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## Alienation, humanization of the work place, and technology

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ALIENATION, HUMANIZATION  
OF THE WORK PLACE, AND TECHNOLOGY

Jürgen | Backhaus

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## ALIENATION, HUMANIZATION OF THE WORK PLACE, AND TECHNOLOGY

The purpose of this paper is to clarify some aspects of the economic consequences of co-determination. Starting from the same assumptions as one of the critics of this institution of workers' participation in the supervisory boards of large industrial corporations has made, it is shown that co-determination is likely to constitute a *pareto* superior move by reducing workers' alienation and, at the same time, rendering operation of the firm more efficient.

### I

In a recent paper on "The Economic Consequences of Co-Determination on the Rate and Sources of Private Investment" *Eirik G. Furubotn*<sup>1)</sup> developed an optimization model for the co-determined firm in which, supposedly, workers' representatives take part in major decisions of the firm.<sup>2)</sup> An index variable  $E$  is introduced to capture the quality of the working environment, where *a l i e n a t i o n* decreases with an increase of  $E$ . Relatedly, an inverse relationship is postulated between  $E$  and productivity. In an attempt to clarify the consequences of these assumptions, *Furubotn* used figure 1, which is reproduced on page 2 of this paper.  $U_a U_a$  and  $U_b U_b$  denote differently shaped indifference curves which reflect workers' preferences for the level of wages  $w$  and the quality of the work place  $E$  respectively.  $\bar{I}\bar{I}_1$ ,  $\bar{I}\bar{I}_2$ ,  $\bar{I}\bar{I}_3$  and  $\bar{I}\bar{I}_4$  denote different iso-yield curves, determining the expected net present value of the firm; where the net present value increases with rising natural index numbers. The reason for this particular order is *Furubotn's* assumption that the better the quality of the work environment, the less productive will be the worker. He concludes:

The magnitude of net present value or yield depends on various features, but one particular determinant of  $\bar{I}\bar{I}$  is the reward policy enforced by worker directors. Thus, if the demands made in this area were reduced, capital formation would be encouraged correspondingly. In the diagram, movement from  $U_a U_a$  or  $U_b U_b$  to  $MM$  would raise the attainable net present value to  $\bar{I}\bar{I}_2$  and permit investment to take place.

It is the purpose of this paper to clarify the assertions implied.

1) See pp. 131-167 in *Svetozar Pejovich* Ed., "The Co-Determination Movement in the West". Lexington: Heath 1978

2) For a correction of the institutional assumptions, see section III below.

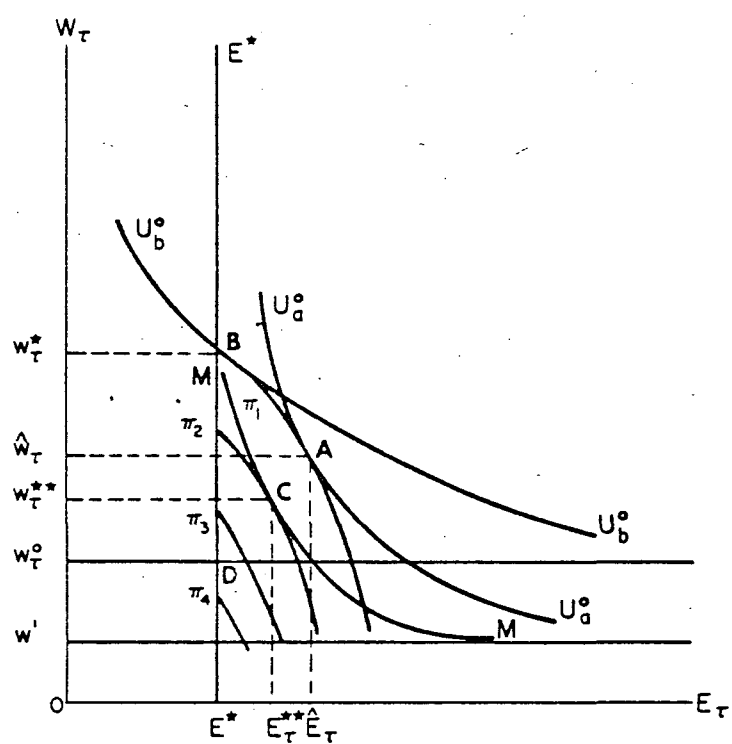


Figure 1 *Furubotn's* Optimization Model of the Co-Determined Firm

(Reproduced from *Furubotn* (1978), p. 144)

## II

Quite obviously, there is a trade-off between the wage level  $w$  and the quality of the environment of the work place  $E$ . The problem with these two variables is that one is a quantitative entity, wages can be easily measured, while  $E$  is a qualitative unit. On the horizontal axis, therefore, qualitative differences are shown, while on the vertical axis quantitative monetary units are depicted. This is first the wage received by workers under different technological and institutional settings, as well as second the net present value of the firm  $\bar{\Pi}$  as a consequence of different technological states as well as corresponding wage levels earned in the firm. (See fig. 2 on page 4).

