firm, because the direct use of force is very costly and likely to be very inefficient as a means of organising production. The problem is that the sort of structure which allows the use of "threat" as a form of currency needs to be created. It must be such that actual sanctions can be used in isolated individual cases where they are at their most effective. The power advantage of the agency is at its greatest, and the possibility of combined opposition is at its lowest. Marglin's argument about the function of hierarchy within the firm is of this nature. It might well be called the "divide and rule" hierarchy. Continuing our analogy, we can see that the firm might dispose of a certain capacity to apply sanctions (let us say to inflict costs on individuals that can outweigh the advantages they might obtain by refusing to obey which may take the form of fines, deprivation of overtime or bonus work, or dismissal) and that it can entitle certain members to use its "threat" as the form of currency they need to obtain compliance. Thus, the foreman might be allowed limited use of the threat of certain sanctions with the right to "cash" this threat from time to time and obtain the dismissal of an employee or his exclusion from promotion or something like that.

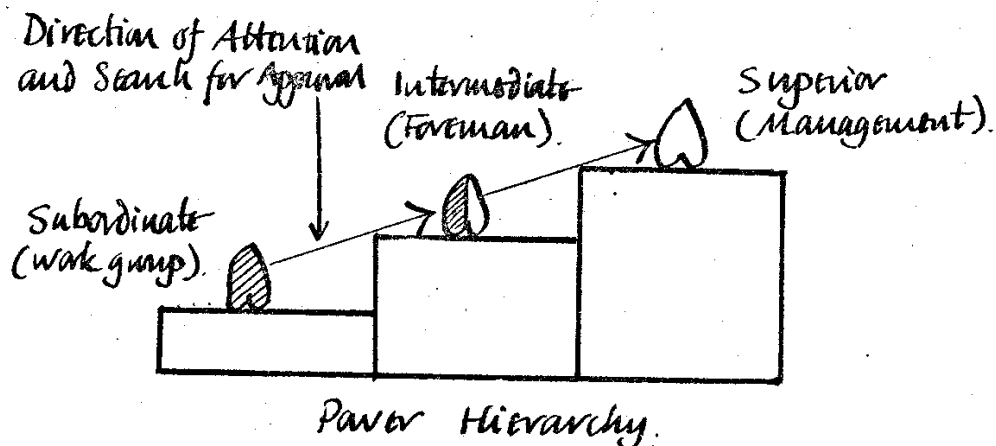
82 The hierarchical structure is quite well suited to such an arrangement as it has a large number of isolated end-points and these are separated to some extent from each other by their links to the level above. Not only are there divisions of this kind within each level, but there are also distinctions of level which further divide up the workforce and tend to isolate pockets of

potential opposition, thus maintaining the overall power advantage of the central point, and minimising the cost of using this power at any moment. It is probably only under such conditions that power can provide a stable basis for the organisation of production. This seems even more true when we consider the use of a power relationship as an alternative to the use of open market exchange.

83 The third way in which a power hierarchy can work, though related, is really separate from this. Control of incentives and sanctions still applies, but the structure within which the currency of "threat" would work is less favourable to this. Gouldner (1955) in his study of social and industrial relations in a gypsum plant, began to sketch out a theory of intergroup relations within the plant in which the cohesion of these groups was maintained by the need of individual members for a minimum level of approval from the group. Work groups, for example, can apply sanctions to members of whose actions or attitudes they do not approve which range from minor "comments" to the hiding of tools or "sending to Coventry". Gouldner's point is that many employees are members of two or more groups and are thus subject to pressures from these to conform to what may be contradictory norms. In the case of foremen, he represents the situation as follows:-



The "power" of the "power hierarchy" intervenes at these points of overlapping conflicting norms, and the essence of a "power hierarchy" lies in the ability of the superordinate group to enforce its norms on the employees who are members of both groups, and thus to oblige such employees to communicate the norms of the superordinate group to the subordinate one. Gouldner simplifies by taking the two groups of workers and management. The sanctions the workers can take will be dealt with later. The sanctions management can use to enforce its norms of course relate to questions of pay, promotion, preferment, dismissal, and so on. The successful working of these sanctions leads to an orientation of attention seeking approval that is directed upwards towards management. Gouldner illustrates with the following diagram:-



84 The Structure of the Firm and "Defensive Formalisation". Following from the earlier argument about the role of the entrepreneur as being that of analysing probability situations out of pure uncertainty ones, and his consequent need for increasing flexibility as he approaches purer uncertainty, it can be seen that the entrepreneur will not want any degree of formalisation of relations in the power hierarchy that might limit his capacity to respond to changed market conditions. It is when we come to the corollary of the power relationship, that is the existence of a degree of conflict of interests, and the possibility that one side will seek to secure its interests at the expense of those of the other, that the formalisation of relations within the hierarchy becomes an issue. A degree of "formalisation" or of "bureaucratisation" as some writers have called it can be understood in terms of its informational advantages - rules save repeating commands, and provide criteria by which the effectiveness of supervision can be judged, they can economise on direct supervision, and set out minimum levels of performance required and so on. However, the source of formalisation that is of greatest interest in the context of the power hierarchy is that of what might be called "defensive formalisation". Defensive formalisation as we shall argue is directly related to the power question, and unlike the other sources of formalisation, the source of this one is a desire to restrict the area of flexibility of the other side. The two writers who have contributed most to this field are Gouldner (1954) and Crozier (1963). The basis of the argument will be that the side whose plans face the greatest uncertainty in general is least well placed to take particular risks, and of special importance among these are the risks of confrontation*. Formalisation of procedures is a particularly effective way of reducing the opponents room for manoeuvre and of increasing the probability that he will behave in a certain way, thus reducing the number of uncertain variables the

* This is developed in Appendix 1.

first side is facing. As the formalisation of procedures applies to both sides, and thus restricts both sides, it can be seen that the side with the least to lose from this, will be the one that has least room for manoeuvre. Thus it is to be expected that the weaker side will attempt to make most use of the device of "defensive formalisation". As will be seen this form of action can be used by either management or workers.

85 One of the sources of weakness in this context is the inability to produce a graduated response. The closer one is to having to give an all or nothing response the greater the risk involved in confrontation and consequently the less likely one party is to make an issue of small grievances. Preisner (1952) has taken this argument a long way and argued that the relative power of employers and workers should be analysed in terms of this. Workers are weak he argues because they have an all or nothing response to management. They can strike collectively, or quit individually, but they cannot put pressure on the employer in a less absolute way. The consequence is that they must either fight by withdrawing their labour and then "sitting it out", or they must continue working. The employer, on the other hand, has a much greater flexibility of response given to him by the possibility of varying the levels of stocks, and by his overall control over the production process. The inability to respond to employer initiatives except on such a basis puts the worker in the situation of a known risk avoider as conflict greatly increases the uncertainty element in his plans. The nearer he comes to the "all or nothing" situation the greater the stakes if he opts for conflict, and so the more he is forced to avoid risk.

86 The "prisoner's dilemma model", which is developed in the appendix, illustrates the widely recognised weakness of the position of the known "risk avoider". Because one party knows that the other is not in a position to take the risk of pursuing an aggressive strategy, the other knows he can get away all the more easily with aggressive or "exploitative" behaviour. The consequence of this would seem to be that the workers who need to minimise the uncertainty they face (because of the employer's flexibility of response) will try to improve the range of their responses, and at the same time to limit those of their employer. The creation of formal procedures is one way in which this can be achieved. In this way they can gradually lever themselves out of the situation in which allowing themselves to be "exploited" in the short run may be less expensive for them than defending themselves.

