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THE PRODUCTION PROCESS OF CAPITAL AND THE CAPITALIST LABOUR PROCESS

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(PRELIMINARY DRAFT)

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INTRODUCTION

The labour process has always been the site of class struggles, often intense and prolonged. And now it has shifted to the very centre of the stage. China and the USSR proclaim different roads to socialism and the contrast between them is at its sharpest in the politics of production. In the capitalist world, a crisis forces on capital an attempt to restructure social production and in doing so it brings into focus with ever greater clarity the issue of the control of production and the necessity for a critique of the capitalist labour process. Our aim as a group has been to work towards a critique of the capitalist labour process from the standpoint of labour, i.e. from the standpoint of class struggle and around the problem of the potential general political content of class struggles in production.

In this paper, therefore, we start with the theory of the capitalist labour process; we proceed by trying to locate the labour process and its development in a more general analysis of the development of the capitalist mode of production; we attempt to draw out the implications of these developments for an understanding of class composition; and, finally, we make suggestions about the general political perspectives thus opened up.

SECTION 1 : THE LABOUR PROCESS AND THE LAW OF VALUE

1. THE PRODUCTION PROCESS OF CAPITAL AND THE RELATIONS OF PRODUCTION

"Just as commodities are, at the same time, use values and values, so the process of producing them must be a labour process, and at the same time, a process of creating value." (1)

Capitalist production is both a labour process and a process of production of self-expanding value, of valorisation. In general terms, Marx characterises the labour process as:

"human action with a view to the production of use-values, appropriation of natural substances to human requirements; it is the necessary condition for effecting exchange of matter between man and nature; it is the ever lasting nature-imposed condition of human existence, and therefore is independent of every social phase of that existence, or rather, is common to every such phase." (2)

In every society there have to be labour processes. But these processes do not, in every society, have at the same time to be processes of valorisation.

At the most general level the production of self-expanding is characterised by Marx in terms of the circuit $M - C - M'$.

"Value therefore now becomes value in process, money in process, and as such, capital. It comes out of circulation, enters into it again, preserves and multiplies itself within its circuit, comes back out of it with expanded bulk, and begins the same round ever again." (3)

What this means is that, capitalism is a social system in which labour time is made social, that is to say, made commensurate with the labour of others, through the production and exchange of commodities rather than through direct coercion (e.g. feudalism) or planning (socialism). Furthermore, it means that a given quantity of social labour time has the property of being able to socialise yet more labour time, to create surplus value, through the medium of commodities. This property cannot be

derived from the process of simple commodity production considered in isolation: while an individual commodity producer can increase the amount of social labour by working longer hours, there is no social relationship between different portions of his labour time; one portion cannot call into being another portion.

"A commodity owner can, by his labour, create value, but not self expanding value." (4)

But nor can it be derived from the process of commodity circulation considered in isolation. This is clearly the case if equivalent amounts of social labour time are exchanged, but even if non-equivalents are exchanged, this does not call into being more social labour time, but only redistributes that which already exists. (See Capital, Vol.1, pp.158-161)

We have, therefore, says Marx, got a double result:

"It is therefore impossible for capital to be produced by circulation, and it is equally impossible for it to originate apart from circulation. It must have its origin both in circulation, and yet not in circulation," (5)

The answer is provided by a commodity "whose use-value possesses the peculiar property of being a source of value". This commodity can be purchased by a given amount of social labour time in the form of money and when used results in the socialisation of yet more labour time, the creation of surplus value.

The commodity is, of course, labour power. In order that such a commodity may exist certain social conditions have to be fulfilled: there must be free labourers.

"free in the double sense, that as a free man he can dispose of his labour power as his own commodity, and that on the other hand he has no commodity for sale, is shorn of everything necessary for the realisation of his labour"

This in turn implies the concentration of the ownership of the means of production in a few hands. These conditions emerge through a long process of historical development.

Provided the labour power is consumed productively both use-values and value are produced; provided it is consumed productively for long enough surplus value is produced. It must be consumed for longer than the time required to produce its own means of subsistence. To ensure this, further conditions are required beyond the existence of labour power as a commodity. The purchaser of the commodity must be able to ensure that labour power is consumed productively and for long enough. Then a given quantity of social labour time, equal to the value of labour power, is able to socialise yet more labour time, to produce surplus value. There is a definite social relationship between different portions of the labourer's labour time: the time required to produce his means of subsistence, or necessary labour time, in the circumstances of capitalist production, 'expands spontaneously', 'brings forth living off-spring': surplus labour which is socialised as surplus value. The surplus value accrues, in the form of profit, to the capitalist, the purchaser of the commodity labour power, the controller of the conditions of labour. This is the essence of capitalist exploitation, that surplus value is created through the ability of one class to compel another to perform surplus labour, by purchasing its labour power, ensuring that the labour power is put to work, and controlling the length of the working day.

We can now respecify the production of self-expanding value thus:

$$M - C - \frac{m.p.}{1} \dots P \dots C' - M'$$

It is clear that there are two sets of relations of production, the relations of production in the sphere of exchange $M - C - \frac{m.p.}{1}$ and the relations of production within production itself $C - \frac{m.p.}{1} \dots P \dots C'$.

It is not enough for the conditions for the production of self-expanding value to exist, they must continually be reproduced. The necessary relations of production in the sphere of exchange are continually reproduced by the production of capital in that the produce takes the form of commodities which must be exchanged for money. But the same is not true for the

length of the working day. This is determined by class struggle, which can thus set limits to the self-expansion of value.

But this limitation, placed by class struggle, on the length of the working day, and hence the self-expansion of value, can be overcome if the necessary labour time can be reduced. This requires an increase in the productiveness of labour, and hence 'the labour-process itself must be revolutionised'. This Marx called the extraction of relative surplus value.

But the labour process requires the participation of the labourers who may have objectives other than valorisation, and may resist the revolutionising of the labour process. In order to impose the process of valorisation, exploitation is not enough: there must also be a relationship of real subordination which permits the revolutionising of the labour process in the service of valorisation.

The relations of labour to capital can then be summed up as (i) exploitation and (ii) real subordination. The conditions in which these relations are reproduced are constantly changing. They are never definitively established once and for all. The very movement of capital accumulation, (which changes labour markets, labour processes, geographical distribution of production, products, new conditions of ideological and political class struggle, and so on), ensures that these relations are always having to be reestablished in new conditions. The reproduction of the relations of production is a process which is conducted by class struggle, and to each of the two sets of relations there corresponds a specific terrain of class struggle. The ultimate material basis of politics in the capitalist mode of production is in this dual dominance of capital over labour; in the form of ownership of the means of production on the one hand, and the form of real control over the process of production on the other, (or, as it is sometimes put, in the appropriation of the product and in the appropriation of nature, by capital).

So, the production process of capital is the unity of the process of valorisation and the labour process. The product of the production process is (i) surplus value and (ii) specific

use-values. Whereas the economic relations of capital separate labour from the means of production, the labour process brings them back together again, but now they are together on terms that are set by capital and in order to pursue the objectives of capital. Capital assembles means of production and labour power and sets them to work, but it does so in a way that is determined by the objective of valorisation, of maximising surplus-value production and as far as possible eliminates all other potentially conflicting objectives. Capital needs real control of the labour process precisely because the formal separation of labour from the means of production is cancelled in reality by the material form of labour process in which labour and materials and instruments combine. Capital needs to have control over the form of this combination, because whatever the instruments and materials (e.g. whatever the technology) there is always more than one way of effecting the combination and there is always the possibility of the process being informed by some objective other than that of valorisation and potentially in conflict with it, (e.g. the objective of healthy and safe working conditions, or of a socially useful product).

"The process of production is the immediate unity of the labour process and the process of valorisation, just as its immediate result - the commodity - is the immediate unity of use-value and exchange-value. However, the labour process is only the means to the process of valorisation, this in itself being essentially production of surplus-value, i.e. objectivation of unpaid labour. It is this that characterises in a specific way the capitalist process of production overall." (6)

"(In the labour process) labour reestablishes its union with the objective conditions which are the matter and organs of its creative activity. The hide tanned by the worker is treated by him simply as the object of his productive activity and not as capital. It is not the capitalist's hide he tans." (7)

The unity of the process of valorisation and the labour process is not given simply on the basis of the relations of production in the sphere of exchange. This unity presupposes a specific historical development of an adequate objective and subjective basis in the labour process itself, in the material, technical and social organisation of the labour process. In

the absence of this development there can be a non-correspondence between the relations in exchange and the relations in production (i.e. a non-identity between formal, judicial economic subjects and real, material economic subjects). Marx talks about there being a conflict between economic relations and relations within the labour process; and about the material and social form of the labour process not allowing the "capitalist relation to be realised in an adequate manner" (8). A development of the labour process is necessary so that

"this modification of the material form constitutes the basis for the development of capitalist relations, which require therefore a definite level of development of the productive forces in order to take on their adequate form ...
Use-value: here capital must conform to the nature of the labour process. But it is precisely here that labour does not merely belong to and become incorporated with materials and means of labour, but, also social combinations of labour and the corresponding development of the means of labour." (9)

It is important to note here that when Marx talks of the development of the productive forces he explicitly does not refer solely to the development of the technical basis of production. The development of the productive forces that is the basis for the real subordination of labour to capital is a development of both the objective conditions of labour but also of the social combinations of labour. The capitalist labour process cannot be specified on the basis of its technological components. But also note that it cannot be specified on the basis of the relation established within it between the individual worker and the instruments of production. It can only be specified as a specific form of social organisation of labour, a form which is a specific form of coercion and the realisation on an adequate basis of the objective of valorisation. It will be important to remember this when trying to define the essential features of machinofacture.

So the capitalist labour process is the unity of the processes of valorisation and the real labour process⁽¹⁰⁾ on the adequate basis of a specific form of social organisation of labour. It is the aim of this section to spell out just what is involved in this theoretical concept, to find out just what are the essential aspects of its realisation in concrete labour processes.

2. FORMAL SUBORDINATION

When the labour process is only formally subordinated to capital there is production of surplus value and its appropriation, but the objective and subjective conditions of labour are such as to provide a material basis for continual resistance to the imposition of valorisation as the unique objective of the production process. Real control of production is not yet firmly in the hands of capital. There is still a relationship between labour and the conditions of labour within production which provide labour with a degree of control and hence with a lever with which to enforce the class objectives of labour (class objectives which may, of course be different from those of the fully developed proletarian labour of the mature capitalist mode of production; objectives of artisanal labour, craft prerogatives over recruitment into the trades and over the content and performance and so on).

This kind of non-correspondance can reappear even within brand new spheres of production within the fully developed CMP. Consider for example Michael Channan's analysis of the labour process in the production of film (11); he identifies as the principle contradiction of film production for capital precisely this non-correspondance between the objective of valorisation and the basis of production in specific skills which tend to be beyond the reach of the rigours of capitalist control.

The forms which constitute the basis of formal subordination are given in the representation of the value circuit of capital above. They are: wage-labour (labour with no access to the means of subsistence except via sale of labour-power); means of production in the form of commodities; the product takes the form of commodities; the product includes means of subsistence, also commodities.

Note that although this subordination is formal it nonetheless is a form of subordination, of compulsion. The forms of coercion in precapitalist modes of production were directly political and social. In the transitional phase (and the existence of formal without real subordination is a definition of a phase as transitional - cf. Bettelheim on transition to socialism (12)) compulsion takes instead an economic form - the compulsion to sell labour-power in order to live. This economic power of capital over labour allows capital, even on the basis of unchanged technical means and methods of production, to coerce from labour a degree of intensity, duration and continuity of production quite unlike that to be found in the previous forms of production (independent artisan, peasant farming). i.e. it allows capital to extract absolute surplus value. It also allows, in fact even necessitates, an increased scale of production. This increased scale is, says Marx, the real basis on which the specifically capitalist mode of production develops as soon as the historical conditions are favourable. Marglin's paper (13), which is essentially about capitalist production under conditions of formal subordination, adds absolutely nothing to this theoretical analysis of Marx; in fact it only horribly confuses all the issues by failing to pose as the overriding objective of capital the transformation of the production process into a process of valorisation by the extraction (in this phase) of absolute surplus value.

Thus formal subordination is a specifically capitalist organisation of the social forms of compulsion, and this change in the organisation of material production forms the basis on which develops the specifically capitalist mode of production (the forces of production and the capitalist relations of production). Since Marx does not develop the theory of the CMP in Capital as it appeared in print in quite these terms it may be worth adding here a few from the "Unpublished 6th chapter of Capital": (14):

"I call formal subordination of labour to capital the form which is based on absolute surplus-value, because it is distinguishable only formally from the anterior modes of production on the basis of which it spontaneously springs up (or is introduced)...The only thing that changes is the form of coercion, or the method employed to extract surplus labour. Formal subordination is essentially:

1) the purely monetary relation between the appropriator and the supplier of surplus labour. Subordination is a consequence of the specific content of the sale and is not anterior to it as it is when the producer is in some relation other than the monetary one (ie. other than a relation between possessors of commodities) to the exploiter of his labour; for example by virtue of a relation of political coercion. The seller is only in a relation of economic dependence on the buyer because the latter owns the conditions of labour: it is no longer a fixed political and social relation which subjects labour to capital.

2) the fact that the objective conditions of labour (means of production) and the subjective conditions of labour (means of subsistence) confront labour as capital and are monopolised by the buyer of labour-power: it is from this that the first point follows, because if it were not for this that the worker would have no need to sell his labour power.....

At the beginning there is no innovation in the mode of production itself: the labour process is carried out exactly as before except that it is now subordinated to capital. Nevertheless, as we have already shown, there develops in the production process: 1) an economic relation of domination and subordination; because the

capitalist is henceforth the consumer of labour-power he is therefore the supervisor and organisor of it. 2) greatly increased continuity and intensity of labour, as well as a greater economy in the use of the conditions of labour, because everything is put to work in such a way that the product contains no more than the socially necessary labour time (and, if possible, less);....

On the one hand the capitalist mode of production ... gives a different form to material production, on the other hand this change in the material form constitutes the basis for the development of capitalist relations, which thus require a specific level of development of the productive forces in order that they (capitalist relations) can find an adequate form."

3. REAL SUBORDINATION: VALORISATION IN COMMAND

Capital must take control of the labour process. It must have power in the very heart of production itself so that it can have a solid material basis for its overriding objective: Valorisation in command! This it achieves on the basis of a series of linked and mutually interdependent developments:

the extraction of relative surplus value
the employment of machinery
the conscious application of science and technology
the mobility and replaceability of labour / formation of the reserve army
large scale production.

These are the material bases for new relations between capital and labour, relations that enforce real subordination.

"'Real Subordination of Labour to Capital or the Specifically Capitalist Mode of Production'.

... we have shown in detail that with the production of relative surplus-value, 'the whole of the real form of the mode of production is modified, so that we are now concerned with the specifically capitalist mode of production (from the point of view of technology also). It is on this basis - and solely as a consequence of it - that are developed relations of production which are in correspondence with the capitalist process of production, relations between the various agents of production, in particular between capitalist and wage-labourer. As the forces of production of society develop, (or the productive power of labour) they are socialised and become directly social (collective), as a result of cooperation, the division of labour within the workshop, the use of machinery, and, in general the transformations which the production process undergoes as a result of the conscious application of the natural sciences, of mechanics, of chemistry etc, applied with definite technological objectives, and as a result of everything that is involved in labour conducted on a large scale, etc."

In Capital Marx analyses the stages of this development of real subordination from simple cooperation through manufacture to machinofacture. The introduction of machinery is a culmination of this development because it allows capital to break through the limits within which, under simple cooperation and manufacture, it could effect a real command over the labour process.