Although preferences will not homogeneously be held by all workers alike, it is reasonable to assume a set of indifference curves relating  $w$  and  $E$ . Supposing that the mix of  $w$  and  $E$  is a matter of the technology chosen for the enterprise in question, we can postulate different technology-feasibility-curves such as  $T_1 \bar{\Pi}_1$ ,  $T_s \bar{\Pi}_2$  etc. These curves are drawn to be concave reflecting our impression that "extreme" technologies will in general also be more costly. Not only will workers insist on proportionately higher compensations as the environment of their jobs becomes less pleasant. Secondary costs such as employers' liabilities as well as the enterprise's contributions to the industry's compulsory accident and invalidity recourse funds will increase as the working environment becomes harsher, less pleasant and usually also more dangerous. On the other hand, an extremely cozy working environment might well interfere with productivity.

As far as the qualitative aspect reflected in the technology-feasibility curves is concerned, the environmental level realized decreases with increasing ordinal index numbers. The order of net present values of the firm, however, is *a priori* indeterminate. There is a distributional as well as an efficiency aspect to this problem. Let us turn to the efficiency aspect first and leave the distributional aspect to section IV.

Please consider, still following fig. 2, three different cases, where first in a traditional capitalist firm the working environment is ignored as an important variable. If an element is ignored in a process of choice, while it is

