Decollectivization and Recollectivization in the Workplace: The Impact of Technology on Informal Work Groups and Work Culture[1]

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Technological rationalization has been found to have a disintegrative effect on informal work groups. I offer a new explanation of this phenomenon of decollectivization by arguing that a rationalized work process, in calling for less worker skill, also provides less of a motive for workers to form such groups and to create work culture within them. I also assert that the impact on work culture is the most serious consequence of technological rationalization since it impairs workers' collective ability to respond to further rationalization. Contemporary 'job redesign' experiments are then interpreted as managerial attempts to recollectivize the workplace through the institution of rationalized work groups with rationalized cultures. Limitations on these attempts are also considered.

'Technology', argued Merton (1968: 617), has been used as an '*instrument of social power*' (emphasis in original) for 'the management of workmen'. He added that the improved productive efficiency promised by a given technology might never be realized if that technology had the 'collateral function' of 'keeping workmen in their place' (1968: 619). But this challenge to the widespread assumption that managers evaluate various technologies entirely in terms of the productive efficiency they offer, though it originally appeared over three decades ago, seems not to have had any memorable impact on scholarly inquiry.[2]

Merton's words now seem remarkably ahead of their time. The decade just completed was marked by a renewed interest in the ways in which technology has been developed and employed to

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keep workers, and therefore managers, in their respective places in workplaces both past and present. A number of studies appeared, the best known of which was authored by Braverman (1974), that specified the exact means by which technology was made to play this conservative role. These 'radical' or 'critical' studies differed from Merton's primordial analysis in that they typically employed a perspective based upon notions of class and class conflict, and they frequently raised the possibility that the management of workmen may have been the *primary* motive for the development and implementation of various production technologies. Nonetheless, the seminal idea that technology is a *weapon* in the managerial arsenal has been around for some time.

In spite of the relatively long tenure of that idea, the investigation of the ways in which technology has been used to maintain existing workplace relationships, or to enforce relationships more favourable to managers, is neither theoretically nor empirically complete. The purpose of this article is to extend that investigation by examining an outcome of technological deployment that has received scant notice from the radical scholars who have recently returned to the workplace. That outcome consists of the effects of technology on informal work groups (also known as primary work groups), and the work culture produced within them.[3] Following a brief review of what has been said elsewhere regarding the technological management of workmen, I will argue for the importance of considering the effects of interest here. After an exploration of these effects, I will consider their implications for the currently popular 'job redesign' experiments, and conclude with questions for future research.

Knowns of the Technological Management of Workers

For Merton, technology would serve to keep workers in their place if it could be used to threaten them with unemployment when they made demands considered objectionable by managers. But it would be difficult, perhaps even impossible, to determine the frequency with which a new technology (or rather, the spectre of a new technology) has been employed for such a purpose. It is also doubtful that this use of technology would be fully effective in the long run, given the continuing worker hostility that this mechanical Damoclean sword would likely generate. As any sophisticated

manager knows, workers are easier to keep in their place when they are not being constantly reminded of efforts to keep them there.

The radical analyses that appeared more recently have focused on the actual implementation of new production technologies rather than on the threat posed through rumours of their future introduction. A major concern in these studies, with the aforementioned work of Braverman showing the way, has been with the use of technology as a means for accomplishing the deskilling of workers advocated by F. W. Taylor and his followers. The degree of control over the immediate work process necessarily exercised by skilled workers (Blauner, 1964: 170) serves as a foundation for the social power they may exercise in their relations with managers. Thus, to the extent that technology is designed and introduced which incorporates some of the skills formerly exercised by workers without requiring them to develop new skills of at least equal substance, those workers are more effectively forced into the place managers deem proper for them. Used in this way, technology often engenders considerable hostility and even outright resistance among workers at the time of its introduction. But the intended effect is usually apparent over time, especially as new generations of workers who never possessed the old skills are brought in to operate the new production machinery.

What little has been written about the effects of technology on informal work groups differs from the analyses just reviewed in that it does not conceive of these effects as a mechanism for keeping workers in their place. The reasons for this difference will be explored in the following section, but for the present purpose it will be disregarded. Studies of the impact on informal work groups are united in a broad consensus about the disintegrative effect that 'modern' or 'industrial' or 'rationalized' technologies have had upon informal work groups. Seligman (1966: 370) argues that 'modern technology "desocializes" the worker, tears him from his comrades, and isolates him', while Friedmann (1964: 43) asserts that the Taylorist use of technology 'prevents the workers from exercising the powers of co-operation, teamwork and solidarity...'. Similar observations have been made by Blumberg (1973: 60ff) and Blauner (1964: 113f).