87 An Example. The best example Gouldner (1954) gives of formalisation from below as a form of defence is that of the "bidding rule" which covered internal recruitment and promotion within the gypsum plant he studied. Basically, the rule applied to the way in which management should fill vacancies that occurred, and consisted of a procedure outlining who within the works had first refusal. Only once this procedure had been exhausted could the vacancy be advertised externally. The workers' system of priorities applied first within the workshop concerned on the basis of seniority, and then within the whole works on the same principle. This rule, which was vigorously defended by the union, affected managerial freedom of manoeuvre in a number of ways. It restricted a form of management patronage by substituting for management evaluated "ability" the criteria of which are hard to judge in an objective way the principle of seniority whose recognition is much less open to dispute. "Ability" was defined according to management norms, which as suggested earlier may not be the same as those of the workers in the case of the power model. Management could use this either to promote technical ability, or as a form of reward for loyalty to management. The latter of these was especially relevant in non-promotion cases, as transfer to easier or better paid jobs do not necessarily require a higher level of ability.

88 Uncertainty for the workers is decreased in a number of ways. The seniority principle is an easy "objective" standard the workers themselves can apply, and it is predictable in its application over a long period of time. No "bright young man" is likely to jump the queue over those working their way up. Because of the ease with which it can be recognised it cannot lead to workers competing with each other for management favour in order to obtain the post. The uncertainty of rivalry is thus eliminated. Finally, the seniority principle prevents management from using refusal of transfer or of promotion to workers who "stand up for their rights", and thus allows workers to express their grievances more freely.

89 Crozier (1963) gives a number of other examples of formalisation of procedures stemming from pressure from below.

90 Bargaining and the Incompletely Defined Transaction. To some extent the formalisation of procedures from below is a form of procedural bargaining. This might be contrasted to the other aspect of the incompletely defined transaction which is completed by a power relationship, that is the one in which definition is completed by a process of bargaining. Williamson (1975) has argued that the "idiosyncratic" nature of the labour supply transaction which is due to the great number of features that are specific to any particular job, means that

the labour contract is formed and defined under a form of bilateral monopoly in which the basic parties are the work group and the employer. The source of power on which this hypothesis of bilateral monopoly is based is again that of the uneven distribution of information. Much work is open to the advantages of learning by doing, and as a result "on the job training" is an important way in which the appropriate skills are required. Such learning is rarely the result of one individual working out on his own better ways of doing his job. It is much more commonly learning on the job alongside other workers who have gradually discovered the important short cuts which make for efficient work. The knowledge passed on in this way, it was argued earlier, was the property of the work group in two ways. First, the training of new workers had to be undertaken with the agreement of the work group, and secondly, because the various "tricks of the trade" were learned by imitation, there existed no language in which this knowledge could be stored apart from the work group, and which management could control.

91 Because of the work group's control over this information it could withhold a vital resource from management, and management could not replace the individual members of the group overnight as it could not replace their knowledge overnight. Under such circumstances the entrepreneur can retain some flexibility at the expense of accepting bargaining as the method for adapting to changing circumstances. Under completely unilateral management control such changes could be effected without compensating the workers. With the bargaining model the entrepreneur has to bargain an acceptable price for change. A good example of this is the working of the "mutuality principle" in the British engineering industry, according to which management can introduce the change it wants in work allocation, but it has to negotiate the rates of pay with the worker, or work group affected.

D CONCLUSION

92 This concludes the third part of our analysis of the forms of transactional arrangements available for meeting the peculiar requirements of the labour contract and its peculiar relation to the position of the entrepreneur. The next question to be faced concerns the relationship between them. To some extent they have been developed as if they were rival hypotheses, but each appears to be based on too solid a part of reality for any one to be rejected totally in favour of another. If each contains its part of truth they are not of such nature that the "truth" is simply the sum of its different aspects. It is

just not possible to "add" a hierarchy of authority to a power hierarchy as the two kinds are to a considerable extent exclusive one of another. The same is true of the reasoning behind the supervisory hierarchy. A full treatment of the question would require at least another paper. It is therefore necessary to improvise to some extent if a basis for the drawing of some limited policy conclusions is to be established.

PART THREE. THE RELATIONSHIP BETWEEN THE THREE TYPES OF TRANSACTION
PROCEDURE AND SOME POLICY IMPLICATIONS

A THREE PROCEDURES

93 Before exploring further the relationship between each of these types of procedure an additional word needs to be said about their nature. A certain consistency between the procedures used to complete the definition of the substantive content of the labour contract can be drawn out of the previous section. For the sake of brevity we shall present them in tabular form.

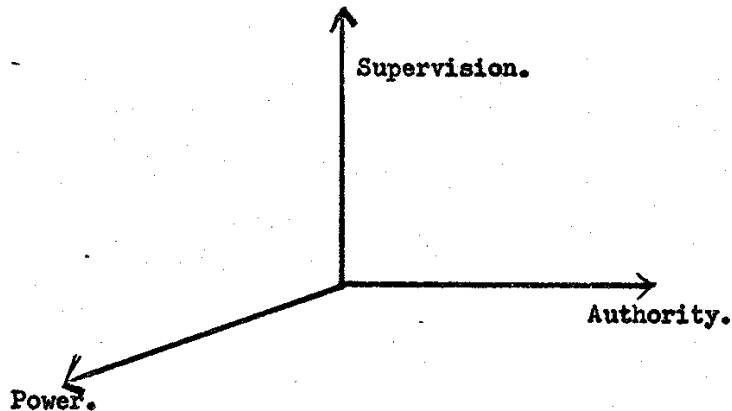
<u>PROCEDURE</u>	<u>BASIS</u>	<u>SANCTIONS</u>	<u>HIERARCHY</u>	<u>CONFLICT</u>
Supervisory	Market. Free Consent.	Market type sanctions.	Informational	
Authority	Belief in legitimacy	"punishment"	Social Space & Distance.	Normative.
Power	Recognition of superior power, compliance.	"Retaliation".	"divide & rule" group pressures.	Bargain, & counter organisation

94 The distinctness of these types of procedure extends through a number of key aspects of the way in which they work: the basic beliefs and attitudes on which they rest, the kind of sanction available, the type of hierarchy, and the kind of conflict or form of opposition engendered. All this points to an important characteristic of these types, and that is that their internal consistency is really the internal coherence of what might be called a "meaning system". In other words, they function a little like three separate languages which are "read" and understood by the actors who orient their behaviour within the firm. In fact, this linguistic analogy has been present in our argument from the moment we introduced the problem of the definition of the substantive terms and the procedures regulating individual transactions.

95 Just as a language has certain rules of grammar which must not be infringed if meaning is to be conveyed clearly, so these types of "meaning system" need to maintain their own internal coherence if they are to give rise to coherent

overall patterns of interaction or behaviour within the firm. This tends to make the types of procedure mutually exclusive, which is something that would, on first sight, appear to run against experience as each type of procedure and hierarchy though containing important elements of truth, appears to give an inadequate account on its own.