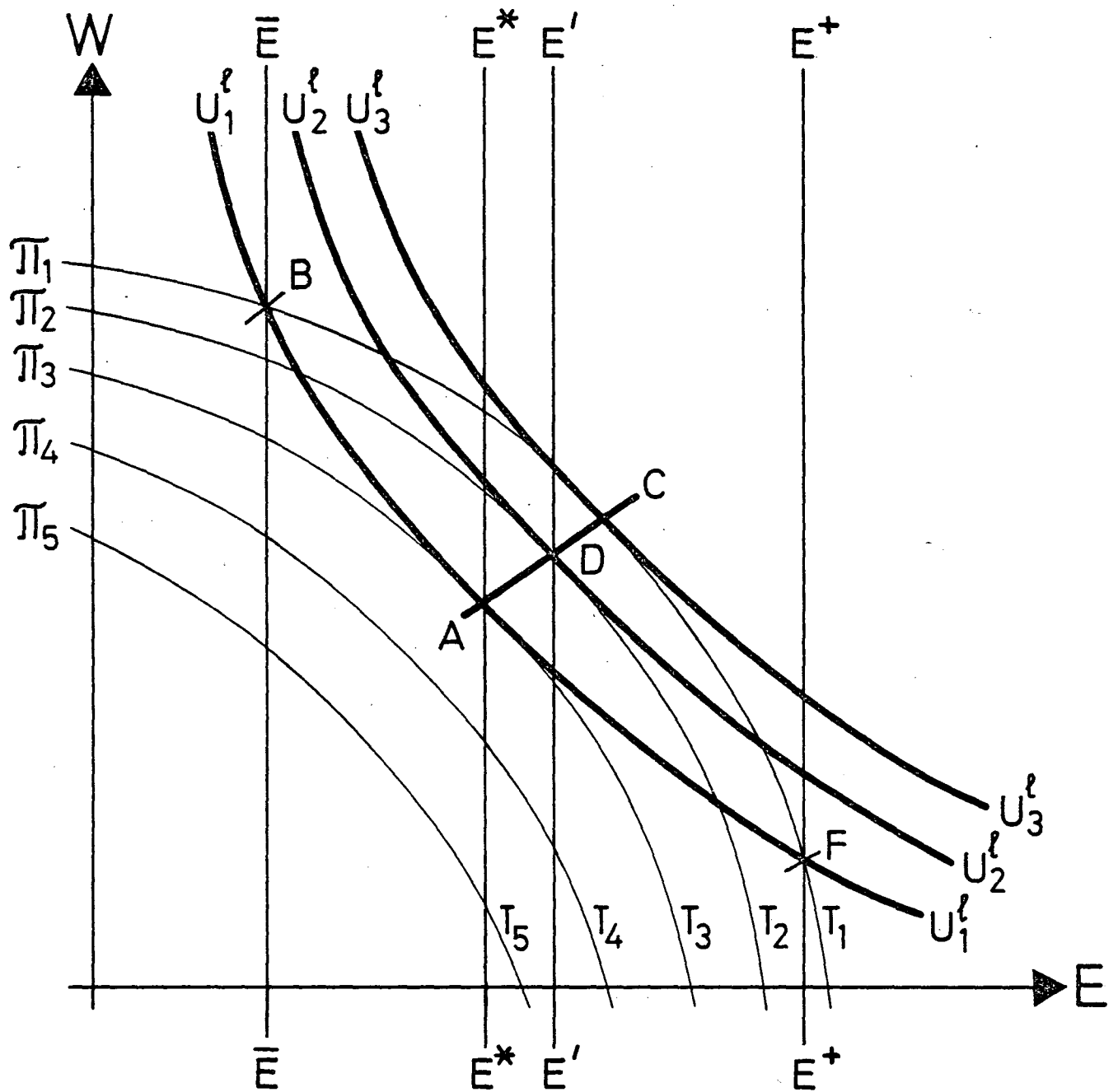


Figure 2 Alternative Optimization Model  
of the Co-Determined Firm

nevertheless implicitly decided upon, we cannot *a priori* know which outcome will be realized. The outcome is, of course, simply random. In the long run, however, when a particular feature of a situation is continuously not taken into account, we can suppose that it will, *ceteris paribus*, be developed only to a very limited extent. There it seems only fair to assume that only a minimal level of environmental quality,  $\bar{E}$  in fig. 2, is realized.

Secondly, assume that employers and employees co-determine the technology in view of the environment of the work place, wages and the net present value of the firm. As far as the working environment is concerned, we can assume that it will turn out to be better than minimal under co-determination.

Thirdly, an artificially high level of environmental quality is assumed to be imposed on an enterprise.

Given the trade-off between  $w$  and  $E$  and a reasonably competitive labour market, a particular level of  $E$  gives us the respective market wage the firm will have to pay. *E.g.*, a management which tries to reduce operating costs in choosing a technology and as a consequence employs a technology with only a minimum level of working environment such as  $\bar{E}$ , will face stiffer wage demands. If workers are given no say in co-determining the technology, with prospects of  $T_1 \bar{\Pi}_1$  as a technology-feasibility line and a working environment of  $\bar{E}$ , their representatives will demand at least the wage corresponding to the lowest labour indifference curve, which we may interpret as the minimum acceptable level of aggregate pecuniary and non-pecuniary rewards, determined in the labour market. This gives us point B in fig. 2, where  $U_1^1 U_1^1$  and  $\bar{E}\bar{E}$  intersect.

This choice is not an efficient one. Following the contours of the same technology-feasibility curve, workers can attain much higher a level of utility without any harm to the owners. Indeed, a Pareto superior move is feasible from B to C, thus raising workers' utility from  $U_1^1 U_1^1$  to  $U_3^1 U_3^1$ . Conversely, workers will remain indifferent to any arrangement along their minimum acceptable employment standards  $U_1^1 U_1^1$ , which implies the possibility of a move from B to A, which considerably reduces the level of wages that have to be paid, while, at the same time, increasing the environmental quality of the job.



Following *Furubotn's* assumption on the order of net present values of the firm in relation to the wage level, a move from B to A increases the net present value by  $\bar{\Pi}_3 - \bar{\Pi}_1$ .

Why should a point like B be chosen in the first place? Management can arguably be supposed to choose  $\bar{E}$  on  $T_1\bar{\Pi}_1$  only under incomplete information. This, however, is not an unrealistic assumption, and it is precisely what co-determination is about. Hierarchical organizations suffer from deficiencies in transmitting information from the bottom to the top. Information is screened, distorted, lost or simply disregarded.<sup>3)</sup> In addition, different technologies are more difficult to assess as to their impact on the environment of the work place, than they are as to their price and durability. Only the second set of criteria is what management is typically concerned with in the typical capitalist firm.

There is a second possibility, however, why this non-efficient choice might be made. If workers and labour representatives are given no say in choosing the technology under which work is going to be done, if, instead, the only single item to be negotiated is the going wage rate, this is what they are forced to maximize, although, in so doing, unions and managers alike are jointly rendering a disservice to their respective constituents, *i.e.* to both workers and the owners of firms.