But what exactly are these new relations between the agents of production that become possible with the use of machinery? And how exactly is it that this technical basis allows these new relations to be formed? What, in other words, is the connection between machinery and the real subordination of

labour to capital? Marx's answer involves four main concepts. (These notes will only be concerned with the first two of these).

1. The real separation of constant from variable capital, of labour from the conditions of labour.
2. The objective organisation of the collective worker replaces the subjective organisation.
3. The fetishism of technology/fixed capital.
4. The reproduction of the relations of production (the labour process becomes the site of this reproduction).

Real separation is partly a matter of scale, a consequence of the fact that production is now large scale production and requires a certain large minimum of capital for it to be put in motion. (16) In small scale production it was, as far as the individual labourer was concerned, an accident and not of the essence that he lacked the means of production. This is true of some forms of manufacture. In a sweat-shop garment factory the girl (usually) who works the sewing machine could easily own such a machine herself. The scale of capitalist production based on manufacture may make it difficult for new individual capitalists to arise out of the ranks of the working class; but it does not make it impossible. There is still a certain fluidity between capital, artisanal groups, workers etc. And it is not necessary to the actual labour process itself that it be supervised by some agent of capital. Inasmuch as it is this is a consequence of an economic compulsion and not a technical one. Capital is, from the technical point of view, redundant. With manufacture it is essential that there be some agency, over and above that of each individual worker, which assembles the

means of production prior to the purchase of labour power. (Fetishism arises from the tendency to see it as a necessity that this agency be capital rather than some other trans-individual economic subject). Because production is now collective, on a large scale and machine-based, capital can appropriate to itself all the functions of specification, organisation and control, and perform them independently of labour. It can therefore impose its objectives on the labour process so that labour, even when it is brought into real association with the conditions of labour, does so in an antagonistic relationship. Labour serves the machine and not the machine labour. For some, particularly skilled, workers real separation comes to this, that they cannot do their work except in a large-scale collective labour process which exists prior to and independently of their being brought into it by its owner/controller. Compare the man whose skill is monitoring a console in a power station with those remnants or imitators of pre-machinofacture labour such as chippies, plumbers, domestic appliance repair men and so on, who move into and out of relations with capital in ways that depend on economic rather than apparently technical compulsion.

With machinofacture capital now has power over constant capital; it can now be designed and organised without reference to the traditional skills and crafts. The whole point of machinery is the speed with which it can effect mechanical transformations. From now on capital breaks through the limits represented by the speeds with which labour could perform these functions. Being no longer dependent on them the labour process is designed around the performance of the machine, and the worker has to perform in accordance with its needs rather than vice-versa. That capital controls this process is a function of the fact that it can assemble all the knowledge and materials stored up in machinery, knowledge and materials which themselves develop under the sway of capital and from which labour is entirely separated.

In any discussion of whether or not there is a "new epoch", whether the epoch defined by Marx as that of the real domination of capital over labour is ending, there is one fundamental question: who controls the means of production (instruments and materials)? Is there any basis in the development of the means of production for a displacement of this control out of the hands of capital? Certainly the personification of capital now takes (necessarily) different forms.

How does capital use this real power of control to achieve valorisation? Or what is it about machinofacture that allows capital to use this power to promote valorisation to the dominant objective of the process? It is that it is now a matter of a particular form of collective worker. Any collective worker requires organisation and supervision. The collective worker of machinofacture allows the imposition of the authority of capital. This is because capital can monopolise the knowledge required to design and enforce (i) the way in which each individual worker functions as an appendage to a machine, ie. the interfaces between machine functions and labour functions and (ii) the integration of the various partial processes into a whole. There are two things worth emphasising here since they are often forgotten. Machinofacture transforms not only the work of each individual labourer but also their articulation into a system. Secondly, the power of capital is represented not only in its power to design and organise machine systems but also in its power to enforce the labour discipline required to keep that machine system in effective (from the point of view of capital) operation. Real subordination is a matter of both the kind of instruments of labour that are employed and also the form of social combination that is imposed on labour, the realisation of the power of capital in the form of factory discipline. These are all aspects of what Marx calls the "rational" or "objective" organisation of labour (rational

and objective from the point of view of capital and its aims that is) and which he distinguishes from the "subjective" organisation to be found in manufacture.

In manufacture (a) each worker or group of workers still has some degree of control over the content, speed, intensity rhythm, etc. of work. And (b) the integration, the balancing or harmonising of the collective work is still empirical. It is still worked out on the basis of observation of actual work rather than calculated beforehand on the basis of knowledge of the machine functions. Compare the job of a line supervisor in balancing an assembly line or of a machine shop supervisor allocating and distributing jobs in his shop on the basis of information coming to him from progress chasers, production engineers, stock demands etc. What we have here is the calculability of the process based on a standardisation of machine functions, compared with the non-standardisable, merely inductively calculable progress of work in manufacture. With the development of machinofactory capital attempts to give the same form even to jobs that retain a non-machine basis (parks and gardens workers, gas-fitters and other tool users are brought within a similar formal framework of standardised rates for the job, standard times for the job and so on even though the material basis for this is lacking because each job will confront the worker with many unpredictable nonstandard contingencies). Under manufacture capital does not have the knowledge or control to rigorously impose cheapness of labour, intensity, economy of materials and so on.

Thus the capitalist labour process is that specific form of the collective worker based on machinofactory in which capital, having a monopoly of knowledge and power over the relations between labour and the means of production, uses this power, this real domination, in order to enforce the objective of valorisation.

4. VALORISATION AND CAPITALIST MANAGEMENT

Valorisation is the objective of capitalist management. Machinofacture is the material basis which allows capital to take power over the labour process and to there translate this objective into a system of concrete production relations. It allows capital to design the labour process so as to achieve to the maximum degree possible on the basis of a given level of development:

speed of performance of tasks
intensity in the performance of tasks (ie. decreasing the gaps between successive operations)
maximal precision, predictability and quality of transformations being worked on the object of labour
continuity of production (ie. design out holdups, bottlenecks and risks of breakdown or disruption)
cheap labour and labour functions such that labour is easily replacable (ie. minimise dependence on specific and scarce labour skills)
economy of raw materials, energy, etc.

The power that capital has to pursue these objectives is in part, but only in part, the power of capital to select, design or develop machinery and other aspects of the technology involved in the labour process. Capital also has, and must have, the power to design and operate the social organisation of production within the enterprise. It must therefore organise not only the machines and their integration but also a system of power relations the function of which ultimately is to define and enforce the discipline of the labour process. Thirdly it must organise a system of information production, diffusion and processing, which will be a presupposition of the correct functioning of the machine and discipline systems. Of course this information system will itself involve the design,

selection and operation of technical equipment of various kinds (telephones, typewriters, computers etc etc). Let us call these aspects of the labour process (i) material transformations (ii) discipline (iii) information.

The question of whether technology is or is not neutral is now easy to answer within this limited frame of reference. Consider the production technology (responsible for material transformations). It is clearly not neutral, in the sense that it has been chosen or designed by capital in the interests of valorisation. To the extent that other technical solutions always exist to perform any particular material transformations, and to the extent that these might be chosen if objectives other than valorisation were taken into account (employing particular kinds of labour available locally, workers' health and safety, reducing pollution effects, or whatever) then to that extent the technology reflects the objectives of capital. On the other hand given a certain production technology (say an imported machine-system in China) then that very technology can always be used for objectives other than valorisation. The method of so using it will be to so design the discipline and information systems and the way in which labour is brought into relation with the machinery as to advance other objectives (different job definitions, different division and rotation of jobs, different system of power - politics in command instead of valorisation). In this situation, of course, there may be a non-correspondence between the form of the labour process and the relations of production which necessitates a permanent struggle in production against the effects of this non-adequate material base. You don't have a capitalist labour process simply by virtue of having

an automatic spinning jenny and self-acting mule. How, concretely, does capital take such machinery and use it as the basis for its own forms of coercion?

Capital designs the jobs to be done around the spinning machinery - the machinery doesn't do it. There doesn't have to be the machine operator, the assistant and the piecer, a little group of three workers with a well defined internal power and discipline structure.

Capital integrates the work of this little group with that of other groups and other departments - the engineering department which controls the speed of the shaft which delivers the power to the spinning machine, and which also has the power to switch on and off - the despatch department where the output of the spinning team is measured and graded so that there is a basis for a system of payments and penalties - bonuses, and sanctions for poor quality; norms which have to be met and can only be met if the machine minder imposes a fierce discipline and intensity of labour on the piecer who even has to risk his body to get his tasks performed while the machine is in motion. (17)

In general forcing speed, intensity and continuity of production on the workers is achieved by capital by virtue of its power to calculate and then to impose norms for job performance and rates for the job, quality standards and sanctions for failing to meet them, ie. systems of supervision and of payment and penalty which depends on (i) the knowledge capital has of the objective properties and potentialities of the machine systems and (ii) the power that it has by virtue of the replacability of labour and (iii) the information that capital has which allows it to continually operate this power (information about workers' outputs in terms of both quantity and quality). The fascinating thing is that this whole

network of capital power and control is almost totally invisible to academic researchers into the sociology of work, job satisfaction and so on. Any academic discussion of job-satisfaction, alienation or about the effects of automation, which fails to describe the system of power by which capital defines and enforces the limits within which labour is compelled to operate can be thrown straight in the waste paper basket. Eg. if it fails to mention the system of payment that a so-called semi-autonomous group is working under. Or if it "forgets" to describe the system of norms and penalties and the automated information system making them operative in the case of some "enlarged" job. Capital does not always need to control labour by specifying the tasks and rates for an individual, rather than a group. And it does not need to exercise its power via a system of direct face-to-face power relations (foremen etc): The fact that it is a computer that is docking your pay or sending you to another department as a punishment and generally keeping an eye on the intensity and quality of your labour in no way prevents this from being a capitalist labour process. What are the criteria then? Abstractly the criterion for a capitalist labour process is that it is a process in which valorisation is in command. Concretely this is translated into the power to design and operate systems of material transformation, discipline and information.

The capitalist labour process is the translation of the objective of valorisation into a concrete social organisation of production; ie. where the design and operation of systems of physical plant, information processing and factory discipline are the materialisation of the power of capital to enforce its objectives on labour..

5. THE IMMANENT LAWS OF THE CAPITALIST LABOUR PROCESS

The three basic structural features of the capitalist organisation of the labour process are (i) the division of intellectual and manual labour (ii) hierarchical control (iii) fragmentation/deskilling of labour. But it is very important to work out the precise theoretical content of these concepts, to know what is and what is not essential to them and what are their limits. This is because it is very easy for them to be totally trivialised, as indeed they usually are by bourgeois "social scientists". These latter think that one renders a concept rigorous by "operationalising" it, by giving it a precise empirical definition. However, if one gives these concepts empirical definitions, instead of theoretical definitions in terms of the theory of the capitalist labour process, one produces utterly trivial and arbitrary concepts in terms of which one can prove anything one likes. For example, one can prove, by reference to the job of monitoring dials in an oil refinery that the days of manual labour are over; or one can prove, by reference to some assembly job in which the worker performs a series of unskilled, standardised routine manipulations (ie. "job enlargement") that the days of unskilled, fragmented labour are over and that we are entering a new epoch. Or one can prove by reference to "semi-autonomous groups" that the hierarchy of control in production is dissolving, that there is a trend to democracy on the shop floor. (18)

(i) The division of intellectual and manual labour. This is immanent in the labour process under capital to the extent that it refers to the division between conception and execution, which is probably a much less confusing way of putting it. It is an aspect of the monopoly that capital has on the knowledge and power over the design of production systems. Only by having and reproducing that monopoly can capital impose its objectives.

But clearly seen in this light (which is very obviously what Marx has in mind in Capital) the division has nothing to do with a division between mental and bodily functions of the human organism taken in a purely abstract sense. All human labour involves both mind and body. Manual labour involves perception and thought. No work is so utterly routinised that it can be performed without having any conceptual organisation of it whatsoever. Equally all mental labour involves bodily activity which is in many cases a vitally important aspect of it. Above all, from our point of view, it should be noted that the production of science and technology are material practices which involve "manual labour" and of course Marx knew this very well. Clearly then the division that is important from the point of view of the theory of the capitalist labour process is that division between those who produce or apply scientific and technological knowledge in the design of production systems and in day to day problem solving involved in the operation of the system, from those whose relationship with the production system is calculated, standardised and specified in advance by capital in the interests of producing an output which is known with precision in advance.

In the light of this we would say that the kinds of "white collar" or "white coat" technical workers whose jobs consist simply of monitoring the function of continuous flow processes are in no way an exception to this division. "Manual" labour has always performed such monitoring tasks. The only difference, from the present point of view, is that (i) these tasks are now performed without manual operations on the system being performed (or rather without human interference with the transformation process being performed) and (ii) that these tasks are now just as standardised, routinised and predictable, and hence under the control of capital, as traditional labour functions are. (Of course there are other aspects of labour in such processes that it would be important

to consider - the point here is that specifically from the point of view of the thesis that the division of conception and execution is immanent in the capitalist labour process such jobs are in no way an exception.)

(ii) Hierarchy: this is immanent in the capitalist labour process by virtue of its inherently antagonistic nature. Discipline is essential so that capital can allocate jobs, enforce speeds and intensities, sanction poor quality and so on. This antagonism which renders a hierarchical organisation essential is not a psychological thesis. Regardless of the extent to which a worker may resign himself to or adapt to the demands made on him by capital, ie. regardless of the psychological strategy of the worker, it remains true that labour always has a wider range of needs and aspirations than capital can allow itself to take into account in its design of the labour process. Capital is forced to treat labour as subjective (ie. in the interests of efficiency to take note of the specificity of labour as distinct from machines - you don't penalise machines, or pay them or send them home at some period of the day or night to sleep) but it is also forced to confine its relationship to labour to within very severe limits - limits defined by the wage-contract in the sphere of exchange and by the objective of valorisation in the sphere of production.

What is essential to capitalist hierarchy is that it is ultimately capital that gives instructions within the labour process. It is capital that allocates tasks, that specifies rates and norms, and that enforces penalties for failure. It is not essential that the personification of capital take a particular form. The traditional form of hierarchical control (management- supervisor- foreman-group leader) can be very expensive. It is made necessary to the extent that supervision requires there to be information available at all times about the performance in terms of quantity

and quality of each individual worker. You can't rationally allocate rewards and punishments (bonuses etc.) unless you have this information. It is also made necessary to the extent that the work of a particular shop has to be continually allocated on the basis of the need to integrate the output of the shop with the changing needs of other processes "down-line" and varied customer requirements, and so on (19) - so one had to have shop authorities receiving information and distributing tasks on that basis (this is particularly true of course in machine shops making a large variety of components).

Capital determines the form that its personification takes. With the development of automation of information processing and diffusion systems it becomes possible for capital in some cases to dispense with some of these traditional and expensive features of control. In effect it can automate control of labour. Taylor developed the control routine of starting the day in the machine shop by giving each worker a job slip, written instructions about his tasks. But one can now read of shops where the day starts by the workers receiving computer print-outs specifying their work allocations and schedules. No doubt the same computer receives information during the day about the extent to which each worker is doing his job.