96 The most obvious way of relating these apparently coexisting but mutually exclusive types is to treat them as three dimensions of a possible reality. We might represent each type by an axis in three dimensional space.



If something has to be quantified on the axes, it might be the degree of development of the type in question. The pure types are described by the axes, but in actual fact pure types will be extremely rare. It is more likely that in any given organisation one type will be dominant in the sense that where conflict between the types emerges, one type will always override the others. This type will be called the dominant type. In terms of the three dimensional representation, organisations with a dominant type will be found in clusters around each axis. The existence of such dominance, or "overdetermination" as we shall call it, means that there will be few organisations situated outside the main clusters around the axes. The problem then from the point of view of those seeking to effect change is to identify the type of hierarchy being dealt with, and the type of transactional base on which it is built, and to see what kind of industrial democratic change is appropriate to which kind of hierarchy. We then hope to look at some of the kinds of unintended consequences that might flow from attempts to change each type.

This is not the place to deal with in depth with the question of the empirical identification of the type of transactional and hierarchial structure to be found in different organisations. We, however, possess a criterion for the recognition of the dominant type, and that is the way it overrides the other two types in cases in which they enter into conflict. For example, in a situation in which both authority and power relationships appear, if bargaining were rigorously restricted to substantive issues in dealings with the foreman and was rigorously excluded by both/all sides procedural issues concerning the exercise of authority within its prescribed limits it is clear that the authority hierarchy is dominant. If, on the other hand, the scope of the foreman's jurisdiction were the subject of workshop bargaining, then it is clear that it is the power based hierarchy that is dominant. Similarly, the supervisory hierarchy is dominant if the supervisor is restricted to the application of the kind of sanction to be found on the open market - able to renew or terminate the contract, and bargain over rates, but not to fine or more generally to punish in the strict sense of the word - and if there is no basis for bilateral monopoly stemming from the importance of learning by doing, or if there is no basis for one-sided employer power.

B POLICIES OF CHANGE AND DOMINANT TYPES OF PROCEDURE

98 There are certain kinds of measure appropriate to the "democratisation" of relationships according to which type is dominant. The kind of change that would be associated with the hierarchy in which the supervisory, or monitoring type is dominant would affect the nature of the supervision. A good example of the kind of change appropriate in this case would be the introduction of self-supervising peer groups in the place of hierarchically structured groups with a foreman. Such appears to be the main thrust of the movement towards autonomous work groups in which teams of men work together on the construction of a whole object, like a car, with only a minimum of supervision from above, instead of working individually on small parts of the whole under ^{the} supervision of quality controlled piece work, or of the assembly line. The relative effectiveness of peer group supervision as compared with specialised supervision has already been dealt with.

99 The kind of change appropriate to organisations in which the authority hierarchy is the dominant form bears on the bases of the legitimacy of the form of authority present. It seeks a change in the bases of consent. Examples of this kind of change (regardless of whether or not they followed correct diagnosis) can be found in the J Lewis Partnership and in the Glacier Metal experiments. In both of these cases there has been an attempt to change

the basis on which employees consented to the authority of their superiors through the setting up of representative structures within the company.⁹

100 In both cases there was a desire on the part of management to move from a system of absolutist to one of constitutional management. In the Lewis Partnership the shift appears to have been towards authority based on a belief in goals shared by management and workers as if they were all partners. In Glacier, too, the central preoccupation of management seems to have been the basing of consent to the orders given by management on a belief in shared objectives. These objectives are of a material nature in the form of increased welfare for all concerned, and the basis for authority is close, in theory, to the "rational legal" grounds we referred to earlier on.

101 The kind of change appropriate to a situation in which it is the power hierarchy that is dominant can be found in the history of German "codetermination". This, it should be stressed, is not to say that the power hierarchy is the dominant type all through the Federal Republic, but simply to stress the power implications of the institutional arrangements there. Later in this paper we shall see some of the possible consequences of introducing measures appropriate to a power hierarchy in a situation in which the authority hierarchy is dominant. As the Reader will be able to guess from our reflections on "defensive formalisation" one of the most important institutional changes that can alter the balance of power is the restriction of the area for manoeuvre of the other side. In this respect, the presence of worker and union representatives on the supervisory board and the limitation of management's area of unilateral control by codecision rights constitute measures which would lighten the weight of the power hierarchy, and increase the need to win agreement through bargaining and the making of concessions. Limiting the employer's field of manoeuvre in this way and increasing the need to bargain for co-operation decreases the relative ease with which the employer can pursue an "exploitative" strategy, and the likelihood that the workers will have to adopt a "co-operative" one.

C POSSIBLE CONSEQUENCES OF MIXING POLICIES AND TYPES

102 We now pass to a brief analysis of the possible consequences of wrong diagnosis.

103 If we follow the argument of Alchian & Demsetz, the main consequences of applying measures designed for "industrial democracy" in situations in which authority or power is dominant in a situation in which it is the supervisory hierarchy which overdetermines the others will bear on the

the efficiency of the monitoring. In arguing that the single entrepreneur as "residual claimant" constituted the most efficient form of organisation Alchian & Demsetz did consider the possibility of various other kinds of arrangement. The Reader will remember that their central problem was that of monitoring the performance of the monitor as the concentration of information in his hands meant that no one else could do this job effectively. The kind of representative organisation considered in the case of the John Lewis Partnership or of Glacier Metal would not be adequate for this as responsibility for monitoring is too diffusely spread in two senses. In the first, Alchian & Demsetz argue that the more responsibility is concentrated the more efficiently it can be controlled, and the more concentrated the residual that is profit is, the more effective it is in motivating.

104 We now consider the case in which it is the authority hierarchy that is dominant and in which measures appropriate for the supervisory and the power hierarchies are taken. Earlier we suggested that the creation of autonomous work groups was one way in which a supervisory hierarchy might be loosened. The difficulty with such a measure if applied in a context overdetermined by a hierarchy of authority is that two different procedures for completing the definition of the labour supply transaction are made to work side by side. The whole idea of the autonomous work group is that intervention by an external organiser is limited, and the whole idea of the authority hierarchy is that co-ordination takes place through the issuing of orders. The introduction of such measures in this context is likely to lead to conflict between these two principles.

105 The alternative wrong diagnosis results in the introduction of measures which restrict the exercise of power through the power hierarchy in a context in which the authority hierarchy is dominant. In this case the likely result is that the social distance created by the hierarchy will carry over into the power oriented institutions. This may be one factor behind the social distance separating German workers from the "codetermination" institutions. Most of the studies, for example, looked at by Dahrendorf (1965) revealed that many German workers felt that the Works Councils and the Supervisory Boards worked somewhere "up and there", and that they were distant from their main preoccupations. The dominance of the authority hierarchy means that the other institutions have to be structured in such a way that they can deal with the appropriate level of the hierarchy. If management is distant, and contact with it limited, then the workings of the supervisory board will also be distant.

106 The final case to be looked at is that in which the power hierarchy is dominant. In this context, measures like the introduction of autonomous work groups are likely to affect the power structure. The Reader will remember that in an earlier part of the discussion we referred to the role of "scientific management" and the fragmentation of work tasks in the breaking down of the power of the work force relative to management. Taylorism sought to take away control over work process from workers, and to break their control over information about the way work was done. The creation of autonomous work groups would seem to be a move in the opposite direction, albeit a limited one as management has a much larger role in the definition of the tasks than it did in pre-Taylorian days. The consequences of such a shift back in the balance of power will be considered when we come to the question of fluctuations in the size of the firm.