Under co-determination, however, the trade-off between  $E$  and  $w$  as well as the respective costs associated with different technologies are necessarily taken into account. In the example depicted in fig. 2, worker representatives maximize labour's interests if subject to the technology-feasibility frontier  $T_1\bar{\Pi}_1$  already chosen by management, they select point C. No harm is done to the owners of the firm, but workers' interests are extremely well served due to the initial choice of B discussed in the preceeding paragraphs.

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3) A lively description and analysis of these problems is given in *Gordon Tullock*, "The Politics of Bureaucracy". Washington: Public Affairs Press, 1965, which applies to private and public bureaucracies alike. For a survey see also ch. 4 of *Jürgen Backhaus*, "Ökonomik der Partizipativen Unternehmung I". Tübingen: Mohr/Siebeck 1979.

It is hard to believe that management, in this case, would be prepared to concede such an outstanding success to workers' representatives. In fact, given workers' indifference curves  $U^1U^1$ , the minimal acceptable compromise is given by point A. This point is efficient. In between A and C, numerous efficient solutions are attainable, and they are indicated by the contract curve drawn between A and C. As an example of a feasible and efficient compromise, D can be easily shown to increase the welfare of both workers and the owners of the firm, still compared to position B.

Under government regulation, a third outcome should be considered as well. Government agencies such as OSHA in the United States or the ambitious program on the humanization of the work place ("Humanisierung der Arbeit HdA") in the Federal Republic of Germany, might be expected to have the effect that certain minimal standards of E will be imposed. Again, three cases can be distinguished. Either the imposition is relatively ineffective, such as  $\bar{E}$ . This is the case when, *e.g.* regulations require humane working conditions only to the extent that used technologies are not obviously inhumane, not corresponding to the existing state of technological knowledge.<sup>4)</sup> In choosing and employing technical equipment which does not meet these standards, managers would simply increase their costs in terms of a further increase in wage demands, increased expected values of liability claims presented etc., since setting E below  $\bar{E}$  would violate the legal order and invite all kinds of claims and negative sanctions.

Secondly, the technology regulation might require a level of E consistent with the feasible set of compromises, such as  $E^*$ . This would economize on transactions costs, which would otherwise be borne by the bargaining parties, although anybody familiar with the operations and effects of regulatory agencies will have some second thoughts as to the probability of such an efficient regulation.<sup>5)</sup> Regulation of this second type would indeed be a substitute for co-determination.

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4) §91 of the German Enterprise Constitution Act, *e.g.*, refers to changes in the environment of the work place which obviously are inconsistent with the contemporary state of ergonomical knowledge about a humane design of the work place in a particularly grave way, in which case the workers' council may insist on a reversal of the change.

One third case might be referred to as *overregulation*. In principle this is just the symmetric situation corresponding to B. *E.g.*, a minimal standard of  $E^+$  would lead to position F being realized, which, from both the workers' and the owners point of view, is equivalent to position B. This case would also be relevant under a régime of a *wage freeze*, where workers, in maximizing the sum of their aggregate rewards, including both pecuniary and non-pecuniary, have to resort to maximizing the latter.

### III

Why does this treatment sound so different from *Furubotn's*, although it deliberately follows his own lines of reasoning very closely? The reason is quite simply that *Furubotn* is a little unfamiliar with the institutions of co-determination. Co-Determination ("Mitbestimmung") refers to a régime under which workers or their respective representants hold either parity<sup>6)</sup> or near parity or else only the third part of the seats of the *supervisory* board of large industrial enterprises under a two-tier system of company law. This means that workers or their representants, respectively, have a say in the appointment of the management as well as in the determination of basic rules and strategies of firm policies. The members of the supervisory board of an enterprise have nothing to do at all with the wage policies followed by a firm. This, instead, is subject to negotiations on an industry level between industry-wide unions on the one hand and industry-wide employers' associations on the other. The system of industrial bargaining is far removed from decision making processes in the firm, both under the law as well as in reality. Thus it is reasonable to assume that a particular firm has only a minimal influence in shaping labor's minimal reward constraint  $U^1U^1$ . This influence can only be exercised

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5) In terms of a cost benefit analysis, the costs of regulation would have to be compared with the transactions costs saved in the process of collective bargaining.