It is also not essential that the instructions be given to each individual worker rather than to groups. But one can see here how "semi-autonomous groups" are possible only within very severe limits. Basically they are possible to the extent that capital can so rigorously control, verify, specify and monitor the functions and work of the group that the group has no margin at all for interposing into its organisation of labour its own objectives. "Autonomy" is only possible on the basis of an increase in the material basis of capitalist power:

a paradox for bourgeois empiricists to loose sleep over. To put it in theoretical terms: automation in these applications, far from introducing a non-correspondance between capital's formal subordination of labour and the material basis of its real relations to labour in production, on the contrary provides an even more solid foundation to its real subordination of labour. Of course this real subordination is totally invisible to bourgeois science. One can read whole libraries of articles on "semi-autonomous groups" without coming across an analysis of the systems of norm-setting and penalties within which the work of the groups takes place.

(iii) Fragmentation/Deskilling

Deskilling is inherent in the capitalist labour process because capital must aim at having labour functions that are calculable, standardisable routines; because this labour must be performed at the maximum speed and with the minimum of "porosity"; and because capital wants labour which is cheap and easily replacable.

What is essential to the notion of deskilling is, however, quite difficult to spell out. There are three aspects: (a) first of all there is the replacement of the relationship between labour and tools by the relationship between labour and machines. Basically this comes to the replacement of the craftsman by the machine operative. It could be that these two relationships are simply incommensurable so that to speak of deskilling here is confusing (in as much as the notion of deskilling seems to imply a quantitative unilinear scale of some kind, whereas craft and machine-operative skills may require different scales): ie. it may be abstract and arbitrary to argue about whether or not there is "more skill" involved in beating metals with hammers into craft artifacts or operating certain metal-working machines.

(b) Secondly there is the separation off as separate jobs of all tasks requiring some special skill for their operation, so that in as much as skill is still required it is distributed to as few, specialised workers as possible (eg. design work, machine setting, maintenance).

(iii) Thirdly there is the tendency for the remaining unskilled or semiskilled tasks to be separated out from one another and distributed to different jobs - ie. a tendency for further fragmentation, breaking down even of unskilled tasks. This third aspect of deskilling, however, is only a tendency - the extent to which capital fragments unskilled labour (or reduces the time cycle of operations of each individual worker to put it another way) is determined by a complex of considerations having to do with the integration of those tasks with each other and with ancillary tasks (and hence with the management of such problems as physical layout of machines, problems of material transfers and so on) and also with the problem of designing quality control systems. So-called job-enlargement experiments which operate entirely at this level (ie. of recombining a group of unskilled tasks) improve efficiency for capital if they solve difficult problems of line-balancing and quality control as long as the materials flow and control supervision can be performed effectively. Once again we have here the fact that computers, which make it possible to automate the quality control and monitoring of individual labour performance without face to face supervision, introduce for capital the possibility of experimenting with modified systems of assembly design. But the fundamental point here is that this can only take place given that labour routines have been so thoroughly deskilled and fragmented that they can be recombined and yet still remain both fast, calculable and monitorable and require very little training. Job-enlargement presupposes deskilling! since it is the

recombination of small numbers of calculable routines. Only in the brain of a bourgeois academic could an "enlarged" job of routine assembly operations, taking place within the strictest and most rigorous network of capitalist control, be taken to represent the emergence of a new order in which labour, no longer alienated, becomes free and human. Once again, in reality here automation increases real subordination of labour to capital.

SECTION 2: THE DEVELOPMENT OF THE CAPITALIST LABOUR PROCESS

The development of the CLP can be investigated at two quite different levels of abstraction. On the one hand it can be investigated from the point of view of valorisation. From this point of view each labour process, as it is organised by an individual capital, is studied from the point of view of how its organisation exemplifies the basic structural features of the CLP and we abstract from questions about the development of the conditions in which this valorising process is conducted. Thus we abstract from the laws of accumulation and from the concrete conjunctural forces stemming from them and look at the labour process from the point of view of its internal structure. In doing so we would try in each case to demonstrate just how the process is the concrete materialisation of capitalist production relations, and how it thus exemplifies the immanent laws and limits of the CLP.

On the other hand the development of the CLP must be examined from the point of view of the forces that are at work determining its concrete development, and in the first instance this means from the point of view of the structure, dynamic and contradictions of capitalist accumulation. It is the overall structure and laws of motion of capitalist accumulation that determine the conditions in which individual capitals have to attempt the valorisation process.

1. THE EXTENSION OF MACHINUFACTURE

We can investigate changes in the labour process both in relation to changes in their technical basis and in relation to changes in the management of control i.e. as systems of coercion, although these are clearly interdependent. In relation to the former one might look, for example, at continuous flow processes, numerical control machine tools, other aspects of automation and of mechanisation of information processing etc. In relation to the second one might focus on the ideology and practise of "Job Design", of the "humanisation of work" movement and so on. Some innovations in labour processes are such that this (rather arbitrary) distinction would have no relevance (e.g. the cellular organisation of small batch machine shop production). Our general thesis with respect to such changes

is that they have indeed taken place within the limits conceptualised in the theory of the CLP in the previous section of this paper. The development of the CLP has been an extension, a generalisation, and that with ever increasing severity and rigour, of the immanent laws of the CLP as more and more processes come more and more perfectly to exemplify its capitalist character: i.e. it has been an expansion of capitalist manufacture and thereby of the real subordination of labour to capital.

It is worth pointing out some implications of this thesis. It would follow that we see no "fourth era", i.e. no break with manufacture which would constitute a fourth term in the series simple-cooperation/manufacture/manufacture. It follows also that we see no emergence of a non-correspondance within the CLP, i.e. no basic change of production relations that would leave these relations in conflict with the capitalist relations in exchange. We thus do not see the labour process itself, in its internal structure, as the site of a new contradiction between the formally subordinate character of labour on the one hand and its technical command of the process on the other. Developments in the labour process such as high-speed continuous flow mass production, automation, semi-autonomous groups do not, therefore, signal the emergence of "a new era" in which all the brutalities of machine-based production would be left behind. Nor do they announce the impending overthrow of capitalist relations within production. Although we cannot develop the argument in this paper we want it to be clear that we see our position as one which would allow for a fundamental refutation of views such as those just mentioned and in particular:

(i) the "Scientific and Technological Revolution" thesis: this thesis states or implies that there is an autonomous development of the forces of production which come into conflict with the relations of production within production itself; and that these developed forces of production (automated processes, technically skilled labour) are the embryonic realisation in advance of socialist production processes:

(ii) the mountain of bourgeois ideology which asserts that we have, as a result of developments in technology, entered a new era (see especially L. Davies ed. Design of Jobs) an era which will be "post-industrial" and which is characterised by the disappearance of alienation in work and the dominance of technically skilled labour.

Our position is that the motor of history is neither an autonomous development of the forces of production nor the development of "technology", but class struggle, and that as far as the labour process is concerned this struggle takes place on what is essentially the very same terrain as that analysed by Marx, i.e. capitalist machinofacture.

It is of course impossible within the scope of this paper to attempt a branch by branch survey of the main developments of the labour process in the present century. We shall concentrate our analysis on the three main aspects of the modern labour process which we think show the continuity of the characteristic features of machinofacture (division between conception and execution, hierarchical control and simplification of tasks): (a) the increase in automation, (b) the use of "scientific" management and (c) the process of creation of the labour process itself, especially as regards the conscious application of science to that purpose. The first and the third aspects are related mainly to the technical basis of the labour process while the second is more explicitly related to the control of the labour process. In fact, of course, the other two are of necessity concerned with that objective as well.

Before analysing these aspects of the modern labour process it is worth pointing out that the need for an agency which organises the labour process has increased in the present conditions of capitalist accumulation and realisation. First, there has been an enormous increase in the scale of production, at the plant level, i.e. independently of processes of centralisation. In metallurgical industries, for instance, larger aluminium plants have grown, since the Second World War, from a capacity of less than 100,000 tons per annum (t/a) to more than 300,000 t/a, and in the steel industry new integrated steel works of more than 10×10^6 t/a capacity are not unusual

anymore. Pre-war capacities of 2 x 10⁶ t/a were considered large⁽¹⁾. In the chemical industry increases have been even more dramatic. Perrin (1976) shows that for several products minimum size plants have increased over ten-fold in the period 1960 - 1970/75⁽²⁾.

Such increase is made possible by the development of more powerful machines, more resilient materials, better control systems and by the systematic exploration of the possibilities opened up by technical relations such as those existing between the surface and capacity of containers. In other words, the results of several specific (capitalist) labour processes are combined in an organic whole which, on account of its size and complexity, must have an organising agency. In the capitalist system the "natural form" of this organising agency is the enterprise and it is indicative of the importance of this form of organising productive activities that State activities in this area are organised as enterprises⁽³⁾. Second, as is implicit in the above, the labour process is increasingly the result of a high degree of socialisation of labour. Enterprises tend to use more and more instruments and objects of labour purchased from other enterprises belonging to other "families", so that technical progress in one industry depends on the technical progress in others. In fact, it is significant that the most radical innovations in this century have been accomplished in the intermediary industries (especially chemicals and electronics) which produce inputs for a wide range of other industries. One of the best examples of this process is the machinery industry, where the main developments have originated in the electronics industry (especially numerical control), to the point that a report on the technical progress of the machine tool industry characterises such process as one of "invasion" by the electronics industry.⁽⁴⁾ Therefore, in the present conditions of capitalist production there is an increased need for a conscious organisation of the LP. Let us now examine the main features of this organisation.

(a) AUTOMATION

Automation is understood here as the realisation of the activities of the labour process by machines. In terms of a "general" labour process, automation leads to an increased capacity for producing more goods of homogeneous quality in a shorter period of time. In this sense it is an advancement of

human productive capacity. However, as implemented in the capitalist system, it presents the following advantages for the capitalist:

- (a) In terms of increasing the rate of surplus-value:
 - (i) It increases the speed of production
 - (ii) It increases the accuracy of operations and reduces waste.
 - (iii) It reduces the period of production because of
 - (i) less time is spent for each good and because of
 - (ii) also - less time is spent on repairs and quality control.
- (b) In terms of the control of the labour process:
 - (i) It increases control as processes and equipment are designed to suit the capitalists' aims, to increase surplus-value.

A productive process can be viewed as being composed of two main stages:

- (a) Conception - Research, development and design of the labour process including the specifications of the instruments and objects of labour;
- (b) Execution - The actual production of the commodities. The first stage is discussed in more detail below. As for the second, it can be usefully decomposed into three systems: transformation, transfer (handling and transportation) and control.⁽⁵⁾ Automation of transformation systems is not new - in many cases it goes back to the middle of the last century, as for machine tools, and even earlier in the chemical industries. What is the main new feature is the automation of the control system, largely through electronic devices, and the combination of automated transformation, transfer and control systems in an integrated whole.

The present developments represent, in fact, a continuation of a pattern of substitution of machines for men that goes back to the Industrial Revolution. While in that period what was being replaced was largely the muscular power of workers, what is presently being substituted for is their ability to process and store information and capacity for making decisions.

The realisation of productive activities by machines which underlies the progress of automation has been often attacked because of its consequences for the workers (greater intensity of labour, greater control by the capitalists, monotony of repetitive operations etc). Such consequences are undeniable, but the problem for the workers is not automation but the capitalist mode of using the possibilities opened up by the development of machines and productive processes. To focus on automation per se, except perhaps for tactical reasons at plant level during specific struggles, is essentially a reactionary (in the widest meaning of the word) approach in terms of the possibilities of socialism in the future and largely unproductive in political terms, as shown by all forms of Luddism.

The same applies to a considerable extent to the question of deskilling. Undoubtedly the development of automation leads to a simplification and fragmentation of tasks. This suits the purposes of capital as it increases the possibilities of expanding the use of machines even further, and it eliminates the need for some categories of workers (as Ford observed: "in mass production there are no fitters") and reduces the importance of others, generally of qualified workers employed directly in the productive process, thus reducing wage costs and the power of the workers. The workers who are affected by such processes often resist them, since they bring pay reductions (present or prospective), the waste of several years spent on training and apprenticeship and a different and usually more boring job. However, to over-emphasise the role of such resistance, except for tactical reasons, is probably a mistake. Professions and skills do not have their survival necessarily guaranteed because they existed at some point in history. Their survival must respond to specific social needs and, in fact, many professions and skills have practically disappeared from industrialised societies, whatever their mode of production, because they are not necessary any more. The fitters above mentioned are a more recent example, but hunters are perhaps a more traditional and obvious case.

The disappearance of skills or their loss of importance, we are arguing, is inherent in the development of human productive capacities. From the socialist point of view what has to be denounced is not such disappearance (which is again a reactionary position) but how the new (and old) skills are used in the capitalist system.

As regards future tendencies, the completely automated factory is still a thing of the future - systems of control that are able to automatically correct machines when new conditions arise (adaptive control systems) and robots that can 'see' and assemble parts accordingly are still in early stages of development, but they are undoubtedly technically feasible.

This means that the technical possibilities of those productive processes that are based on assembly work (e.g. the engineering industries) are far from exhausted. The degree to which they will be in fact introduced will depend much on their cost, compared with the cost of maintaining the present systems and on the workers' reactions to present and future systems. The same considerations apply to techniques such as cellular manufacture and group technology, where workers' attitudes are likely to be even more important, as those techniques emphasize changes in the organization of the labour process rather than introduction of new machinery.

It is also worth stressing that while until the middle of this century automation was largely the preserve of mass production, the latter being in fact a precondition for the introduction of the former, the development of numerical control has broken this necessary connexion, making possible the automation of short runs of production, such as batch manufacturing, which characterize most of the capital goods industry, for instance.

In the industries which are characterized by chemical processes, such as plastics, petroleum, metallurgy etc. (industries in which the productive process involves a change in the molecular or atomic structure of the materials being processed), the degree of automation has been carried much further than in assembly-based industries and they are much nearer the stage of dispensing with most of the direct workers in the productive process, retaining only a small staff for the control activities, largely based on electronic instrumentation.

The development and diffusion of automation is probably the prime example of the present pattern of technical change:

developments originating in an intermediate industry (electronics), heavily dependent on scientific knowledge (especially solid-state physics) which are then applied to a whole range of industries.

(B) "THE CONSCIOUS APPLICATION OF SCIENCE"

In this section we focus on the first stage of the productive process, on the activities of research, development and design, where some important changes have occurred since the beginning of machinofacture, but which have, nonetheless, preserved its basic characteristics and, in fact, contributed to deepen them.

There are two main differences in the process of creation of the labour process today; first in its 'inputs', especially the increased use of scientific knowledge for the transformation of the labour process but also the use of complex machinery and instrumentation for the same purpose; second, the systematic and institutionalized form of pursuing these changes. These are complementary features of the same phenomenon but it is convenient to discuss them separately.

It is known that originally, in the sectors where machinofacture was first introduced (textiles, metallurgy), capitalists relied little on the use of scientific knowledge. In fact, science profited more from the development of industrial processes than vice-versa(6). This situation begun to change at the end of the last century with the development of the electrical industry and changes in the chemical industry. The former is the first example of an industry which was from the outset 'science-based'. At the present time the most radical changes from the point of novelty and, at the same time, the most relevant economically, such as the development of electronics or atomic energy, are directly based on the development of scientific knowledge, in the sense that this knowledge is a conditio sine qua non for the realization of productive processes. Of course, in order to realize such productive processes 'technical' knowledge, such as embodied in design and manufacturing procedures, is equally necessary. This knowledge is based on experience and also on scientific information, but in order to simplify the discussion we shall treat it in the following exposition as subsumed under the expression 'scientific knowledge'.