107 The last example to be considered is that in which measures designed to change an authority hierarchy are introduced in a power-dominant context. Fox (1974), commenting on Jaques' analysis of the problems encountered at Glacier Metal, and particularly on the latter's observation of a "break" at the bottom of the executive structure between the levels of foreman and worker, suggested that this was due to a fundamental conflict of values which the attempts to alter the basis of consent through the introduction of a "parliamentary system" had not really changed. In other words, attempts to alter the authority structure had been grafted onto a power structure that was dominant.

108 So far then, we have argued that the three types of transaction and of hierarchy within the firm represent three dimensions of a space of control. Each of the dimensions represents an aspect of social reality, but at the same time they are to some extent mutually exclusive. As a result it was argued that in cases in which they occur together one of the types will be dominant, or will "overdetermine" the others. Different types of industrial democratic reform are appropriate to each of the types of hierarchy. The last couple of pages have been devoted to a brief analysis of the kind of consequence that might be expected to follow from attempting to reform one kind of hierarchy in a situation in which another type is dominant. It remains to be argued that the tensions resulting from these together with changes which are disadvantageous to the entrepreneur may have a further effect upon the structure of the firm owing to their effect upon the relative cost of effecting transactions on the open market as opposed to bringing them under the auspices of the firm.

109 The Reader will remember our earlier discussion of the ideas of J R Commons (1934) concerning the importance of starting an analysis of institutional economics from the transaction, and of Coase's suggestion that the size of the firm might be defined theoretically by the number of transactions that might otherwise be effected on the open market that are gathered under the organising control of the entrepreneur. The Reader will also remember Coase's argument that the entrepreneur will increase the size of the firm to the point at which the costs of organising the marginal transaction within the firm are equal to those of carrying it out on the open market.

110 From this it is easy to see that effects on the cost of organising production resulting from either restricting the margin of manoeuvre of the entrepreneur, or from the tensions resulting from the mismatching of reforms and contexts may lead the entrepreneur to hive off some of the transactions grouped under the auspices of the firm and return to the open market. (In a very simplified case, returning to the cost diagram on page 15, we might see the problem in terms of a shift of the marginal savings curve to the right, representing a decline in the savings to be achieved by organising within the firm). In actual fact, the effect on costs is unlikely to be general, but to apply unevenly to different groups of transactions. The costs of employing white collar workers may not be increased as much as that of employing manual workers. In addition organisational change is often of a structural nature and as such is unlikely to allow smooth fluctuations in size. However, this does not go against the predicted underlying tendency.

HOW "REALISTIC" IS THE TRANSACTIONS APPROACH?

111 Finally, we might ask; is this realistic, or is it just an interesting prediction of theory, but of little practical importance? No definitive answer can be given but a recent piece of research undertaken by the Italian sociologist Paci (1973) on the labour market in Northern Italy suggests that the practical importance of these ideas may be quite broad. Paci's main concern was to look at the relationship between the employment strategies of the large capital intensive firms operating in European markets and the very small labour intensive, precariously based firms that worked side by side with them. Many writers on the industrial structure of modern Italy have taken the view that these firms belong to separate sectors, one advanced and the other backward.

Paci's main argument was that they were in fact interdependent, many of the small firms producing directly for the large capital intensive ones. One of the principle reasons Paci put forward to explain this was that the cost of employing labour was much lower in the small firms. Because of the precarious nature of their existence they were relatively free from trade union organisation which meant that they knew neither the "disadvantages" of collective bargaining, nor the "disadvantages" due to trade union vigilance over the enforcement of law on working conditions, health, and safety. They had the further advantage of getting through the net of social security legislation, and so on.

112 So much for the static advantages to the employers. The interesting part for the present argument is the fluctuations in the relative size of these two sectors, and the changing strategy of the Italian big employers. Essentially, what seems to have occurred is that in times of economic expansion the large capital intensive firms have preferred to avoid simply increasing the scale of their own operations to meet the increased demand, and to opt instead for contracting work out to the small peripheral firms or to individuals engaged in moonlighting or in home working. The small firms were used to a great extent during the years of the "economic miracle", although the depression of the mid-sixties severely reduced the numbers in this sector. In the up turn of the late sixties, Paci argues that this sector was no longer strong enough to meet the demands placed on it, and that this has led in part to the failure of Italian industry to repeat the "miracle", and in part to the search for new ways of reducing the cost of labour. To some extent new forms of contracting out have been found, and Paci's team is at present looking at domestic working, and ^{at other} ~~that~~ ways of reducing the cost of employing labour in the central sector have been sought. He argues that the strikes and industrial unrest of the "hot autumn" of 1969 were in large part a response to methods of reorganising and intensifying work.

113 To sum up, Paci argues that there are two main reasons why the large firms prefer to contract out a large amount of their work. One is that the small firms are not easily subject to government controls, and the other is that trade union organisation is weak in the "marginal sector". Both conclusions illustrate the importance of costs in determining the entrepreneur's decision

whether to employ or to contract out, and they both illustrate possible consequences of industrial democracy legislation which is not acceptable to employers, insofar as industrial democracy legislation is a special case of a government control, and of increased organisation of the work force.

PART FOUR

D OF THE ARGUMENT SUMMARY AND CONCLUSIONS

114 The aim of the paper is to outline the basis of an alternative approach to the economic and sociological analysis of the firm and its internal structure, and to examine the implications of this for policies directed at the promotion of industrial democracy.

115 The basic ideas underlying the approach adopted in this paper differ from most of the work done by economists on the theory of the firm and industrial democracy in that their focus is on the ORGANISATIONAL rather than the DISTRIBUTIONAL aspects of the question. Instead of taking organisation structure as being technologically determined (I) our chief concern is the factors affecting organisation structures and procedures. This has the distinct advantage over much of the work done to date of allowing us to look at changes resulting from quite modest policies like the introduction of supervisory boards or even of autonomous work groups rather than the very ambitious ones involving radical changes in the ownership of British industry such as might come about with the encouragement of worker cooperatives at the expense of capitalist firms.

116 This paper falls into three broad sections. The first deals with the nature of the firm and the reasons for its emergence. The second looks at different transactional procedures and the internal structure of the firm developing a threefold typology of procedures and hierarchial structures. The third looks at some of the policy implications that follow from this for the promotion of industrial democracy.

I The Nature of the Firm and the Reasons for its Emergence

117 We take the TRANSACTION as the basic unit of analysis because it has the virtue of being at once a unit of economic activity, an element in the legal process, and an object to which the "working rules of society" may apply.

118 Making the transaction our point of departure allows us to analyse the open market and the firm in the same terms; as alternative systems of transactions which may be used for organising production. Transactions may either be effected on the open market or within the firm, or by a mixture of

(I) For economists who use the "production function" as the basis of their analysis technological determinism takes the form of there being a given combination of capital and labour for a given rate of profit.

the two. The key factor in deciding which of the two, or which combination of the two, is going to be used is their cost. If the cost of using one or other system neither increases nor decreases with the number of transactions effected we would expect one of the two to be used exclusively at the expense of the other. On the other hand, if both, for example, experience increasing costs, and there is some point beyond which it is cheaper to rely on the other system for carrying out the remaining transactions, we would expect to find both systems in use. Moreover, we would expect changes in the relative costs to lead to shifts in the transition point dividing the areas covered by the two transactional systems in one direction or the other.