6) A brief survey over the different institutions of co-determination in Germany is given by *Peter Schwerdner*, "Trade Unions in the German Economic and Social Order". *Zeitschrift für die gesamte Staatswissenschaft*, 135.3, 1979, 454-473. See also *Backhaus*, "Ökonomik ...", ch. 3.

by casting the appropriate vote in the process of choosing the officials of industry wide employers' associations, where this vote is cast only by the managers of the firm.

Thus, an essential feature of co-determination is the separation of two types of conflicts. Distributional conflicts as to the going wage rate are solved in an independent bargaining system separate and far removed from a particular enterprise. Firm-specific decisions as to long-run policy, long run investment strategy and long-run employment behaviour, which take the end result of the distributional decisions as a datum, are taken within the enterprise. Here, labour representatives as well as the traditional members of the supervisory board co-determine. Thus, a wider range of aspects taken into account in any decision is introduced into the decision making process.

Please contrast this with the following statements, again taken from *Furubotn's* chapter seven of the aforementioned book on "The Co-Determination Movement in the West":

The legal and institutional structure characterizing the politico-economic system gives the employees of the firm substantial, if not overwhelming, bargaining power on the firms governing board. While the workers cannot always expect to have their views prevail, they are in a position to demand reasonable compromise solutions from the firm's owners. (136) (...)

Under co-determination, (...) wage rates and environmental levels are likely to be the subject of negotiation. That is, because of their representation on the governing board, the firm's workers can be expected to press for some local controls over these key variables ( $w_t$ ,  $E_t$ ). And, depending on their bargaining skill and economic power, the workers may be able to secure particularly favourable wage streams and working conditions from the firm's owners. (139) (...)

It is true, of course, that the co-determination system gives support to the fundamental idea of labour reaching its goals on the basis of coercive power rather than through the use of contracts and markets. (160)

The only feasible strategy which workers representatives have on the supervisory boards of an enterprise is compromise, not conflict. Coercive strategies such as strike and lock out are the instruments used in the bargaining conflict between industry wide unions and industry wide employers' associations. A seat in the supervisory board of an enterprise is not vested with any coercive power whatsoever. Only by casting

a vote, influence can be exercised. With the exception of one worker director in the governing board of firms of a determined size in the mountain ("Montan") industries<sup>7)</sup>, labour representatives are typically not part of governing boards of large industrial enterprises under co-determination.

#### IV

In referring back to the quote cited on page one of this paper, what would happen if labour representatives under co-determination could somehow be convinced to accept MM and situation C in fig. 1 as an optimal solution for firm's policy? This case is similar to the case where, in fig. 2, workers were somehow propositioned to accept some point on  $T_4\bar{\Pi}_4$  or  $T_5\bar{\Pi}_5$ , when starting from a point such as A, B, C, D or F. Any of the points under such a proposal is located outside the bargaining range, and in any case off the efficient set of compromises on the contract curve between A and C. Since, therefore, such an offer would be neither efficient nor even acceptable, anybody following *Furubotn's* advice would simply witness his workers to take off and possibly drive his enterprise into bankruptcy, be this under co-determination or any other system of industrial organization. Realizing MM is equivalent to shutting down. There is no relationship between the institution of co-determination on the one hand and this particular proposal on the other. Reducing the aggregate rewards offered below any point on  $U_1^1U_1^1$  would, following this logic of events, rapidly decrease the net present value of the firm. Furthermore, the relationship between the level of the wage rate and the net present value of the firm is far from clear and unambiguous. Higher wages, given a particular labour market, offer the potential for an increased quality of workers employed, and often imply a higher amount of human capital invested in the production process (and bought in the labour market). Also, rising levels of the environmental quality of the work place, apart from the trade-off between  $w$  and  $E$ , tend to

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7) In the mountain industries, a worker director may not be appointed against the labour vote in the supervisory board; under the rules of the Co-Determination Act of 1976, the worker director is responsible for labour affairs, but not dependent on the labour vote in the supervisory board.

increase labour productivity<sup>8)</sup>. Therefore, neither the decision on the level of the wage rate nor the decision on the level of the environmental quality should be viewed as strictly zero sum game between workers and owners. This, however, is not an issue relating to the institution of co-determination.

What co-determination is about may be simply stated: In adding additional members to the supervisory board of large industrial enterprises, co-determination may be expected to increase the level of information at the disposal of the decision making committee, which is not, in the first place, involved in a conflict over the distribution of resources, but which, in being responsible for the entire enterprise, tries to co-determine its policies under constraints given by the market economy.

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8) For a survey over the experimental literature see *Paul Blumberg*, "Industrial Democracy: The Sociology of Participation". London 1968