The scientific knowledge mentioned above is basically a much deeper knowledge about the composition and structure of matter, which leads to a vastly expanded range of possibilities of controlling and changing Nature to suit economic and social purposes, such as is witnessed in the development of synthetic materials, genetic engineering and the development of new forms of energy. The extension of human capacity for productive activity, implicit in the development of science, could lead to an enormous increase in the range of human needs being satisfied and to a widespread alleviation of human misery. This in fact was the basis of the Victorian faith in the liberation of mankind through technical progress. However, subordinated to the needs of capital accumulation and realization those possibilities are implemented only when they can contribute to those needs.

The already vast literature on innovation bears witness to this subordination as it stresses the importance of 'adequation to users' needs' for the success of innovations as those needs are those of enterprises, the great majority of the main innovations being on intermediate products, which are purchased and used by the enterprises for the purposes of capital accumulation and realization.(7)

The capitalist nature of the knowledge-producing activities is also expressed in the fact that such knowledge, in itself, has an exchange value, transacted through patents, licensing agreements, technical assistance and so on, so that only those who can pay for it can have access to its use value. Therefore, as regards the development and use of scientific knowledge, from a historical point of view capitalism is a progressive system, in the sense that it has carried such development to a stage hitherto not achieved, but such progressive character is limited is limited by the intrinsic characteristics of the CMP itself.

The original organization of manufacture and its relationship with the institutions producing scientific knowledge were inadequate to bring about the changes we have just mentioned. The production of knowledge could not be left to a few gifted individuals working autonomously - such persons had to be brought together, properly organised and made to work on problems that were relevant to the needs of the system - therefore the need to organize and systematise the effort of research and development that characterises the process of change of the labour process

in this century. Moreover, the type of problems being investigated, the need to draw expertise from other people and the requirements for complicated and expensive machinery reinforced, from the operational side, the need for organizational backing.

Again, this is a trend originating at the end of the last century, in the electrical and chemical industries, but which became firmly established only in this century. Since the Second World War it has been considerably emphasised, when priority was given to large-scale research on problems related to atomic power, aerospace and military projects.

Concomitant to the trend towards large-scale organization, which created new professions (scientific and technical workers) there has been an increase in the importance of hardware, machinery and equipment, in the realization of technical and scientific work. In some cases (e.g. atomic research) such hardware is a necessary condition for the realization of research and in others it is now spreading as an important aid, frequently replacing workers, especially in more routine tasks, as in the case of the use of computers for detailed design. In this way, not only industry becomes dependent on research but also research has become dependent on industry.

Presently, even if the scientific workers in R&D laboratories and technical workers in design departments retain a greater control over their work than their counterparts on the shop-floor, the trend is unmistakably towards the organization of their work along the lines of 'scientific management', with an increasing fragmentation of tasks, tighter control of activities and hierarchical structures of command. As regards R&D Malecki and Olszewski (1965) (8) speak of a "certain assimilation of the character of the scientific work to that of a large mechanized industry; operating intricate equipment is in some features analogous to operating machinery... the development of equipment does produce trends towards a narrowing of the scientific workers' qualifications and towards their degradation". A notable feature of the literature on design techniques is its concern with systematizing and organizing the designers' creativity with a concomitant increase in their productivity and in the control of the results by the organization. (see,

for instance, the collection of essays in Gregory (1966) (9).

This is complemented by the increased use of computers and other aids to design activities, especially for those activities which have a more routine character (detailed design) but also increasingly for complex systems which require the combination of vast quantities of information, such as in aerospace projects or, more modestly, for complex machinery.

In this sense there seems to be a certain degree of convergence between the activities of conception and execution of the direct labour process and therefore there is an increased need for management to resort to other means, such as status-symbols and physical separation, to maintain the division between the two types of activities which is so important to its overall control of the labour process.

The growing importance of scientific knowledge for productive purposes tends to increase the value of commodities as there is more labour, especially highly qualified labour, involved in their production, but on the other hand, it contributes to the reduction of their value by making possible larger scales of production and, through its systematic and organized character, making the process of change more controllable and quicker.

Finally, it should be noted the use of scientific knowledge for productive purposes has led not only to the creation of new organizations (R&D labs, engineering departments and firms, consultants), both as parts of larger organizations or as autonomous institutions, but has also led to a closer integration of industry with the other components of society, such as the education system and the State, increasing the social division of labour and reinforcing the internal cohesion of capitalist societies.

(C) "SCIENTIFIC MANAGEMENT"

In both aspects of the production process discussed above there has been a notable increase in the use of 'scientific management' techniques, drawing heavily on academic disciplines such as psychology, sociology and so on. As in the case of the knowledge derived from the natural sciences this social 'scientific knowledge' is put to use for the capitalist purposes of increasing productivity and decreasing disruption of the

of the labour process. 'Management science' is a clear example of the subordination of knowledge to economic, social and political, ie. to class, purposes. It is an ideology designed to induce the working class to accept changes in the labour process, to increase its subordination and to counteract its resistance.

Also, 'organisational science' has become 'institutionalised' through the cooperation of universities, management schools and large firms. The planning, organisation and control of production have become an object for research. People who have studied management systematically at school are channelled into enterprises, then move into responsible positions after relatively short intra-firm training, and they often compete successfully for executive posts with those who have worked their way up the job ladder in the enterprise or with those with greater technical knowledge (eg. engineers).

The most articulate expression of this management science is socio-technical systems theory (10). This differs from the classical tradition of scientific management deriving from Taylor in that it does not aim at direct control of work through machines or men. Management techniques based on the systems approach attempt the integration of systems of activities which have their own internal structure of regulation. The result, ideally, is a whole which is either self-regulating or so structured as to make deviations from planned performance easily seen by those managing the organization, which is to adopt for the labour process as a social system the same ideal of 'self-regulation' (complete automation) that is adopted for the labour process as a machine system.

Autonomy is a central theoretical and ideological focus in socio-technical systems theory. The point of this autonomy is that it aims to raise cooperation and creativity, but these are of course only allowed to unfold within a system whose objectives have been 'clarified' by top management and 'operationalised' for the subordinated levels of the organization. This autonomy may vary in degree and content depending on the specific characteristics of any particular labour process. One has the case of 'seed money' for R&D projects which give

researchers considerable freedom; but on the other hand one has the case of the 'semi-autonomous' groups on the shop-floor, and these have in effect an extremely limited degree of freedom. Central control of 'autonomous groups' at whatever level is always exercised through the 'management information system' which has developed to remarkable and sinister degrees of sophistication with the revolution of 'information technology'.

While such concepts of management may not yet be dominant in industry they are certainly the dominant ideology in management studies. But the point is that while such management systems do of course require investigation into their concrete materialisation in production processes it is at the same time, if seen from the point of view of labour, perfectly clear that they in no way constitute a break with the general immanent laws of the capitalist labour process. A purely empirical study of them can very easily fall into all kinds of ideological traps when it comes to measuring such purported empirical variables as 'autonomy', 'responsability' and so on. But a theoretically informed study of them would reveal in all detail their embodiment of ever more rigorous constraints and controls operating on labour to define its required performance and ever more systematic and technically sophisticated means of monitoring this performance, ie. of increasing supervision and discipline. Capital has increased its power to coerce required labour performance. Any shop-floor worker can instantly perceive the power of management hiding behind the rhetoric and the software, but not surprisingly bourgeois intellectuals are more easily fooled.

2. THE PROCESS OF ACCUMULATION

(a) Levels of abstraction

The analysis of the form of the CLP has to be relocated into the analysis of capitalist relations of production, and further, into the concrete historical analysis of the development of particular social formations (eg. 20th century Britain). Although the capitalist control of the LP is a necessary condition for the extraction of surplus value, the development of the capitalist mode of production cannot be simply derived from the capitalist labour process. The needs of capital accumulation and the reproduction of capitalist production relations require the continual reconstruction of the CLP ie. the labour process, as the source of surplus-value, must be continually reconstructed by capital in order to meet the changing conditions under which valorisation has to be accomplished. But this reconstruction unfolds, historically, through the processes of class struggle and of capitalist competition, through both the intensive and extensive growth of the field of action of accumulation, and, broader still, through political and ideological processes, notably the development of the capitalist state. It is thus a long way from an abstract analysis of the forms of the capitalist labour process to any historical periodisation of the capitalist mode of production or to a consideration of the transition to socialism. Indeed, it is only in terms of its articulation with this wider context that the actual historical evolution of the capitalist labour process can be understood, and the enormous body of empirical observations on the changes in the labour process in this century sorted into some meaningful order.

Therefore the analysis of the labour process is relevant to the analysis of the development of contradictions within the capitalist mode of production not at the level of its internal structure only but in the context of the dynamic and contradictions of the accumulation process. It is beyond the scope of this paper to do more than provide notes on the main the main dimensions of this problem, concentrating on the fact that the interaction between the accumulation process and the development of the labour process takes place on the terrain defined by the developing socialization of labour and a greater reliance on the extraction of relative surplus-value. The general framework is a series of evolving relations:

relations between departments of production

relations between branches of industry

relations within the world capitalist system (e.g. between national capitals, and between metropolitan and imperialised economies)

relations between fractions of capital
relations between capital and state
relations with the competitive 'socialist' economies.

These developments change the conditions in which the valorisation process is conducted by individual capitals, and are themselves, on the other hand, affected by developments in particular labour processes. Thus, for example, the problems faced by an individual capital in textile manufacture are structured by the existence of particular international labour markets, by the intervention of states in the defence of national interests, by technical developments in other branches of production (so that the chemical industry becomes a main source of raw materials with the development of synthetic fibres) and so on.

On the other hand one can find in any particular social formation many labour processes which do not, or do not directly, fall under the full force of the law of value. For example, there are labour processes taking place in non-capitalist subordinate modes of production within peripheral social formations, and the survival of certain areas of individual artisanal production even in the developed capitalist economies. In these economies there are also, and above all, many labour processes which stand in some indirect and difficult to analyse relations with the operation of the law of value and which are, nonetheless, of central importance as aspects of the general conditions under which valorisation of capitals is taking place. Perhaps the most important of these are (i) housework, and (ii) the very heterogeneous range of labour processes taking place under the command of the State.

So, in the theory of the capitalist labour process developed in Section 1 of this paper we defined its essence as its subordination to the objective of valorisation, and we worked out the implications of the subordination for the internal structure of the 'abstract labour process'. We abstracted from other, external, forces acting on the labour process and determining its precise concrete content. To investigate changes in the labour process in the context of the process of accumulation involves moving to a lower level of abstraction and attempting to conceptualise how the context of changing relationships mentioned above has an effect on labour processes as the CMP develops. The theoretical concepts involved in specifying these aspects of the secular accumulation process (concepts such as

'fractions of capital', the 'State', 'departments of production' and so on) give us a framework for understanding the accumulation process in terms of its own logic. They allow us, for example, to elaborate a set of abstract criteria for distinguishing competitive from monopoly capitalism, in so far as this is a useful distinction. More concretely, they allow us to distinguish periods of the accumulation process, in terms of the changing requirements for ensuring reproduction as the relation between departments changes (the shift to mass consumption goods in the USA between the wars, in Europe post war); and the leading role of particular sectors at particular times. Moreover, this level of analysis, of the 'structure of accumulation', encompasses also the changing territorial structure expressed in the international division of labour and the internationalization of capital: especially today, the nature of the capitalist labour process is inseparable from the structure of capital in the world economy. It is at this level of analysis that Palloix¹¹ develops the notion that there exist not only two distinct labour markets (a shrinking highly-skilled and a mass unskilled, as a central feature now of the international division of labour), but also two labour processes: the labour process of mass production, and the labour process "directed at the reproduction of ruling class hegemony based on the control of commodity relations", i.e. market research, design, management consultancy etc.

But the elements of this accumulation process are articulated concretely in the yet broader context of the capitalist social formation. The actual structure of the process is not historically determined by the abstract logic of capital accumulation, since capitalist production relations can only be reproduced as a totality of social relations, much broader than 'capital as a social relation'. Hence the need to elaborate the links between changes in the capitalist labour process and changes in class composition, in political structures, in the role of the capitalist state (in education as much as the economy) and in interstate relations. We only want here to point up the danger of interpreting concrete developments in the capitalist labour process solely in terms of the 'logic of accumulation', rather than in terms of class struggle to be understood in a wider context.

To illustrate the kinds of research we see as relevant here we give below our notes on the labour process and imperialism, and on the labour process and the State; these are of course only sketches and not adequate treatments of the problems.

(b) The State

Existing theories of the state can be characterised in terms of i) their relative emphasis on either the use value or the exchange value role of the state; ii) their emphasis on either production or circulation as the principal sphere of the state's activity. The two perspectives can be brought together in a matrix as follows:

	use value	exchange value
circulation	state as supplier of generalised inputs, as planner, or reproducer of labour power as a commodity	underconsumptionist theories of the state (Baran & Sweezy) distributional theories (Ricardians, Fabians)
production	Italian school	restructuring (Fine & Harris)

Among use value views (i.e. those views concerned with the qualitative material character of the state) we include those theses concerned with the economic role of the state as a provider of material inputs, as the co-ordinator of proportionality between branches and departments, and as the reproducer of the labour force by means of the 'social wage'. We would also include those who exclusively emphasise the role of the state as an instrument of class oppression - a fertile example being the Italian school with their insights on the way in which the state 'decomposes' labour both in production and in the "social factory". In general the use value grouping emphasises the class character of the state, the increasing socialisation of labour (social conditions for the production of health services,

education, transport, energy etc) and the creation of the conditions for the reproduction of capital.

Exchange value theorists emphasise value contradictions, and usually derive their theses on the state from a particular theory of crisis. The underconsumptionist theories of the state as an absorber of 'surplus' are an obvious example. In this case the state acts in the sphere of circulation to correct a contradiction in the sphere of circulation. In some of the capital logic theories, the state acts in the sphere of circulation (increasing state expenditure, expansion of the money supply,) as a displacement of a contradiction which appears in the sphere of private circulation (unemployment, failure of capital to advance money capital) but originates in the sphere of production (falling rate of profit). Another variant of the capital logic school, is the recent work of Fine and Harris, who see the state's role as directly intervening in the restructuring of production.

Our task is of course to combine all elements, more specifically to trace the irreducible contradiction between use value and exchange value as manifested in the activity of the state both in production and circulation. Some use value authors have attempted to do this by introducing the concept of unproductive labour. The pressure for expanding the state for use value purposes has worsened the value contradictions of capital by increasing the proportion of unproductive supported by the productive labour of the private sphere. Or the argument can be taken one step back: the increase in the state's use value functions being related to contradictions in the exchange value sphere (need for restructuring, cheapening the elements of constant capital etc), which then further reacts back on exchange value in some contradictory way - again perhaps by the avenue of unproductive labour. For the most part however

exchange value and use value approaches have remained separate as have the treatments of production and circulation.

Approaching the subject from the point of view of the labour process will we hope suggest a more satisfactory way of treating the state as a form in capitalist accumulation. Let us start, like the Italian school, from the material relations in the process of production. Just as production is simultaneously a material and a value producing process so it has simultaneously a political and an economic character. The political stems from the necessity for capital to extract surplus labour from the commodity it has purchased - labour power. How to force labour to work - this is one side to the problem of capitalist control of the labour process. The Italian School has analysed the nature of the class struggle in the politics of production, the means by which capital has attempted to control labour (decomposition) and the way in which labour has responded (recomposition). The important point here is that capital's political response at the point of production will take a number of forms. Much of the political attack is carried on by the capitalist owner or his managers. But there are also ways in which capitalists co-operate, act as a class, in the form of state action in the politics of production. The instruments of force - both army and police - to enforce labour discipline in production is one example. The history of industrial law - (about working conditions, and the length of the working day,) is another. The direct intervention of the state in restructuring and raising the productivity of labour in production is a third. In all these instances the state is a form - but only one form - in which capital attacks its central political problem of extracting labour out of labour power.