119 There are a number of hypotheses relating to the factors underlying the costs incurred by these two transactional systems. According to one group of authors the chief costs are those of "monitoring" the fulfilment of the terms of the transactions, or of seeing that "full-measure" is given. They argue that there are circumstances in which the open market is less efficient in this than direct supervision. For another author, the chief problem associated with reliance on the open market is that of discovering what the relevant prices are, and for yet another, the problem is one of maintaining sufficient levels of effort and of "workmanship" without a degree of coercion and of direct control of the system of production.

120 Adopting the "transactions approach" highlights a further factor which is central to economic activity: the DEFINITION of the scope and content of the transaction. This is so because it is through their grouping into categories which form a suitable basis for transactions that goods and services can enter into economic relationships. The transaction may be the elementary unit of economic interaction, but it is far from being a simple indivisible particle.

121 The requirements imposed on these categories by market exchange are twofold. First, they must be defined ex ante with sufficient precision to offer the basis for the quantification that is so important in market exchange as both parties have their accounting do so. Secondly, they must offer a basis for sufficiently stable expectations so that the probability of the correctness of the calculation can be worked out and an appropriate level of contingency planning made. In the first case, the task is that of decomposing the production project into categories which can serve as the basis for market transactions. In the second case, there is the requirement of defining categories in such a way that some measurable probability can be assigned to their execution. The question of probability need some elaboration.

122 Two types of probability situation are relevant in this context. The first is that of "statistical probability" in which a system for the classification of instances can be gained from empirical evaluation, and the probability calculated from the observation of the frequency of association between variables. The second is that of "pure uncertainty" in which there exists no valid basis for any kind of classification of instances, and which is not, as a result, susceptible to measurement. Both of these situations are always present in the market and the problem in defining the content of future transactions is that of abstracting the categories which serve to establish a situation of statistical probability out of a situation of "pure uncertainty". Traditionally, economic theory has assigned the role of mediation between these two probability situations to the "entrepreneur". In playing out this role the entrepreneur is required to take risks in committing resources to certain projects. He differs from the "insurer" whose role is that of distributing risks on the basis of the calculation of the probability of certain kinds of event.

123 As the categories which form the basis of market transactions are successively abstracted out of the initial project, the residual of "pure uncertainty" becomes harder to reduce. At the same time, the savings on production costs brought about by increased analysis and consequent improved organisation tend to decrease. The meeting of these two tendencies suggests that there will be some point beyond which there will be no advantage to be gained by grouping tasks so as to form the basis of further open market transactions. The greater influence of pure uncertainty situations will require the use of more flexible arrangements for effecting transactions.

124 Framing the problem of the emergence of the firm in terms of different ways of effecting transactions as a result of the problems involved in their definition allows us to pursue the analysis in terms of the use of different procedures. Economists have been able to treat market transactions as if they bore exclusively on substantive issues. It is true that the importance of quantification does lead to a primary focus on substantive questions, but this should not disguise the fact that the market contains its own set of procedures which include the ex ante definition of the terms of transactions, the possibility of the non-renewal of contracts and the changing of the content of subsequent transactions under the threat of going elsewhere.

125 The chief difference between transactions effected on the open market and those effected within the firm is that the latter are incompletely defined ex ante insofar as they deal with substantive issues. On the other hand, the incompleteness on the substantive side is made up for by the inclusion of terms relating to the procedure to be followed in order to complete the definition at the necessary time. The use of such procedures allows the maintenance of a margin of flexibility that is necessary in order to meet the changing requirements of market conditions, and dissolves the need for complete ex ante definition of the terms of the transaction. This is the area par excellence of the labour contract.

II The Transactional Procedures, and the Internal Structure of the Firm.

126 In this section of the paper we look at three main ways of solving the problem of defining the content of transactions for which it is not economical to use the open market. The three procedures used concern the continuous negotiations of "sequential spot transactions", reliance upon partial definition supported by an authority relationship, and partial definition supported by power relationships.

127 The first might be described as "a continuing implied renewal of contracts at every minute and hour, based on what is deemed, on the employers' side to be satisfactory service, and, on the labourer's side what is deemed to be satisfactory conditions and compensation".

128 In the second, the procedure is one "whereby the factor, for a certain remuneration agrees to obey the directions of the entrepreneur within certain limits...". It is argued that the authority relationship does not owe its existence to the market but that it exists independently being "grafted" onto a basically economic relationship.

129 Power is the factor underlying the third kind of procedure. It is important to distinguish this from authority. Authority depends upon consent from below and has to be believed to be legitimate by those subordinate to it. Power, on the other hand, makes no such demands and one of the commonest criteria for the empirical identification of its presence is the ability of one party to get its way against the wishes of another. Put very simply, the terms of the transaction can be made fully explicit at any one moment by the capacity one party has to oblige the other to comply.

130 Each of the three types of procedure rests upon a particular set of sanctions. Those of the "sequential spot transaction" come closest to those of the open market. They rest on the capacity of either side to refuse to renew the contract, and on the possibility of breaking off the obligations entered into if one side does not fulfil its part of the transaction.

Alchan & Demsetz (1972) maintain that the employment relationship is in no fundamental way different from my relationship with my grocer. I can order him to supply me with this brand or that brand of peas or butter, and if I find the service unsatisfactory I can always refuse to return with my custom.

131 In the case of the authority relationship, the relevant sanction is "punishment". In contrast, the sanction relevant to the power relationship is that of "retaliation". While the substantive content of the sanction may be identical, for example the loss of the first half-hour's pay for poor time keeping, the conditions surrounding it are vitally different as is the likely behaviour following it. In the first case, where the commands supported by authority are regarded as legitimate, the requirement of good time-keeping is likewise regarded as legitimate. Poor time-keeping is felt to be a fault for which punishment is justified. In the second case, commands backed up by power are obeyed because the other party is in a position to inflict a sanction which outweighs the advantage obtained from not obeying.

132 All three of these types of procedure give rise to relationships that are structured hierarchically, although the type of relationship running through each hierarchy means that the kind of behaviour running between each of the levels is different.

133 The sequential spot transaction gives rise to a hierarchy of "supervision" or "monitoring". Unlike the hierarchies associated with the other two procedures, this one knows only flows of information concerning the tasks to be accomplished, or details of the transactions to be completed. The chief reason for the hierarchical structure in this instance is its efficiency in the transmission of information. The co-ordination of small groups does not impose very exacting requirements on an information structure. It is, however, easy to illustrate the large number of information channels required for complete co-ordination if there is no specialisation, and the way this can be reduced by centralisation. In a simple structure consisting of five members free communication between all requires the existence of ten information channels. Against this, a simple "wheel" structure with one central member who "sorts" and retransmits information, only four such channels are needed.

More generally, the hierarchical structure emerges as the most economical if the relative cost of setting up channels as opposed to the simple emission of messages is such that the number of channels must first be minimised. Continuing along these lines it can then be shown that for a given number of channels, the centralised form of the hierarchical structure requires the emission of the smallest number of messages.