Those who have sought reasons to explain why technology has had this impact usually emphasize those aspects of it that directly affect the amount of interaction that is possible or necessary among workers during the course of their work performances. Relevant

features of a given technology would include the distance between work stations, the amount and type of noise, the extent of permitted or required physical mobility, and the degree of workers' control over the speed of production machinery (Faunce, 1970: 171; Blauner, 1964: 113f). Through these variables, production technology (including the physical arrangement of machinery on the shopfloor) affects the time and space available for workers to engage in the interaction requisite for the construction of informal work groups.

Another way in which technology can affect the formation and existence of such groups is also known to social scientists. A given technology might require a certain degree of 'teamwork' or 'functional interdependence' among workers (Faunce, 1970: 171; Salaman, 1974: 69f), and in so doing, it would call *formal* work groups into existence. The interdependence that provides the magnetism in such groups is something more than the serial interdependence found on the assembly line, where the quality of a worker's performance may not be significantly affected by the performances of those closest to him on the line. In contrast, the interdependence of a formal work group is of a kind in which the quality of work performances by each member affect the quality of those by every other member. In this sense, the product of a formal work group is more of a collective outcome than that of the seemingly more collective assembly line. This technological interlacing of individuals in formal work groups often leads to the social and emotional interlacing that characterizes informal or primary work groups. Particularly vivid examples of this phenomenon have been provided by Kornblum (1974) in his discussion of millhands' and loaders' groups in a steel rolling mill. Kornblum even argued that the experiences workers had in the highly cohesive informal work groups were of greater significance than the experiences in the many primary groups found outside of the workplace and based upon such commonalities as religion, race, and ethnicity.[4]

But the degrees to which a given technology permits interaction or demands teamwork do not tell us everything about the ways in which that technology influences the formation and existence of informal work groups. Even the factors just mentioned are far from absolute determinants. As I have demonstrated in a study of operating railroaders (Grzyb, 1977), tremendously solidary informal work groups can arise even if verbal interaction is virtually impossible on the job (as it was in the cab of a steam locomotive), pro-

vided that the organization of work offers other times and places for the required interaction. Furthermore, as the same study indicated, the technological demand for formal work groups does not mean that informal work groups will be created by team members or that they will necessarily parallel the formal groups in terms of membership or leadership (cf. Brown, 1977: 101f). In order to further our knowledge of the impact of technology, however, we will have to begin with a review of what it is that informal work groups do.

Informal Work Groups and Work Culture

The group life humans engage in at work and because of work has long been a topic of interest to social scientists and managerial theorists. Although F. W. Taylor was apparently aware of the impact of informal work groups on production (Tausky, 1978: 184), it remained for Elton Mayo and his colleagues to put the groups under the microscope during the well-known Hawthorne studies. Their findings would have been ignored by the practical men of management, however, had the researchers done nothing more than demonstrate the existence of such groups. What piqued the managers' interest was the discovery that little groups of workers were collectively influencing the level of production (Baritz, 1960: 93).

The 'restriction of output' (or more accurately, the *control* of output) that Mayo observed has proven to be a remarkable phenomenon in terms of the sheer number of studies devoted to it in the years since the human relationists emerged from the bank-wiring room. As a result, much is known about the nature of leadership in informal work groups, the means by which cohesiveness is established and maintained, the methods of discipline used to keep group members in line, and the ways in which these groups can affect the course of production.[5] The primary goal in most of these studies was not the addition of new findings to the existing body of social scientific knowledge, but rather the development of information that would facilitate managerial control of informal work groups.

That goal separated the human relationists from Taylor. While Taylor proposed to spatially isolate workers and thus hinder the formation of informal work groups, the human relationists sought

to harmonize the aims and activities of these groups with the objectives of management. They argued against any attempt to destroy such groups or interfere with their formation, claiming that the groups satisfied important emotional needs for association among the workers. In their rosy view, the potential was stressed for managers to use the informal work group as a device for integrating workers into the industrial community of the firm, with employee-centred supervisors serving as shopfloor agents in this matter. *Mirabile dictu*, the manipulation of informal work groups would end worker alienation, increase production, and enhance managerial control of the work process all in the same stroke.[6]