There is also a politics of circulation. It is concerned with forcing labour power to sell itself as a commodity. This is the familiar field of the expropriation of the labourer from his/her means of subsistence, the development of modern landed property, the reproduction of labour power as a commodity. This is also the familiar terrain of theories of the state as reproducers of capitalist class relations. Two points need to be made. First, many theories of the politics of circulation do not see this aspect of circulation in terms of the politics of production. Production remains a black box, with labour power going in at one end, and surplus value coming out at the other. Our point is that the whole process of the circulation of labour power is dominated by the concern to discipline labour in production. Wages are not just a portion of value yielded up by capital as part of a general distribution process (neo-Ricardians). They are yielded up in a form and an amount necessary to ensure the application of labour in the process of production in the next time period. Labour permits are not just a means of restricting immigrants from a generalised access to social services, nor of preserving the bargaining power of labour in wage negotiations, but rather a means of supporting capitalist attempts at discipline in the factory. Indeed the threat of being thrown out of work (a moment in circulation) is perhaps the main way in which capital enforces discipline in the factory. Thus we must recognise the irreducible character of the politics of circulation, but in doing so situate it in terms of the politics of production, or more generally, in terms of the material (as against value) problem of extracting surplus labour from labour power.

The second point is that, as in production, capital acts in the politics of circulation in many guises. The form of this politics may be confined to the factory. Particular capitalists are often concerned to restrict or counteract labour's 'freedom' not to work for a specific firm. They may:

- i) control labour through tied housing or other items of subsistence.
- ii) include promises of future pay and promotion if the worker stays disciplined in production for the particular firm.
- iii) condition the amount and form of wage payment on performance in the factory (piece rates, other bonuses etc.)
The history of the wage.
- iv) arrange through the state that a labour's freedom to sell itself in a particular national market is conditional on staying with the same firm (direct recruitment of labour by London Transport for example)
- v) move to areas where the reserve army is so large that mobility between capitals is restricted and the discipline of hunger provides the supporting context to the discipline of capital in the factory.
- vi) have recruitment policies aimed at excluding militants, or others who are unlikely to meet the required speeds desired by capital from its labour power.

Or capital may act at the local level (see local agreements on training labour, or non-poaching agreements, or exchange of information on particular workers.) Or it may act through the national state (see Gambino's interpretation of the race relations act in terms of the discipline of immigrant labour in the car industry, or unemployment benefits).

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The states role is particularly important in the event of a strike: insisting on the necessity for particular labourers to sell their particular labour ^{power} substituting these labourers with troops, dividing the striking labourers with propaganda, attacking strikers with criminal trespass laws and laws against picketing, withholding payments from strikers families.

In general the main form in which capital appears in the politics of production is that of the organising capitalist himself. The whole hierarachy of control, the internal system of factory 'police', is devised and guided by the capitalist. The state is more important in the politics of circulation for here the particular capitalist is restricted to the micro level. But whether in the politics of production or the politics of circulation, the state must be seen merely as one of a number of possible forms which capital takes in its political drive against labour.

While it will be clear how circulation and production are related in the above remarks, the connection between use value and exchange value is not so clear. For in identifying politics with that aspect of material production and circulation concerned with extracting surplus value, we run the risk of once more divorcing the inseparable: use value from exchange ^{value}. The relation between the two has a number of aspects as it touches the state. First, the very politics of production and circulation is founded on, driven by the value relations within capital, the drive for the expansion of surplus value through the exploitation of labour power. Capitalist exploitation as a form of exploitation necessarily involves the concept of value and exchange value. From here comes the drive for time economy and synchronisation. Secondly, the fact that the political tasks are themselves material tasks, and therefore have to be produced, means that considerations of value enter here.

Thus the state performs many of these tasks because it is most 'efficient' from the point of capital for it to do so. Put in other terms, there are considerable scale economies in centralised production.

This leads to a third point, namely that the activities of the state, whether they are concerned with the politics of production or circulation, whether concerned with the provisions of material inputs and planning, or whether concerned with the reproduction of the labour force and of ideology, themselves involve a labour process. The production of use values by the state involves necessarily exchange value and value relations, and as such involves labour processes. Force, education, health, all have to be produced, and all have their own process. One of the main points we want to make is that any analysis of the state must involve a study of the labour process of state production and the character of the relations between these labour processes and value.

Exchange value theorists have distinguished this labour in terms of the character of its sale as labour power. It is unproductive because it is paid out of revenue. We want to place a contrary emphasis on its character as collective labour, an emphasis which is concerned more with its output (output not immediately related to particular commodities, but rather with generalised commodities produced by general social labour). In these terms, state labour is not unique. There is much social labour in private companies whose output can not be directly linked to particular commodities. Put another way, their jobs cannot be directly disciplined by the market. But the state has tended to take over the production of those general commodities whose production characteristics involve a high labour productivity and degree of socialised labour. Gas, electricity, trains, broadcasting, force: all have very high scale economies, and interdependent systems of labour to produce the particular results/commodities. One consequence of this is very low marginal costs of production (virtually zero for telephone calls, electricity, and broadcasting).

These systems of production have a double insulation against the law of value. First, restructuring tends to require the reorganisation of the whole system rather than particular jobs in the collective whole. Second, the state has a certain autonomy of funds, a leeway, linked to its power of tax and money creation, which can defend its units of collective labour from restructuring. This does not mean that the state sector is immune to the law of value. Rather, when it comes it tends to be i) massive in its implications for general labour - of the reorganisation of railways, or the introduction of

electronic telephone exchanges, or automatic post office sorting or new mining techniques, or natural gas; (ii) a clearly political quality: cuts are introduced in ways which are not necessarily dictated by the markets. They may run counter to the dictates of the market and the market's common sense (increasing charges for services with zero marginal cost, slashing the jobs of immediate service workers while maintaining the paraphernalia of corporate hierarchy). Both these points mean that large numbers of workers (and the nationalised industries tend to be the largest employers in any one country) will be subject to the simultaneous, and overtly political experience of capitalist crisis and restructuring. The fetishism of commodities fades to be replaced by a fetishism of the system.

At the other extreme, the state has a number of sectors which have a very low productivity: education, health, many social services, and branches of administration. Again labour is related to the market in only the most general way (even more general than the utilities we have dealt with above). Thus the discipline of production take on a more arbitrary form than it does for a labour process producing particular commodities for sale (the shoemaker, the printer). Moreover, some labour processes in these spheres are still at the level of the artisan, with some simple-co-operation and manufacture. As we have seen, labour is most difficult to discipline in this form. Hence the contradiction at a time of crisis. Capital finds it difficult to restructure these sectors, the quantity of social capital to maintain the same use values of output rises, relative to other sectors, (the familiar crisis of state expenditure), attempts are made to increase the length of the working day (junior doctors)

and the intensity of labour, alternatively cuts in the output are suggested. All these clash directly with the developed artisan and social ideologies of the workers concerned, who being organised as collective labourers are thrown into joint responses (like the workers in the utilities). The political character of the economic decisions is made vivid. Only the fetishism of the system, or of the commodity relations of the world market comes to the ideological aid of capital in such a situation.

The direction of a critique of public expenditure cuts are we hope clear. The rise in state expenditure is not due to Baran and Sweezy underconsumption, nor a necessity to maintain employment by increasing the money supply. Rather it is due to: i) an inability to cut unemployment benefits at a time of rising unemployment - this is the really large unproductive expenditure; ii) an inability to balance these increasing state payments for unemployment benefit by an increase in productivity in the service sector of state activity. Thus while the use values produced in the state service sector are rising only slowly if at all (one third increase for the 20 years since 1950 in secondary education for instance) the exchange values are not being reduced in line with the private sector, and indeed are in some cases rising because of improved working conditions (smaller classes in schools) and increased input costs by large capital and landed proprietors (cf. rise in drug prices, the cost of educational inputs, land, building costs etc.) Hence while the use values may be seen to be relatively declining in comparison with use values in other sectors, the exchange values are rising because of comparative productivity changes. The high productivity areas of state activity - the utilities - are meanwhile undergoing massive re-structuring, involving subsidies from general funds so that prices can

be kept low for capital, and money supply must therefore be increased. Since the labour movement is vigorously defending jobs and unemployment benefits the cuts are aimed at the weaker sectors, notably the social sectors where the political and savage anti-working class character of the cuts are most clearly evident. The artisans of this sector are currently in the process of preparing their response.

We have emphasised the character of the circulation of the final commodity produced in the state sector, because this seems to have much more significance for the labour process, and the character of capitalist discipline in these sectors than has the nature of payment for the commodity labour power itself. We find in the state the contradiction between forces and relations of production being expressed in the state sector at an advanced level a) in circulation (cuts, prices charged, pressure of state sector wages) and b) in production, in the labour process of the collective worker, organised by a central state institution with either increasing levels of technical labour, or artisan service labour. In both cases the significance for the material basis for political organisation will we hope be clear.

(C) IMPERIALISM

The labour process approach to imperialism is distinguished in the following way: it is concerned with the attempt by capital to struggle against the power of organised labour by recruiting labour in less developed countries. This redistribution of production is important not only in its effect on wages and profits but also in that it ensures a supply of labour when it is required (attempt to avoid strikes) and makes it easier to dismiss it when it is not required.

A. INTERNATIONALIZATION OF PRODUCTION

The pre-condition (or material basis) for the international relocation of production is

- (i) the development of a technology which makes industrial production less dependent on geographical distances, i.e. modern transport and communication techniques.
- (ii) the decomposition of a complex production process into elementary units such that even an unskilled labour force can be easily trained to perform otherwise complex operations.

The forces which bring about the internationalization of production are essentially two: international competition between firms and workers' resistance in the central capitalist economies. This will become clearer when we see which industrial branches are affected, and to which countries in the periphery production is shifted.

The industries which are confronted with the decision to move out are mainly

- traditional labour intensive industries (e.g. textiles, except synthetic fibres, clothing, shoes);

- labour intensive sections of "science based" industries (in particular electronics);
- capital intensive mass consumption industries which are highly intensive in the use of unskilled labour (e.g. car industry).

So, often it is only certain stages in the production process that are farmed out to less developed countries; semi-manufactured products are taken there, worked on and exported back to the mother company or to some other parts of the company in another country.

International competition forces firms which are operating in these industries to move to those states which offer them a docile labour force at low wage levels and freedom in the movement of capital. Wages, in Hong Kong, South Korea, Taiwan are 10 - 18 times lower than in the USA for the same work. In Mexico's border industries, some countries of Central America, and the West Indies, the wages in comparison to the USA are between 1:4 and 1:8. The wage differences are not so great when compared with Japan, but they are different enough to force Japanese firms to move out. The important thing is that labour productivity in the periphery is, in general, comparable to what it is in the USA, West Germany or Japan.

These differences in labour costs are an important reason for "running away" to less developed countries, but they do not explain the reasons behind the choice of country. There is evidence that inter-country differences are best explained by the degree of labour "docility".

This pattern makes sense in the light of the workers' resistance which capital faces in the central economies. Firms attempt to avoid the problems which e.g. US motor car companies have in the traditional car towns where they are up against a fairly militant and sophisticated working class. They have closed older assembly plants in Detroit and Toledo and have

moved to more attractive regions at home and abroad where the prospects of frequent work stoppages and resistance to speed up are reduced - at least temporarily.

This makes it clear that the extent and direction of the "decentralization" of production does not only depend on economic conditions such as relative labour costs, but also on the political conditions which companies meet or are able to impose. Such conditions are essentially the control of labour organisations and the guarantee of free movements of capital. In many parts of the world these are enforced by a repressive state apparatus.

An important alternative to setting up a subsidiary in developing countries is international sub-contracting arrangements with local firms, which are often complemented by domestic sub-contracting. In Hong Kong and South Korea there is now a whole network of small manufacturers supplying inputs to export-oriented electronics enterprises.

Two special arrangements which seem to be gaining importance are: the Free Production Zones in Asia, Africa and Latin America and contract processing with East European firms.

Free Production Zones are enclaves designed for the utilization of labour by international firms. These firms are attracted by low wages, special tariff and tax concessions, and specially built infrastructure. The zones are totally integrated into the world economy or often into a specific company, as most of the material inputs come from outside and all output is exported.

The East European connection is intriguing: intermediate products are sent to factories under contract in socialist countries and on sending back the finished products payment is made for the job. This contract processing seems to be on the increase, in particular to Yugoslavia and in the textile and clothing industries, but other countries (Hungary, Poland)

and other industries (electronic components) are involved as well. It is worth noting that Eastern Europe not only provides a stable, disciplined, relatively cheap labour force, but also that certain standards of payment, working conditions, educational standards, and health care are provided by the state. (12)

B. INTERNATIONAL DIVISION OF LABOUR

An analysis of imperialism which starts from the labour process reveals some tendencies for the international division of labour. A West German banker seems to have captured this very well:

"It will be more and more difficult to manufacture labour intensive products or those with a low technology content (clothing, footwear, electrical and optical products of mass consumption) in West Germany. The efforts of the developing countries to overcome their specialization on primary products will make the productive potential of its industries in advanced countries redundant ... The inference to be drawn is that production plants must be transferred to lower cost countries. The goal should be an industrial structure like that of Switzerland i.e. concentration on products requiring sophisticated know-how and engineering." (13)

This view is in complete agreement with a thesis arising out of Palloix's work on the labour process, who first posits a dual labour market, with a highly skilled, well paid, relatively small work force on the one hand, and the great majority of unskilled or semi-skilled, poorly paid workers on the other. He then argues that this duality tends to reproduce itself more and more at the international level and that industries based on large numbers of unskilled workers tend to move to the periphery, while the centre tends to "reserve" for itself the production which requires a highly trained workforce. (14)

The runaway industries which we dealt with before are certainly the clearest indication of this trend.

However, this whole picture seems to be at odds with a lot of the literature on Third World Employment, which sees one of the main reasons for the high urban un(der)employment in the high capital-intensity of modern industry, usually illustrated by high growth rates of industrial output and low rates of labour absorption into the modern sector.

This lead South Americans such as Nun and Quijano to question the usefulness of the concept of an industrial reserve army, because in their view the imported technology excludes a large part of the labour force from ever being absorbed into the modern sector; they prefer to talk about a marginalised labour force.

The point here is not to discuss this literature but to come to grips with the fact that there are substantial capital intensive operations set up in the periphery by both foreign and national capital. To what extent does this contradict our initial hypothesis about trends in the international division of labour?

The starting point for this view was the labour process, because this is fundamental to an understanding of the capitalist expansion into the periphery. However, not all aspects of imperialism have to do with the labour process, at least not in a direct way. One motor for imperialism continues to be the need for raw materials. Another one has to do with capital's attempt to secure markets in the periphery. The tariff barriers which many developing countries set up to initiate a process of import substitution closed many export markets to firms of the central economies. Consequently, firms tried to jump the tariff barriers by setting up subsidiaries within the underdeveloped countries or by contracting to local firms. This expansion into the periphery had little to do with lower wages in the periphery

or workers' unrest in the centre, it was primarily to secure markets and it included many capital intensive industries (e.g. the chemical industry). Companies producing in developing countries in such capital intensive branches tend to have a relatively highly paid stable workforce - often backed up by enterprise based unions - although this is often accompanied by the employment of unstable, poorly paid labour in ancillary operations.

This type of investment and labour utilization in the periphery makes it necessary to qualify or rectify the German banker's and Palloix's view of the trends in the international division of labour. But at the same time this supports their view, because one part of the total labour process remains in the centre, namely the research and development. Statistics about the distribution of R & D expenditure make this very clear. It is estimated that only 2% of the world's expenditure for R & D (excluding the socialist countries) takes place in underdeveloped countries. This has great importance for where in the world the accumulation of capital takes place and where skilled labour is concentrated.