134 Some reservations concerning the informational efficiency of the centralised hierarchy structure need to be expressed owing to the problems of defining the categories to be used to transmit the messages. Where, for example, "on the job training" and "learning by doing" are important it is exceedingly difficult to develop a language in terms of which the tasks to be accomplished can be described.

135 In the context of the authority relationship the hierarchical structure serves a very different purpose. The informational advantages of the hierarchy structure may favour the use of a hierarchy of authority in firms but this is only a secondary factor. The central importance of hierarchy in the context of authority relationships stems from the way it creates and structures "social space" establishing the social distance between superior and subordinate. It is the importance of this "social distance" that explains why authority and hierarchy are so frequently to be found together. Authority belongs to the realm of social values and rests upon a belief in its legitimacy. Neither the value nor the belief belong to the realm of rational belief grounded in empirical observation. They belong rather to the realm of the non-rational. The social distance is maintained through the restriction of the types and the degree of interaction between the different levels of the hierarchy. Among other things this serves to protect the non-rational beliefs of those in subordinate positions from the kind of empirical experience that might falsify, or lead to loss of faith in these beliefs.

136 A number of different types of authority relationship are looked at according to the kind of belief on which it is based. These are a belief in the legitimacy of a particular authority relationship on grounds of "immemorial tradition", on grounds of the extraordinary qualities of the person exercising authority, or belief based on "rational legal" grounds. The kind of consensus on which the last is built probably comes as close as authority relationships can come to being democratic in that the consensus is to a greater extent based upon shared goals with subordination accepted as a means through which these might be achieved. A consensus based on

"immemorial tradition" comes the closest to a source of legitimacy that is "grafted" onto, the "immemorial tradition" being more likely to be associated with the social context of the firm than the actual firm itself. Authority accepted on the grounds of the exceptional qualities attributed to a leader by his followers is important because of the similarity between these qualities and those required of the entrepreneur who is, in the ideal case, the economic actor who mediates between the situations of calculable and incalculable uncertainty. The boundary between these two situations is also that between action based on rational calculation and that based on non-rational "hunch" or intuition. The interesting feature of this form of authority is the way in which it can be "routinised" and built into institutional structures. Neither of these last two forms of authority is based on anything remotely resembling democratic principles.

137 The third and last type of transactional procedure gives rise to a hierarchy based on power relationships. As with the authority hierarchy, informational efficiency is an advantage without being of central importance. As with the authority hierarchy, the use made of differentiation and separation is important though for different reasons. In the first instance they allow the dividing up of potential opposition which in turn permits a much more limited and more economical use of sanctions.

138 A second type of power hierarchy rests on the idea that at each level there are different groups each able to exercise a degree of power over their own members to obtain conformity to the set of norms of that group. Sanctions applied by work groups to their members include a number of practices like tool hiding or "sending to Coventry". The groups within the firm are to some extent overlapping. For example, the foreman is frequently both a member of the work group and a member of the management group, and as such subject to the norms and the sanctions of both. The essence of the power hierarchy lies in the capacity of one group to enforce its norms at these points of overlap, and thus to communicate its norms to the subordinate group.

139 The first two types of hierarchy were based primarily on consensus and absence of conflict. Conflict is at the very roots of the power hierarchy, and this leads to two interesting developments absent in the other two types. The first is that conflict of group norms can lead to what might be called "defensive formalisation", or the use of formalised procedures to restrict the scope for manoeuvre of the other party. What is striking is that this process can be initiated either from above or from below, and that work

groups can themselves be the source of highly formalised procedures. From the point of view of the entrepreneur who sought to use non-market transactions because of their flexibility this is clearly a "dysfunction". The second development is that of bargaining as a transactional procedure. The situation, however, is rather different from that of the "continuous bargaining of spot transactions" as this form stems from the existence of work groups and the power base they offer.

140 An important result to emerge from this running comparison of the types of procedure and the nature of the hierarchies they give rise to is their distinctness as types. Each appears to have its own underlying logic or coherence. This has important consequences for the way they might be thought of as coexisting in the real world. At the beginning of the argument on the ex ante definition of the content of transactions, and the reasons for its abandonment under certain conditions in favour of incomplete ex ante definition supported by a particular procedure, it was pointed out that definition was a process of central importance. If the three types of procedure are to be seen as part of this definitional process as we argue they should be, it is clear that their coherence be of equally central importance. If these procedures are simply juxtaposed there is no way of maintaining their coherence and thus no way in which they can satisfactorily fulfil their function. Without this coherence individual actors cannot "read" the situation in which they find themselves and orient their action in such a way that its meaning is in harmony with that of other actors.

141 If their coherence or underlying logic is to be maintained, and there is to be some measure of coexistence of these types, it is necessary that in any one situation one type be "dominant". By "dominant" we mean that in cases in which there is contradiction between the requirements of two or more transactional procedures one of them will take precedence. The minimum necessary scope for this dominance follows from the argument about definition and the emergence of the firm. The firm "emerged" at the point at which the use of open market transactions became uneconomical. At this point a set of incompletely defined transactions remain and these are grouped thus constituting the firm. As the firm is the smallest group of such incompletely defined transactions it is the smallest unit over which the scope of the dominance of one procedure may extend.

142 This step prepares the way for the kind of policy conclusions that follow from this mode of analysis.

III Implications for different Policies aimed at the Promotion of Industrial Democracy

143 In considering the policy implications it is argued that for each dominant type there is a particular kind of policy that is appropriate for the promotion of industrial democracy. It is argued that in the case of the "supervisory" hierarchy measures of decentralisation of the structure constitute a move in this direction. An example mentioned is the creation of autonomous work groups. In the case of the authority hierarchy it is possible to attempt to change the basis on which the authority rests, and to move, for example, from the "traditional" or "charismatic" forms to the "rational legal" form. The creation of the John Lewis Partnership might be understood in this light. Finally, it is possible to introduce policies which seek to improve the balance of power, or to increase the degree of control that employees can exercise over their work environment. An example of this kind of policy might be the creation of a system of "supervisory boards" on the West German lines. Such policies might help to foster the degree to which consent is obtained by bargaining, and help to foster the kind of mutual confidence which stems from equality of strength and thus reduce the extent to which strategies of "defensive formalisation" are resorted to.

144 Our reflections on the question of "coherence" and of "dominance" suggest a further set of policy implications, and this concerns the possible results of trying to apply policies that are appropriate to one type of hierarchy and procedure in a situation in which another is dominant. The main line of the argument is that most policies aiming at reform rather than fundamental change are unlikely to affect the balance between the different types within a given situation. This means that the type of procedure that is dominant in that situation is likely to "over-determine" the changes introduced by the policy and impose its own pattern of coherence upon them. Thus a policy aimed at changing the basis of authority relationships introduced in a context in which power relationships are dominant is likely to find itself over-determined by these. This might well be the reason for the much commented "break in the bottom of the executive structure" found at Glacier Metal. Other examples are worked through for other cases.

145 A final policy consequence that is looked at is the possibility that policies to promote industrial democracy might affect the relative costs of effecting transactions on the open market rather than within the firm. The transactions approach that has been used suggests that a possible consequence of such a change in relative costs could lead to a tendency on the part of

employers to resort increasingly to open-market transactions. They might dismiss cleaning staff and resort to the services of an outside contractor. An indication of importance of this possibility is given by some recent research on the labour market in Northern Italy.

APPENDIX. POWER AND THE PRISONER'S DILEMMA (See paragraph 88.)

1 The parable goes as follows. Two men are lying in prison charged with the same crime. They are kept in separate cells with no means of communication between each other. The crime has been committed in such a way that they are the only witnesses. Each man is thus in the situation in which he can either confess himself, or accuse the other. If he confesses he is told the penalty will be less severe. On the other hand, if he accuses the other prisoner, and the latter also admits his guilt, then the first prisoner goes free. However, if they both accuse each other, they both receive the maximum penalty. If they both confess they both receive a lighter penalty.

2 Two types of factor are important in determining the outcome of the two prisoners' decisions. The first is the structure of the "pay-offs", or the distribution of the different sentences, and the second is the belief one prisoner has about the likely decision of the other. In the pure version of the dilemma this second factor is excluded, but the developments from this point are among the most interesting.

3 The different pay-offs accruing to each course of action can be represented in matrix form (v Gergen (1969) and Crossley (1972). Let us represent the pay-offs in terms of the number of years' prison, so that if "A" accuses and "B" confesses, then "A" goes free, and "B" gets twenty years.

		B		Probability years	B		Probability years
		Confess.	Accuse		Confess	Accuse	
A.	Confess.	10 10	0 15	$= 12\frac{1}{2}$	10 10	0 20	$= 15$
	Accuse.	15 0	20 20		20 0	35 35	
		1. Accusation Biased			2. Confession Biased.		

4 The two matrices represent two possible pay-off structures. If we assume that from the point of view of either prisoner the decision of the other to "accuse" or to "confess" is random, either prisoner before deciding might assign a fifty per cent subjective probability to either outcome from the other, and so might evaluate his own alternative courses of action by adding the product of

the sentences and their subjective probability for each alternative. In the first matrix, then, "A" has to choose between a 50% probability of 10 years with a 50% probability of 15 years which he can evaluate as $12\frac{1}{2}$ probability years, and a 50% chance of going free with a 50% chance of 20 years, giving a result of 10 probability years. If he were neither particularly prone to taking risks, nor to avoiding them, he would do well to choose to "accuse". We might say, therefore, that the first set of pay-offs had an accusatory bias. Similarly, we might say that the second had a bias towards confessions. It might be that an honest confession is regarded as being good, while "brazening it out" is regarded as compounding guilt with contempt for the law.

5 The situation, however, changes radically as soon as the assumption of complete ignorance about the likely decision of the other prisoner is dropped. We shall now look at three types of case in which this applies: in the first there is limited communication, in the second there is some knowledge of the psychological or material pressures acting on the other prisoner, and in the third, there is a social relationship holding between them.

6 The first case does not change very much. The two prisoners meet, come to an agreement, and then give their decision separately. The reason why not very much is changed is easy to see as the potential gains from double crossing and "accusing" are still as great, if not more so as the one who is double-crossed goes to prison and so is unable to enforce the agreement until he is set free.

7 The second, knowledge of the risk-taking disposition of the other is rather more important, and can in fact reverse the bias of the matrix. If one prisoner knows the other is an inveterate risk taker (or that he is forced for material reasons, because imprisonment would ruin his business or his career, to adopt risk all strategy) and that he will "brazen it out" he knows that he is inevitably condemned. He has then to choose in the first matrix between confessing and receiving fifteen years, and accusing and receiving twenty years. In which case, if he has no desire for vengeance he will probably confess. In the second matrix let us assume that A would like to play safe and confess. If B knows this, he may even be induced to accuse, again going against the bias of the matrix.

8 The third case, in which the existence of a social relationship between the two prisoners affects the outcome, is the most interesting because of the way it structures the probabilities to be attached to the sets of possible sentences. As a simple example, A and B may be brothers and have great trust

in each other, and thus confidence that the other will confess, or if they have agreed to a pair of strategies, that the other will abide by the agreement. Each knows that to betray the trust is also to betray the relationship and would entail facing the rest of the family afterwards. Other kinds of relationship will affect the probability of the outcomes differently.

9 If we now lift the very restrictive assumption implied in the parable, that there is no continuity in the relationship between the two accused, the prisoner's dilemma model takes on much greater generality. In particular, it becomes more applicable to issues associated with the employment relationship of which continuity is a major characteristic. In place of the two strategies of "accusing" and "confessing", we might substitute those of "exploiting" and "co-operating".

NOTES

1 Indeed, much of the analysis of consumer behaviour in terms of "demand curves" has tended to assume this problem away. The price is represented on the vertical axis, and quantities of the good on the horizontal axis. For the good to be quantified it must first have been defined. Even if we take a simple good like a car or a television set there is some problem of definition of the terms of the transaction. A physical object of a certain quality, that is, capable of providing a certain flow of services, is exchanged. The capacity to provide these services is usually covered by guarantee, and this is quite an important element in the definition of the scope of the transaction. Nor is the guarantee costless as the manufacturer has to keep a number of repair staff and a stock of replacement items. Moreover, the presence of the guarantee is not trivial. In the second hand market there are usually no guarantees and the custom of "caveat emptor", let the buyer be beware, applies.

2 The first paragraph affords a striking example of sociocentricity. It is assumed that the two hunters naturally want to exchange rather than say try to steal the other's catch, or to enslave the other. The second neglects the importance of the conditions surrounding the transaction. Unlike the situation in the street market, in the supermarket you take the goods as they are packaged,

and unlike the situation in some southern european markets you accept the price printed on the package and do not seek to bargain. In other words, before entering a supermarket you are expected to know that there is a complicated set of conditions defining the goods offered, and defining the terms of the transaction. Reference to these important procedures are neglected in parables about buying pats of butter in supermarkets.

3 It would be useful to clarify a small terminological point at this stage. We shall refer to the choice between transacting on the open market and in "off-market" institutions as a choice between METHODS of transacting. Against this background there exists a number of PROCEDURES for the definition of the scope and content of transactions. The open market method generally uses a procedure which involves the complete ex ante definition of the substantive terms of the transaction. As we shall see when we come to look at the off-market method quite a range of procedures exists. These generally involve incomplete definition ex ante coupled with procedures to be followed for the completion of the definition at the time required.

4 Strictly one final problem needs to be dealt with before we turn to look at the factors affecting the degree to which the entrepreneur will use one or other method, and that concerns the relationship between the contracting parties who meet on the open market. The Reader may be worried that if the entrepreneur "transforms" pure uncertainty into statistical probability, a contradiction is introduced into the argument once one entrepreneur is involved in open market transactions with another. The market is made up of a great web of interconnecting transactions and inter-dependent transactors, and this alone would suffice to destroy an argument that the entrepreneurial function should be confined to the initial project - in the case of Marshall's illustration this would be the project for the opening of a new suburb. Indeed, it is doubtful in many cases whether the "initial" project could actually be identified. This is why it is important to our argument that open market relations be conceived of as bearing on the exchange of present or future finished products rather than sets of activities. When the transaction bears on the completed product, for example a completed terrace of houses in eighteen months' time, the actual organisation of the activity is left to the party carrying it out. Thus both the

entrepreneur who took the suburb project, and the entrepreneur running the specialist building firm have their areas of pure uncertainty. Both, so to speak, have their "initial" project out of which they must distil the parts which will serve as the basis of their organising activity.