There is ample evidence (15) that firms which control the technology can, and do, use this monopoly to repatriate capital from the periphery through manipulating prices for inputs, royalty payments and licensing payments - all this in addition to official repatriation of profits from subsidiaries.

The sophisticated machinery and equipment exported to the periphery is only a transfer of technology in the sense that the results of technical knowledge are transferred - often in packaged form - not the institutionally organised knowledge and skill.

The jobs which continually produce new technical knowledge and new machinery and equipment remain in the centre.

C. THE WORKING CLASS AND THE STATE

From this we can not conclude that the working class will be divided internationally in such a way that all skilled workers will eventually be in the centre and the unskilled workers in the periphery. First, there are many operations which require little training but simply can not be shifted, e.g. construction industry. Second, there is no industry which employs only skilled or only unskilled labour. Third, deskilling is a process which works within and across industries. Lastly, some governments in the periphery do attempt to build up their own technological capacity. These are forces which make reality more complex than suggested by the above picture. Even so, an essential part of this reality is that the technological progress in transport and communication and the general drive for decomposition of complex into simple labour has made it possible to shift certain kinds of production internationally; not only this but international competition and workers resistance in the centre has made it necessary for many firms to move to those places which offer a cheap and "responsible" labour force. The worldwide industrial reserve army has become a reality since the sixties.

The sheer possibility of shifting production internationally has an enormous impact on the political struggle between capital and labour. In several industries it has become ^{capital's} most powerful weapon to fight trade union demands or opposition. The labour movement remains powerless because at the present stage it can not effectively organise at the international level, even though "Workers of all countries unite!" has for the first time in history a material basis. Geographical distance and language barriers hamper the unity of the working class. Politically equally important is capital's general policy of treating its core of very highly trained workers, especially in R & D, engineering and design, very favourably in terms of salaries and fringe payments and working conditions and, as said earlier, these are jobs which tend to remain in the centre.

The same possibility of world wide utilization of labour for manufacturing, which increases capital's power vis-à-vis worker organizations, increases its power vis-à-vis governments. Chrysler's blackmail of the British government to pay subsidies and to put pressure on the trade union comes to mind. Nationalization of such companies is very difficult, because the operations concerned are usually tightly tied into internationally integrated processes of production and foreign market conditions over which governments have no control; often it is not even a bargaining counter because of the international mobility of these companies. In 1965 US firms began to run away in large numbers from the US to North Mexico and started production there of electric & electronic products, textiles, footwear, sporting goods, toys, food and wood products. After Mexican workers organised themselves for better wages and working conditions, the US companies increased the pressure on the Mexican government to control the workers; some companies actually moved on to Central America and the Caribbean (in 1974-75), where governments ask even less of the multinational firms in exchange for government-financed infrastructure, giveaway tax exemptions, and "incentive" legislation, and where labour is cheaper and less organised. (16)

Capital relies on the state for its expansion, but for a large part of manufacturing it need not rely on any particular state.

D. INTERNATIONAL MIGRATION OF LABOUR

The employment of migrant labour has been an important alternative or addition to shifting factories: Mexicans and Puerto Ricans work in the USA and workers from the Mediterranean countries went to Western Europe.

A large part of these migrant workers is concentrated in that type of production which requires labour for which only a very short training is needed. This has slowed down the wage increase for unskilled jobs. It enabled West European workers to move into more skilled or supervisory jobs which has the

effect of making them associate with the firm rather than with their foreign fellow workers. (Decomposition of labour). The state plays an important part in regulating the flow of migrants according to capital's needs. A major difference between Britain and e.g. West Germany, is that in a crisis Britain finds it more difficult to dispose of its immigrant workers, whereas Germany can "help the migrant workers to return to their own countries". While the process for international relocation of production seems only to have begun, the migration of workers into Western Europe may have reached its limits due to the resistance of the indigenous population and local governments to accept more foreigners in their areas.

(D) CONCLUSIONS

It is necessary to locate the labour process within the development of social formations in order to analyse contradictions, class forces, tendencies etc. ie. the conjuncture. But equally it is necessary to develop the abstract theory of accumulation and its crises (the "logic of capital", the falling rate of profit) to a level where it can include the concrete relations within the social formation and their articulation with particular labour processes. To put it schematically, in a crisis capital cannot blindly try to counteract the tendency of the rate of profit to fall. Its problems are always more specific - how to accumulate capital in such and such an industry or sector and hence to revolutionise those specific forces of production; how to redraw relations between branches in a way made necessary by developments in technique or changes in relations within the international capitalist system; how to manage the political battle for a redistribution of surplus as between State and capital, and so on. That is, its problem is to restructure the system of social production by accumulating capital in some places, destroying it in others, altering the profile and distribution of the labour force nationally and internationally and so on. The strategy of capital in a crisis is not to homogeneously raise the rate

of profit by increasing with equal urgency the productivity of labour in all industries, but to restructure social production in a way that is determined in part by specific and different developments of labour processes in different industries, different sectors, different localities etc.

Therefore, the strategy of labour in a period of capitalist crisis (or at any other time for that matter) cannot ignore these aspects of the conjuncture. Labour should not act as if all it had to do is to unify as a class around the purely defensive strategy of making it as difficult as possible for capital to manage its reorganisation, by adopting purely negative tactics (no incomes policy, back to collective bargaining, no redundancies etc.... ie. basically the CP line). On the other hand it is useless simply to assert, as do RCG authors: "It is clear that a strategy to defend the living standards of the working class must be turned into an offensive struggle for political power. Increasingly the working class must assert its 'control' and prevent the capitalist class resolving the crisis on the backs of the working class." This formula fails to carry conviction because it simply evades the central issue, that the resolution of the crisis, one way or another, must have a material basis in the reorganisation of social production. It is not just a matter of living standards and political power but of the missing third term that is their connection - the structure of capitalist accumulation on the one hand and of an alternative socialist strategy of accumulation on the other. Living standards can not be defended, whoever wields political power, unless the pattern of accumulation and the relations of production are fundamentally transformed. No doubt we all know this abstractly. The point is, however, to develop a way of analysing the social formation that can provide the concepts and the knowledge that make it possible concretely. This is why the labour process and its developments must be at the center of any analysis of the conjuncture which could form the basis for the elaboration of a socialist political strategy. This point, of course, is not at all to deny the necessity or organising to capture political

power but to emphasize that a direct, concrete connection must always be made between this objective and the objective of transforming the organisation of social production; to emphasize that the political struggle must be thought of in these terms.

SECTION 3: LABOUR PROCESS AND CLASS COMPOSITION

(1) INTRODUCTION

The previous sections of this paper have provided us with a framework in which to think the concept of the 'labour process as the site or class struggle in production', and they have indicated certain key areas for consideration in any attempt to develop this concept. They have shown the extent to which the organisation of the capitalist labour process is a political process, ie. is a function of capital's need to assert its control over the labour force. They have also shown that the characteristic form of the material appropriation within which capital maintains the real subordination of labour is machinofacture, and that the latter has necessary effects on the organisation of labour (collectivisation) and on the nature of the particular tasks performed (de-skilling, fragmentation).

It enables us to arrive at this point where the study of the LP can be used to inform political strategy.

The concept of the labour process must be the starting point for analyses of class relations because as the site of the material reproduction of society it is at the same time the site of the reproduction of the social relations within which production takes place. This is not to suggest that these relations are generated and sustained wholly within the workplace; rather they are reproduced within the social formation as a whole, at a social level and not at the level of the enterprise, through the complex of economic, political and ideological practices. Nevertheless these class divisions are divisions for production and attain their effectivity in production. In a formal sense,

concepts of class can be constructed without analysing the labour process (for example, through the concept of the mode of production and its elements).⁽¹⁾ But in order to give real content to these conceptions we need to discuss the labour process.

Analysis of the labour process in relation to class composition must look at two distinct areas. Firstly, there is the problem addressed in the first two sections of this paper: How does the labour process attain a form which is fully appropriate to capitalist relations of production, ie. how does the labour process become a capitalist labour process? Secondly, and following from this, is the question of how capitalist relations of production are shifted and modified by changes in this 'adequate' form of the LP. This is not simply a question of the relation between the LP and class composition, but of their mutual relations with the process of accumulation.

Within capitalist production, accumulation cannot simply mean a repetitive extension of production at a given technical level, but rather it means the restructuring and re-ordering of capital in a much more fundamental sense, as the social capital is, as it were, taken apart and put together again. This involves the destruction of some sectors of the economy, the construction of new sectors, changes in the relations between departments, changes in the rate of exploitation, changes in the demand of capital for labour-time, changes in the technical manner of producing commodities, changes in the relation of the firm to the market etc.. These changes in modes of accumulation do not simply happen once and for all at some critical moment of transition within the CMP, but rather happen continuously. There is an ongoing process of restructuring of capital which necessarily produces shifts in the relation of labour to the instruments and means of production (by simultaneously changing both those instruments and the forms of organisation of labour within which they are put to work).

Hence there are internal changes in the composition of classes within the CMP as the functions of capital are rearranged and progressively socialized. In turn, such changes produce effects in the process of social reproduction of classes: for example, the role of the education system changes.

But accumulation always occurs within a specific social formation and its form will therefore be subject to the particular state of the class struggle. Accumulation is, on the one hand, determined by a specific class struggle and, on the other, it is an intervention in class struggle, an attempt to modify the balance of class forces by shifting labour, 'de-composing' it, extruding it. Accumulation cannot be just any accumulation, it must be 'appropriate': appropriate to capital's need for valorization, appropriate to maintain control in production, appropriate to the conditions for the social reproduction of the relations of production. These conditions are often contradictory and are rarely completely fulfilled, yet it is the attempt to fulfill them that gives content to the notion that 'class struggle is the motor of history'.

The account which follows does not discuss any particular class formation in any given social formation. It only poses in the most general terms the question of the connection between trends in class composition and the forms of development of political consciousness and political action. It attempts to provide a theoretical framework for understanding the relationship between class and labour process, and not a conjunctural analysis, a 'concrete analysis of the concrete situation'. Therefore it does not analyse the political practices or perspectives of a specific social formation. Theoretical work on the problems of class and politics is the necessary pre-condition for concrete analysis; only through a theoretical construction of the hierarchy of determinations

operating on the theoretical object can the concepts with which to engage and organize the 'concrete' be produced; but a concrete account cannot be deduced from such a theoretical labour. Thus we cannot 'deduce' the class formation and political positions adopted by agents in a given situation simply on the basis either of their economic function, their place in relation to capital, or by observation of certain overall historical trends (such as de-skilling) effected by the development of capitalism on the LP. The main constituents of our attempt to provide a framework within which more concrete analyses should proceed can be listed in a schematic fashion as follows:

- 1) An account of class must proceed from examination of the labour-processes of the various agents in society, rather than in terms of a preconstituted set of categories to which these agents have already been assigned by virtue of certain formal criteria (their objective economic function, their 'productive' or 'unproductive' status etc.) It is the LP that determines the extent to which such categories and criteria are relevant to accounts of class at any given point.
- 2) De-skilling should not in itself be seen as the only significant factor in determining class formation. We should always see its effects in terms of the political and ideological relations in which it takes place, and which for certain workers are the major influence on their class position.
- 3) Proceeding from the LP means submitting concepts such as 'de-skilling', 'socialization', the 'collective worker' to greater scrutiny than they usually receive. It means

that they cannot be allowed to operate simply as formulae.

4) It also means that a conjunctural analysis would have to base itself on empirical work that related differences discovered between different LPs (especially in the extent to which they had been rationalised) to other factors (type of product produced, role of product in the accumulation-valorization process, availability of labour etc.)

(2) POINTS OF DEPARTURE

The central problem for any attempt today to define class or 'allocate' agents to classes is how to account for the manifold gradations that currently exist within the framework of the basic capital-labour polarity, and how to accommodate certain specific sectors of the labour force (eg. technical workers, clerical workers) that have emerged - and expanded rapidly - with the development of monopoly capitalism. Such sectors represent the most vexed areas for any theory of class today. Not only do they show most acutely the problems for any conjunctural analysis or class formation, but also the theoretical problems they throw up are problems of class analysis in general.

There are two basic lines of approach to the analysis of class composition under contemporary capitalism. The one argues homogeneity, the other heterogeneity of the non-capitalist classes. The former starts from concepts about ideology (eg. assumed notions of 'working-classness') and proceeds to conflate differences between groups of workers on the basis of emphasising an overall trend towards proletarianization. Theories of heterogeneity begin with concepts about accumulation (eg. 'productive', 'unproductive' labour) which they then associate with concepts about the LP. We briefly criticize these positions below.

(a) The 'Massification' thesis

The notion of the 'homogenisation' or 'massification' of the working class, a notion on which contemporary conceptions of the 'mass worker' are based, can be associated with the perspective of the Communist Manifesto:

'The lower strata of the middle class - the small tradespeople, shopkeepers and retired tradesmen generally, the handicraftsmen and peasants - all sink gradually into the proletariat, partly because their diminutive capital does not suffice for the scale on which Modern Industry is carried on, partly because their specialized skill is rendered worthless by new methods of production. Thus the proletariat is recruited from all classes of the population.' (2)

'The various interests and conditions of life within the ranks of the proletariat are more & more equalised, in proportion as machinery obliterates all distinctions of labour, and nearly everywhere reduces wages to the same low level.' (3)

Such passages might lead us to expect extensive, if not total, homogenisation of wage-labour under advanced monopoly capitalism, the disappearance of all intermediate strata between the two poles of labour and capital, and a direct and unambiguous confrontation between the masses of the proletariat and the elite of the capitalist bosses. Such an interpretation would suggest that there can be no counter-tendencies to the de-skilling process, which, it is further assumed, proceeds in direct correspondence with the process of immiseration (=homogenisation of wage levels). But there is no reason why the homogenisation of the conditions of surplus-value extraction should in fact produce homogenisation of the collective worker, especially when this process takes the general form of the separation of conception and execution in the labour process, and the formation of separate groups of agents for these functions.

The 'Massification' theses (basically that of the Italian school⁽⁴⁾ and Braverman),⁽⁵⁾ though they are not without an element of truth in pointing to the most general, abstract historical tendencies of class formation, are clearly hopelessly inadequate to the concrete situation today. For it is manifestly untrue either that the working-class is a homogenous mass, or that distinct classes and fractions of classes between it and capital have disappeared. It is also untrue that the progress of monopoly capitalism has been accompanied by an unmitigated erosion of skill - rather, it has given rise to specific demands for skill under the impact of the application of science to large scale industry, and in consequence has generated distinct groups of agents who are the possessors of those skills (engineers, technicians, supervisors etc.) It is furthermore untrue that decrease in wages is the automatic accompaniment of decrease in skill: the 'unskilled' factory worker is increasingly to be found paid at better rates than the more 'skilled' worker in eg. commercial work, and in the so-called 'unproductive' sector generally. This means that the main empirical criteria of class (level of skill possessed, on the one hand, and level of remuneration, on the other) do not necessarily pick out the same groups. In charting the composition of the working-class or in attempting to predict 'falls' into it (ie. the process of proletarianization) we must look at the determinants of both these criteria. High wages may to some extent compensate for loss of skill in certain sectors thus leading to identification with, or at least reconciliation to the status quo, whereas the reconciling effect of the exercise of a modicum of skill may be lost if the agent is paid at an abominable wage.