The use of a diagram may help to make this clearer. The different blocks represent different contracting parties at some point in the open market where there are neither totally new ideas being exploited, nor final consumption. In the very simple model we have been working with the web of transactions will resemble the branches of a tree.

In a fuller development which is not really appropriate here, it would be more accurate to take account of the fact that most entrepreneurs work for several others, and that the categories around which they base their product is oriented not to the needs of one entrepreneur but to several. They are working with movements in the relation of demand to supply on the market and are involved in developing a product, or a certain specialised service that has as wide a market as possible. Much of the work of "definition" that they undertake comes at this stage. What the specialised builder offers the first entrepreneur is the ready-made ability to produce a product of a certain quality for which he has already built up the basic organisation, and for which he has already established a certain set of necessary contacts for obtaining materials at the right price and so on. In fact, the risk works in two directions. From the first entrepreneur, it is still necessary to define categories out of the "initial project" of sufficient stability for open market transactions. For the second entrepreneur, the situation is such that he must define his specialisation in such a way that he can sell it to other entrepreneurs when the current "suburb" project is finished. Both of these elements are present in the work of all entrepreneurs, although the balance between them clearly varies. For the entrepreneur who undertakes to organise the construction of the suburb the decomposition of each individual project is clearly the main problem, for the specialist builder, on the other hand, the definition of the specialisation itself will be of greater importance.

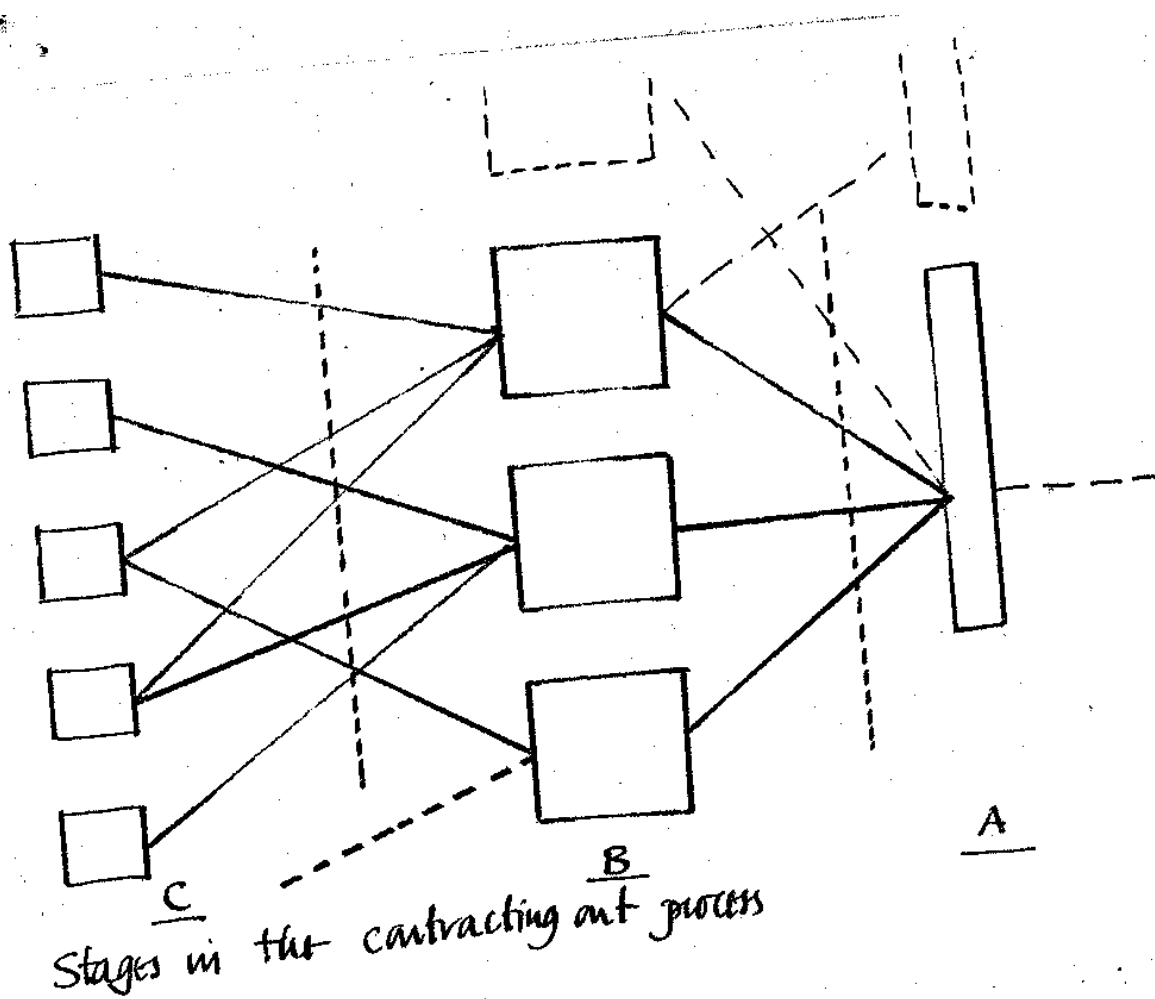
5 The assumption involved is far from neutral as it presupposes the general acceptance of the theory of markets and their applicability to the analysis of the employment relationship.

6 These consist of the non-renewal of contracts and occasionally, suing for non-fulfilment. Alchian & Dansitz compare the sanctions that can be applied within the employment relationship to those that apply in my relationship with my grocer. I can take my custom elsewhere, or sue if I am sold something bad. Likewise he can refuse to supply me with certain goods.

7 Looked at from the procedural point of view the sequential spot transaction does pose some problems. Williamson (1975) has argued that if market procedure is followed through to its conclusion then this type of transaction is subject to the problem of what he calls "first mover advantages". That is to say that a competitive market situation holds at the moment the first of the series of transactions is made, but that after the first, the "first mover" has an advantage over those whose applications were not accepted because he has learned how to do the job. The result is that when the second transaction comes up perfect competition no longer prevails because he has an informational advantage over all the applicants who were not accepted first time round.

8 In Marglin's model the necessity of approval stems from the fact that as the factory system progressed it became less and less possible to leave employment and set up again as an artisan. The strict supervision of the factory meant that if the artisan wanted to compete he would have to impose on himself the same discipline the employers were imposing upon their workers. In addition, the artisan did not have such well developed access to the market as the merchant or the factory owner. He not only had to compete in production, he had also to compete in marketing. The more the system developed, the more dependent the worker became for his livelihood on the maintenance of his job in the factory, and thus the more subject he became to the power of the employer, in whose hands lay the continuance of the employment relationship.

9 Accounts of these experiments can be found in Flanders, Pomerantz and Woodford (1968) and Emery, Thorsrud and Trist (1969).



Source of the notes.

- Note 1 : paragraph 15.
- Note 2 : paragraph 15.
- Note 3 : paragraph 15.
- Note 4 : paragraph 21.
- Note 5 : paragraph 28.
- Note 6 : paragraph 34.
- Note 7 : paragraph 36.
- Note 8 : paragraph 48.
- Note 9 : paragraph 99.

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