Thus, pace the Communist Manifesto, and pace any contemporary simplistic theory of 'massification', there is an actual heterogeneity of class, and any attempt to reduce the class distinctions of monopoly capitalism to the basic one between 'working-class' and 'capitalists' necessarily fails to give due weight to certain important de-homogenising and 'de-polarizing' trends that have accompanied the development of the CMP: 1) the emergence of a distinct managerial grouping, 2) the enormous growth in employment of workers in circulation, commerce and the service sectors (the so-called 'unproductive' workers in the broadest sense of the term - i.e. those paid out of the revenue of social capital whether employed by State or private enterprise), 3) growth in the number of research workers and technicians, and their consolidation as a distinct group at the present time, 4) growth in the employment of female labour.

Furthermore, the massification/^{thesis} emphasizes the effect of capitalist productive forces on the erosion of skill, and it neglects the LP as the site of a division between mental and manual labour, and the function of control over the LP that is afforded (and extensively exploited under capitalist relations) by de-skilling.

(b) Theories of Class Heterogeneity

We take as our instance of a theory of class heterogeneity that provided by N. Poulantzas⁽⁶⁾. Poulantzas argues that the specific class membership of any group of agents is defined by the particular articulation of the mental/manual and productive/unproductive distinctions that corresponds to it: thus the working class is both productive and manual, the 'new petty-bourgeois' is mental and productive or unproductive etc. Poulantzas arrives at this categorisation on the basis of an argument to the effect that the economic distinction between productive/unproductive

labour⁽⁷⁾ does in fact correspond to differences in ideological and political relations: unproductive workers are located on the mental side of a mental/manual division⁽⁸⁾ in a way that separates them from the working class and makes them the distinct class of the 'new petty bourgeois'. He observes the same phenomenon in the case of the technical workers, who though technically 'productive' in many cases, are also located on the mental side of the mental/manual division as a result of political and ideological determinations.

Poulantzas argues that the main site of the reproduction of this mental/manual distinction is the educational system, and he quite rightly emphasises the role of this in producing differences between agents which are harnessed and exploited by capital in the maintenance of its relations of domination. But the labour-process is the site of changes (notably de-skilling and socialization of labour) that themselves affect the extent to which an induced mental/manual division can continue to play its ideological role in maintaining labour aristocracies, separating technicians from workers etc. That is to say, material changes in the LP create contradictions in the sense that the distinction between skilled/de-skilled, or between mental/manual tends to become a function purely of ideology and bears too little relationship to what they do and how they do it. Given a sufficient attenuation of this relation, the ideological support must necessarily be undermined - it tends to become dysfunctional, - and any account which continues to appeal to this support without sufficient concern for its dependency upon the material labour-process for its successful operation will lead to a mechanical application of criteria.

The over-simplicity of the homogenisation thesis, made clear the necessity of a more adequate theory of class. Braverman's dismissal of the need to provide such a theory,

means in the last analysis an appeal to merely intuited notions (eg. of 'working-classness'), and while Poulantzas' distinction between the economic place⁽⁹⁾ occupied by a group of agents in the social division of labour and their subjective class-consciousness ('class position') is a significant advance on the discourse of 'class-in-itself'/'class-for-itself', we are left with a dislocation between the two and no adequate theory of their connexion. The problem of defining class is the problem of including both the objective determinations and the factor of subjective interests and consciousness. That is to say, class is not simply an objective place defined by a function in the social division of labour (this being as 'permanent' as the mode of production based on it), not simply the concept of functions of which agents are bearers/supports. It is also the concept of those bearers/supports as active agents in their response to the performance of such functions, whether this be one of acquiescence or resistance. Clearly an agent's class position does not follow as direct effect of his/her class place, and Poulantzas is correct to insist on this. But not even he successfully theorises the connexion between class place and class position such that his concept of class includes that of the necessary effectivity of the former on the latter (even if this is never a 'pure' effect, a simple outcome of performing a given economic function, but always also the product of political and ideological relations - these latter in many cases dominating to such an extent over the effectivity deriving from economic place that an agent's class position may in particular cases wholly diverge from that which 'by rights' he should be adopting). That is to say, the consideration of an agent's class position can never be wholly detached from consideration of his economic place and task performed, which must have some determination on the former even if this at times takes the form (through the intervention of

ideological and political relations) of a determination that has been subordinated to other determinations. The alternative is to fall into voluntarism - to hypothesise a free-floating level of class interest giving rise to class consciousness, without any necessary correspondence with class place. Poulantzas tends towards this kind of account, or, at least to the extent that he provides a theory of class position, he does so by reference to political/ideological determinations that are seen as functioning in a self-reproductive manner, isolated from the dynamic of changes in the place of work.

(3) DE-SKILLING AND SOCIALIZATION

We shall now attempt to elaborate in a more positive vein our claim that the LP must be the starting point for an account of class formation. We do this firstly, in this section, by sketching out ways in which in the main LP concepts appealed to in discussions of its effect on class must be given greater precision, and we concentrate particularly on the concept of de-skilling. Secondly, in section (4), we attempt to show how giving more substantiality to such concepts will affect the way in which we analyse the role and class position of those sectors of the labour force regarded as most problematic, viz. technical workers, clerical workers. Finally, in section (5) we indicate some of the implications suggested by this kind of analysis for the way we think the relationship between changes in the LP and the development of a given politics.

From the point of view of answering the question as to who is or is not in the working-class, the important question is not that of the formal economic place occupied (eg. whether he/she is 'productive' or 'unproductive') but the question of what the agent does in that place, and of what control, status and wage that performance commands. De-skilling would seem to be the key concept in answering such a question. It is at the same time the labour-process criterion that is most in need of rigorous formulation. Here we present only some indications regarding its elaboration:

1) It does not refer us to a certain standard or measurement against which different jobs can be measured (a view which implies the commensurability of jobs against some given but in fact unspecified, quality called 'skill' of which they partake in various degrees); rather it is the concept of the rupture between two modes of relating to the performance of a similar task.

2) The overall distinction or 'rupture' marked by the couple skilled/de-skilled under the fully established CMP is that between a craft-relationship (worker essentially the controller of his instruments of labour which he relates to as 'extension of himself') and the relationship of labour to machinery (worker subordinated to the pace, rythm etc. of the machine of which he/she becomes appendage).

3) De-skilling represents a loss of control but not its disappearance: the control function previously possessed by the skilled worker is reappropriated at a higher level. That is to say, it passes to a different 'skill' or 'knowledge' in a social patronomy of knowledge which under capitalism (and in large measure in socialist economies too) is related to as hierarchical ordering, whence it becomes the 'property' of a different type of agent, and is exercised by him either directly or indirectly at a higher point in the hierarchy of the labour-process.

4) De-skilling is a necessary concomitant of machinofacture and automation whatever the relations of ownership of the means of production, and it is an irreversible process: the transition to socialism will not be a return to craft based labour, and to the extent that socialism is dependant on the use of machinery and automation there is a lesser need for craft skill. Under capitalist relations of ownership, however, which are characterized by the separation of the labourer from the means of production, the technical liberation of the worker from the need to control the LP which is allowed by machinery is turned against the worker, and becomes the prime instrument whereby capital reproduces its dominance over the LP and enslaves the worker to the machine. Under the dominance of capitalist ownership which defines both the process of power relations and designs the information system incorporated into technology, the corollary of de-skilling is the process of concentration of knowledge which is used in ways specific to capital in the design of jobs and of the means of production. At the same time the ideological relation to knowledge (as a hierarchy) which is sustained by capitalist relations and reproduced primarily within the educational system is exploited in the labour-process as a means of dividing, and thus controlling, the various sectors of the labour-force.

5) Together with the general displacement of the craft relation under machinofacture, there is an on-going process of de-skilling within the machine relation itself (eg. numerical control systems dispensing with the need for skilled machinists, the replacement of traditional office equipment by automated office systems, - increased use of computerisation as a whole).

6) The macrocosmic effect of de-skilling is the polarization between the mass of workers deprived of any significant degree of control over, or knowledge of, the function of their task, on the one hand, and an increasingly concentrated fraction, on the other possessed of all the real know-how involved in the reproduction of capital. As a

microcosmic process it takes place through a division of labour and fragmentation of tasks whose effect is to maintain differences and gradations in skill, pay and status between workers even though the hierarchy of differentiations has in the main been down-graded and the agents taken en bloc further polarized from the fraction in possession of real control.

7) The de-skilling of the mass of workers in an enterprise begets the need for a supervisory function over the production process as a whole. This does not necessarily imply the creation of a group of supervisors. It can be materialized, eg. through computerised information systems. But it is a function that is essential both to the smooth running of the material process (someone or something must be in a position to control the flow of production, predict and preempt snags etc.) and to the subordination of the labour-force itself (supervision over the collective labour performance to maintain production rates, off-set sabotage, quality control of products etc.)

8) The repetitiveness of tasks, loss of self-fulfilment in jobs, that is the effect of de-skilling meets resistance. Loss of job-fulfilment could be compensated for under a different economic system in the free time released by the use of manufacture and automation. But under the dictate of the need to realize surplus-value, de-skilling leads only to intensification of the labour of those in employment, on the one hand, and redundancies, on the other.

We can say, then, that de-skilling means the loss of specific skills but only by virtue of the development of others, and that the process of de-skilling is not simply a one way process of proletarianisation or massification of labour but a two way process tending a) towards the assimilation of workers in terms of control over the job, level of decision making power over pace, rhythm and organisation of the LP, status, and identification with the aims of the enterprise, and b) towards the incorporation of the control

formerly allowed by the exercise of craft skill within a body of 'mental' skills. This serves to accentuate the basic polarity between labour and capital, but the mental/manual distinction it represents becomes a structural principle of capitalist production, an instrument of control throughout the labour force, by virtue of the different gradations of the labour force that it sustains. Obviously the phases of conception and execution are necessary aspects of any production, and cannot be dispensed with: but the distinctive feature of the capitalist labour process is not that it separates conception and execution, and thereby produces the categories of mental and manual labour, that that it locates them in separate groups of agents whose class determination is not necessarily similar.

(4) TECHNICAL WORKERS AND THE MENTAL/MANUAL DISTINCTION

It follows from our analysis of de-skilling that if it is to be used as the central concept to the understanding of the effect of the LP on class, we must always take into account (a) that the two-sided nature of its impact will be reflected in the relations between workers. The microcosmic process of de-skilling to which we referred (it is a staggered, uneven process going on throughout the labour force, - eg. at the various managerial and supervisory levels as well as the lower levels) means that there is a mechanism of 'loss of control - displacement of control' that is operant within and between already existing gradations of the labour-force. If it both erodes differences between groups of workers formerly distinguished in terms of their exercise of control, status, wage, privilege, it also creates division (i) through the displacement and re-exercise of control at a higher level whose agents are not necessarily that far removed from workers subordinated to them that they can be said to represent the capital pole of a simple capital-labour polarity; (ii) in the relations between the two groups of workers themselves - the group undergoing de-skilling and assimilation

to the ranks of their immediate subordinates will be involved in a struggle against that process and may even develop a corporatist solidarity among themselves that promotes a political division between sectors of the labour-force precisely because their material distinction is threatened. Thus to speak of de-skilling as a process of proletarianization is misleading, if by proletarianization one means the adoption of ^aworking-class position. Indeed, insofar, as it is a continuous process at all levels of the labour hierarchy from the lowest paid to the upper echelons of management, not only does it not guarantee any identification with the working-class, it does not involve (except for those groups closest to the working-class) any 'fall' for the de-skilled agents into the place in the social division of labour that is occupied by the proletariat.

(b) De-skilling is a contradictory process for both capital and labour. For capital it is the concomitant of manufacture and a necessity from the standpoint of economy in production and intensification of labour. But it also represents a threat in terms of the potential for the growth in solidarity among workers that it represents. At the same time it lends itself, through the processes described in (a) to a politics of 'divide and rule' that serves to between workers and thus a hierarchical system of social relations. This last aspect must be related to the hierarchical relation to 'knowledge', and in particular the privileging of 'mental' over 'manual' labour that is sustained in the social formation as a whole, particularly through the educational system. The ideological and cultural determinants that stem from this mental/manual division mean that de-skilling cannot function as the sole criterion of class position. The skill exercised by a manual worker may be no less relative to the production process in which he/she is involved than the skill of the mental worker, but the status associated with mental labour operates as an ideological determination against any direct identification with the manual worker.

If the machine and de-skilling provide the technical (and technical-control) basis of production under the established CMP, it is the collective worker essential to the operation of machinofacture that supplies the social basis. The collective work process follows as automatically upon the use of machinery as does the increasing inter-dependency of particular labours to the totality of social production follow upon division of labour and job-fragmentation. These are in fact but two aspects of the same process - a process which cedes a social control to the worker as it withdraws an individual one through de-skilling. The individual craftsman, albeit he has been collected along with his counterparts under one roof, who lays down his tools disrupts production only to the extent of his individual contribution to output. Since his job is autonomous (i.e. he as individual sees through the entire process of transformation of raw material to end product) the loss to social production is insignificant. It becomes more significant in this respect the more de-skilled his task, i.e. the more its component activities are divided up and distributed among other workers, i.e. the more socialized the labour-process becomes. The more intensely socialized the labour-process the more potentially disruptive power is ceded to the worker (precisely because his labour is no longer individual but social); the less the producer owns of the means and instruments of production, the less isolated his form of material appropriation; the more he is forced into confrontation with the means of production owned by capital, the greater his access to the means of production - i.e. the more socialized the productive forces become. This is the other side of machinofacture, of de-skilling and of the real subordination of labour. It is the aspect which exposes the way in which capital is not in control of the production processes which it is forced in the interest of its 'logic' to develop. And faced with this material loss of control, it has no alternative but to enforce an increasingly stringent political, and wherever feasible, technical, control that takes on an ever more arbitrary appearance from the separation of the production of social wealth (i.e. one that is only to private ownership and exploitation).

Two sectors of the work force to which these points have particular relevance are clerical workers and technicians. Of both these kinds of workers it can be said that they are products (at least to the extent that today they represent a significant proportion of the labour force) of the development of capitalist production, that have grown up along with that rather than accompanied it from its initiation. In this sense, they cannot be located within the basic capital-labour division. They neither occupy the place of capital, as can by and large be said to be true of managers, nor can they be said to be members of the working-class. They do not occupy the place of the proletariat in the social division of labour, its structural role as antagonistic to capital. Their 'productive' or 'unproductive' status does not have any direct bearing on this (if being paid out of revenue is the criterion, all non-State employed technicians will be 'productive', all clerical workers 'unproductive'). Nor can we simply refer to the skill they exercise. As Gorz (10) has shown, the 'skill' exercised by technicians is often more nominal than real, and as Braverman has shown in the case of clerical workers, their tasks in many instances, despite the mental status associated with them, can hardly be said to be significantly more 'skilled' than those of the mass of factory workers. What is at issue here, and must be taken into account in determining the class of these types of agents is the relation to knowledge that they represent, their position on the mental side of the mental/manual division. This position operates as an objective ideological determination upon the subjective class position that they adopt and upon the attitudes adopted towards them by other sectors of the labour-force. In the case of technical workers this serves the interests of capital to the extent that the qualifications possessed by technicians (whether the skills these represent are actually or only nominally exercised) function as a divisive factor between them and the working class - they perform a control function. Similarly in the case of clerical work, the ideological determinations stemming from the mental status associated with their work, reproduces a relation to themselves, and of others to them, of non-working-classness.

We have isolated technicians and clerical workers as the two major sectors of the work force today who exemplify the problems involved in attempting to specify class in a way that is neither purely formal on the one hand, nor merely psychologistic on the other. But the considerations to be taken into account in the case of these workers also apply to many other particular groups of 'professional' and supervisory workers, to the relations between them and their immediate subordinates and superiors, and to their relations to the working class. We can sum up by saying that the class of these 'mental' workers cannot be seen as structurally determined in the way that holds for the two basic classes of proletariat and capitalists. We do not have the same readymade theoretical principle in the form of their economic function, place in the social division of labour, as we do in the case of the basic classes. Thus in determining the class position of such workers, ideological and cultural factors will be of predominant importance. To say that the class position of technicians, clerical workers etc. is ideologically over-determined is by no means the simple application of a formula: it is of the essence for analysis of their political role.

We have also suggested, however, that these ideological, and cultural determinations neither arise in some auto-genetic fashion, nor self-reproduce simply at their own level (i.e. wholly within education, or wholly within culture). 'In the last analysis', they are dependant for their generation and reproduction upon the nature of the labour-processes whose privileged status they sustain. That is to say, the ideological support of the mental/manual distinction must correspond to certain differences, even if today they are becoming increasingly attenuated, between the type of tasks done if it is to continue to function successfully in dividing groups of workers. For example, a bureaucratic organization of the office LP (induced hierarchy of functions, mystification of jobs in a way that makes them appear the exclusive domain of their owners) can function in preserving the mental/manual distinction which separates these workers from the working-class, and divides them also within themselves, at the ideological level even where it no longer corresponds

to any real material difference. In such cases we have an instance of between real erosion of differences in levels of skills employed and degrees of knowledge needed and the continued function of the mental/manual division. But such a lag cannot be infinitely extended, and the ideological carapace will wear thin and cease to be a protection against the growth of worker solidarity and identification with the working-class wherever its material support in the LP is sufficiently undermined: this process is beginning to make itself apparent in the reactions of lower level clerical workers to de-skilling and rationalization of their LP. (We are not suggesting that these reactions automatically take the political form of identification with the working-class, but that they are at least ambiguous in that respect). We can compare these with the reactions of technical workers who are beginning to rebel against the contradiction between the purely control function of their qualifications and the proletarianization of their jobs in terms of the skill exercised. In these situations, where the ideological support has become dysfunctional as a result of developments in the LP, capital is faced yet again with the necessity of further re-organization if it is to overcome the contradiction it has exposed between the effects of its necessary rationalization upon workers, and the extent to which its control relies on the maintenance of certain groups of workers at a premium.

(5) MILITANCY AND VANGUARD

It is one thing to chart the tendencies and counter-tendencies to de-skilling and collectivisation; it is another to go on to make the connexion between these and the emergence of solidarity and revolutionary consciousness. The tendency of the adherents of the proletarianization thesis is to assume that de-skilling automatically leads to class unity and a growth in militancy that is revolutionary in character. In fact, it is more often the case that the high levels of militancy that emerge among workers whose LP is in process of de-skilling is nostalgic and reactionary in character - an attempt to preempt proletarianization (which is seen as the threat) rather than any identification with the cause of the proletariat. The

militancy does not relate to an acknowledgement of working-class status in which they see themselves confirmed, but is about the retention of control, privilege, status, wage etc. whose loss is regarded as a diminution of political power. We must look at the class struggle as a struggle about the erosion of difference throughout the gradations of the labour-force rather than in terms of a simple and straight-forward confrontation between capital and labour. And it must be understood that high levels of militancy can accompany quite reformist and reactionary politics while yet being the expression of revolt against the impact of capitalist relations of production.

The refusal to identify with the working-class must itself be linked to the degree to which the latter remains reformist and reactionary in its politics - to the extent to which it, though the victim of maximum exploitation, can be said only in an objective sense to be the main instrument of revolutionary change, and is not subjectively involved in the struggle for socialism. For in such a situation proletarianization can only be regarded in a negative light, and there is no reason why those who see themselves submitted to the process will be ideologically determined to see it as anything but negative, as a loss for themselves. Indeed, the role of technicians, foremen, supervisors etc. is of its nature ambiguous, since whether they adopt a revolutionary politics (i.e. view the emergence of the collective worker from the standpoint of its potential for socialism) or view it as an imposition of capitalist relations, this does not affect the fact that their material position in society is undermined: they have something to lose within either perspective. This suggests the mistakenness of the vanguard thesis - the idea that technicians, 'white-collar' workers will emerge as a 'new' working-class equipped with a revolutionary consciousness and^a political programme for socialism with which they then fire the masses. For it is only on condition of, and in relation to, the emergence of more radical forms of struggle and more long-term perspectives within the working-class itself that we can expect any significant proportion of those not at present within it to respond to the ideological determination that such a struggle and programme would induce, and begin to view their particular roles and political alignments from its standpoint.

We suggest, then, that though it is those workers who are currently most acutely experiencing the contradictory forces of de-skilling of their LP who are most vociferous in their demands and most politically active, they are not necessarily the most significant from the standpoint of the consolidation of a broad revolutionary front. Rather, it may be the fait accompli of the collective worker as this becomes a more extended feature of capitalist production, and the narrowing of the limits within which capital can continue to accumulate without intensification through collectivization that is more important in the long term for the development of a coherent political programme uniting the mass of wage-earners.

SECTION 4: THE LABOUR PROCESS, CLASS STRUGGLES AND SOCIALIST STRATEGY

The production process is the unity of the 'real labour process' and the process of valorisation and also of the reproduction of the relations of production. It is there that the subordination of labour to capital is both put to work in the interests of capital and also constantly reproduced. Therefore it is a central point of class struggle. It is a site of spontaneous and intense struggles. However class struggles in production operate within certain limits. Spontaneous struggles in which labour resists concrete developments or operations of the capitalist labour process suffer from the very fact that their origin is in the concrete labour process and their limitations mean that they cannot of themselves, with their own spontaneous, concrete content, rise to the level of action, organisation or strategy which would allow them to form the basis for general class unification at the level of politics. Although they are class struggles and have political content this does not mean that they are, or could be, the basis for the organisation of the class as a whole or for a general political strategy. In asserting this we are, of course, asserting our disagreement with what seem to be the central positions of the 'Italian School', and the Zerowork Group (their these concerning the autonomous working class content of struggles in production and concerning workers resistance in the labour process as the motor of the development of the capitalist labour process). Just as Lenin analysed and drew out the implications of the limits within which spontaneous 'Trades Union' struggles of economic defence take place, so we can point to a similar analysis of the limits of class struggles in production.

In the first place, such struggles are precisely defensive. In the capitalist labour process there is a real separation of labour from the means of production, a real separation which gives to capital the initiative and power to call the tune. Labour must always react to the initiatives of capital, resist them; but resistance is precisely not the same thing as taking the initiative and operating from a position of general strategic command. Capital designs plant, makes decisions about geographical location; it can 'run away' to the 'periphery', it can design in a need for a relatively docile labour force (immigrant labour, unskilled, women - sometimes). In doing so

it does of course take possible workers resistance into account, and there has developed, in response to this, a ritualised performance of 'consultation' with 'responsible' unions (who can, precisely, be relied on ultimately to submit to the standpoint of capital in order to safeguard jobs, not damage the 'national interest' etc.) But these facts do not alter one jot the basic relation of power within the capitalist labour process, the dominance of capital, a dominance which stems from the fundamental fact that capital has both the power and the necessity to continually revolutionise the forces of production. Cf. A.D. Magaline Lutte de Classes et devalorisation de Capital, (Maspero, 1975, p60) where he states his 'fundamental thesis':

'In the capitalist mode of production the principal site of the reproduction of the relations of production is the class struggle in production, a class struggle in which the capitalist bourgeoisie has the dominant role, and which is expressed in the continual upheaval in the technical and social organisation of the labour process, i.e. in the continual revolutionising of the forces of production. And here we can recall a thesis of the Communist Manifesto: the bourgeoisie, in contrast to all preceding exploiting classes, has a revolutionary basis, and its domination is based on the continual upheaval of the mode of production.'

Such struggles of workers resistance therefore have a necessarily limited outcome. Whatever they may achieve by way of defence of workers interests (and we are not in any way trying to understate the importance or necessity of such defensive actions: they can create serious obstacles to capital's attempts to increase exploitation and, in time of crisis particularly, to restructure social production via an increase in the rate of profit) nevertheless the outcome is always the reestablishment of capitalist relations of production in production. This is clearly so when it is a matter of individualised struggle (expressed in turnover, absenteeism and sabotage). But it is equally so even in those much more dramatic and collective struggles such as those involving sit-ins and work-ins conducted under such slogans as 'The Right to Work' or 'No Redundancies' or even 'Nationalisation'.

To this general limitation we can add others no less significant as obstacles to the formation of unified class politics. Such defensive struggles are limited because they attempt to defend workers within a particular plant, enterprise or industry. For example, revolutionised processes in telecommunications, shipbuilding or the docks throw huge

numbers of workers out of work and involve serious deskilling and demand increased intensity of labour from the recomposed labour force. Defence of workers within those industries cannot take account of the significance of the new labour processes from the general point of view of social labour; there is no standpoint from within an old labour process, given the fragmentation of social production into the dominions of independent capitals, from which a perspective on the development of social production as a whole can be achieved. No amount of class solidarity within the shipbuilding industry can achieve a standpoint from which analysis of a planned and socially rational redeployment of labour redundant to that industry could be developed. Therefore struggles at this level tend to be limited in the range of solidarity they can command and also conservative from the point of view of the labour process. Potentially positive aspects of the development of the forces of production have to seem, from the point of view of labour within production, as threats to employment and as the opportunity to extract as high a price as possible in terms of wages and conditions for the recomposed labour force.

Next we can see that struggles in production are divisive. They divide the class. Class unity and homogeneity are pure abstractions (until they are real accomplishments of political class activity and organisation). There are those who seem to think that class unity is a matter of concepts - for example, see the conclusion of the RCG article on productive and unproductive labour in which class unity appears to be deduced from purely formal considerations. On the other hand there are those who think that class unity is the accomplished product of the development of the CMP, expressed in the appearance on the stage of history of the "mass worker" (Italian School). In fact, however, the labour process divides the class and struggles in production set one fraction of the class against others. This happens when it is a matter of attempting to retain capitalist imposed job classification scales, differentials and so on, as well as when it is a matter of attempting to retain craft or skill demarcation boundaries. The labour process in general divides skilled from unskilled, those who are organised in powerful unions from those who are not (and a great deal of

the acceptance among Labour Party voters of incomes policies stems from this and is an attempt precisely to impose class unity, within the limits placed on this concept by the reformist strategy, from outside and 'above' the particular industrial struggles which are conducted by the big and militant unions); it divides workers in the 'developed' countries from those in the 'periphery'; it can divide men from women; it divides those in manufacturing industry from those in administration, education and so on; it divides shopfloor workers from technical and scientific workers; the list is endless.

In spite of all these limitations on the labour process as a site of class struggle, it is still true, however, that this struggle has not only economic and control aspects but also ideological, military and political aspects. The question is, under what conditions can these limitations be overcome and the general ideological and political content of these struggles forged into a general strategy for socialism? That is, under what conditions could there be achieved, starting from these struggles, (a) a unification of the class and (b) a generalisation of objectives?

How can the defensive, sectoral and divisive character of the spontaneous resistance of labour to the CLP be transcended so as to adopt the standpoint of the class, and not that of a fraction of the class, and so as to adopt the strategy of socialism, rather than that of defence against redundancy, deskilling, right to work, safeguarding differentials etc.etc.? This could only be done, in Lenin's much misunderstood formula, "from outside" - not of course from outside the class, but from outside the concrete struggles which arise within the capitalist labour process. It must be done, above all, (and here it is that the specificity of the "labour process approach to politics" shows itself) from a position from which it is possible to formulate both a concrete critique of the forms of capital accumulation and the elaboration of an alternative strategy for socialist accumulation, and this not abstractly (in terms of some blue-print for an indefinitely remote future society) but concretely in terms of the potentialities for socialist accumulation and the obstacles to it already in existence. The revolutionary task of the working class is the reconstitution of the collective worker with the objective of

socialist accumulation. The collective worker must be reconstituted both internally and externally, i.e. both within particular labour processes so that they are no longer systems of coercion, and at the level of social production as a whole so that the system of relations between labour processes developed under the sway of capital is transformed into a system of relations among labour processes which can function in the production of social needs. It is for these very broad but absolutely decisive reasons that we see the labour process as at the very centre of ideological, theoretical and political work for socialists. We can only present our views here in the form of extremely cryptic formulae, and are of course aware that in this form they really do not say a great deal. But we wish to present them as defining the general perspectives and directions of our own future work.

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NOTES: SECTION 1

1. MARX, Karl., Capital Vol.1. p.186.
2. Ibid. p. 184
3. Ibid. p. 153
4. Ibid. p. 162
5. Ibid. p. 163
6. MARX., Karl, Un Chapitre Inedit du Capital, p.145. (An English translation of this originally unpublished "6th chapter" of Capital is now available as an Appendix to the Penguin edition of Capital Vol.1.
7. Ibid. p. 171
8. Ibid. p. 222
9. Ibid. pp. 222, 252
10. "The real labour process" - this phrase is from Marx and refers to the labour process from the point of view of concrete use-values; see Penguin edition of Capital Vol.1. p. 981.
11. CHANAN, Michael., Labour Power in the British Film Industry (BFI, 1976).
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14. MARX, Karl., Un Chapitre Inedit du Capital, pp. 202, 248.
15. Ibid. p. 199
16. See Penguin edition of the unpublished chapter (note 6 above) p. 1035.
17. See Harold Catling The Spinning Mule ((David & Charles, 1970, esp. chapters 9 - 11).
18. for examples of such arguments see ed. L. Davies The Design of Jobs (Penguin)
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11. See Folker Frobel, Jurgen Heinrichs, Otto Kreye, "The Tendency Towards a New International Division of Labour - World Wide Utilisation of Labour Force for World Market Oriented Manufacturing", (Max Planck Institute, Starnberg, 1975, Mimeo).
12. From G. Adam, "Multinational Corporations and World Wide Sourcing", in ed., H. Radice International Firms and Modern Imperialism, (Penguin, 1975).
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14. VAITOS, Constantine., Intercountry Income Distribution and Transnational Enterprises, (Clarendon Press, 1974).
15. See "Hit and Run; U.S. Runaway Shops on the Mexican Border", NACLA's Latin American and Empire Report, July - August, 1975.

NOTES: SECTION 3

1. See Balibar, Reading Capital, 1970, 'The Elements of the Structure and their History'.
2. MARX, Karl., The Communist Manifesto, (Marx, Engels Selected Works, 1968), p.42.
3. Ibid., p.43.
4. By 'Italian School' we refer to those Italian writers, formerly linked with the group Poteri Operaia, who regard the central trend on class composition as being the formation of the 'mass workers'.
5. BRAVERMAN, H., Labour and Monopoly Capital, 1974.
6. POULANTZAS, N., Classes in Contemporary Capitalism, 1975.
7. Poulantzas defines all workers as 'unproductive' who are paid out of revenue, ie. not productive of social surplus-value, even if they are exploited by their particular employer.
8. Poulantzas' distinction does not refer to empirical differences ('clean' jobs v. 'dirty' jobs, jobs using the hand as opposed to the head etc.) but is a category of demarcation which represents the insertion of the Agent into the system of ideological relations.
9. Class place refers to the structurally determined place of a class in the social division of labour, class position to the political role played by a class in a specific conjuncture. See N. Poulantzas, Political Power and Social Classes, pp. 58 - 98, and Classes in Contemporary Capitalism - the Introduction
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