Academic sociologists have not been so obviously concerned with the direct effect of the activities of informal work groups on production. Most frequently, they have limited their conclusions to noting that these groups are a major source of job satisfaction (e.g., Sheppard and Herrick, 1972; Blauner, 1964) and, like the human relationists, asserting that this is so because the groups meet some sort of social need for workers. A review of the many studies of satisfaction and alienation might even lead one to conclude that being a member of a closeknit informal work group is the single most satisfying experience anyone could expect to have at work, for it is certainly the experience most often cited in such studies. Blauner (1964: 179) even laments the fact that these groups are less likely to form in the industries with the most alienating technologies, for he believes that they could compensate for the lack of intrinsic satisfaction in the work. Of course, some researchers go on to suggest that the high morale found in informal work groups could not help but improve productive efficiency. Others, perhaps fearing to be taunted with the 'factory sociologist' label, make no mention at all of the impact of the groups on production. But in neither case do we gain an adequate understanding of what these little groups of workers are all about. To accomplish that, we must turn away from the internal feeling-states of individual workers and concern ourselves with the defining product of all informal work groups. And that product, as Weir's (1974) pioneering work demonstrates, is work culture.[7]

Work culture may be succinctly defined as the ways of living on the job (and often off the job as well) that workers devise in their informal groups. It includes all of the various components — norms, beliefs, traditions, rituals, etc. — that are normally encompassed by that powerful concept of culture. To illustrate the pro-

duction and nature of this culture, I will present a hypothetical example. For simplicity's sake, it will be one in which informal work groups do not yet exist — let us say, a new plant which has just been staffed.

A worker encountering this work situation for the first time is immediately presented with a range of experiences. On the basis of whatever prior work experience he has had, he may quickly comprehend some of these new experiences because of their similarity to experiences past, or at the very least make some tentative judgement about them. But it would be an unlikely human who could make sense of all of the new experiences in isolation, much less develop adequate responses to them. If this worker has a cultural background broadly similar to those who share his work situation, and has some means of communicating with them (Weir, 1974: 64), he will usually begin to interact with them. And through this interaction, they will collectively decipher the meaning of each work experience and situation.

That worker may think the machine he operates is unsafe, so he discusses it with those who operate the same kind of machine. Or he may think the heat in his corner of the shop is unbearable, so he talks about it with others sharing that corner. Or he may think that the foreman is a burdensome bastard, so he questions others who labour under that foreman's eye. And in so doing, these workers begin to define their common situations and to make common sense of them, thereby validating and interpreting their individual experiences. Consequentially, they also decide which experiences are worth fighting to preserve or expand, and which are worth struggling to minimize or eliminate. With these decisions in hand, the fashioning of collective responses begins. Attitudes and activities are developed and tested for their effectiveness in solving common problems. Among them are the rituals, routines, shortcuts, and traditions so familiar to students of culture. Some will remain informal while others may be institutionalized in work rules at the insistence of unions (themselves a cultural product of informal work groups).

The nature of the cultural creation process and its product will be heavily influenced by the culture workers carry with them into the workplace. As labour historians Thompson (1963) and Gutman (1973) have amply demonstrated in their considerations of worker response to primeval industrialization, the standards of justice, dignity, freedom, and the like which provide a value base for work

culture are often derived from ethnic association or religious affiliation. But it is just as important to understand that the beliefs and behaviours created in the workplace exert a significant influence on the broader cultures outside the plant gate; work culture is not 'punched out'.[8] *All* culture is a product of primary groups, even though the flow soon becomes bidirectional as broader cultures influence the content and course of further cultural production. And it may well be, as Kornblum's (1974) analysis implies, that the continuing centrality of work in our lives — if even in a temporal sense alone — makes informal work groups the most important of all primary groups for inputs to the cultures beyond the walls of factory and office.

The conception of work culture as a creative and collective response is implicit in the preceding exposition. Now it must be noted that work culture is a response *in process*. It is advisable, therefore, to separate culture as product from culture as process, and to avoid a singular emphasis on the former. A particular cultural product — say, a method for combatting speedups — may lose its effectiveness and thus become obsolete, especially as managers implement their own cultural responses to neutralize those developed by workers. Although far from being an immediate or automatic result, workers would likely re-evaluate this product and modify it or replace it if necessary. A recent example of this process is provided by the re-evaluation of the trade union, evidenced by rank-and-file movements for more democratic unions or even for new forms of worker organization that more closely resemble political parties. The distinction between cultural process and product that I have been emphasizing will be important to recall when the effects of technology on work culture are considered.

That workers engage in the ongoing production of work culture is not what urges managers to give research dollars to 'factory sociologists'. The problem for managers is that workers *use* their culture, and that the quintessential use of all work culture is to gain, maintain or increase worker control of the work process. Because of this use, adds Whyte (1974: 320), much of work culture has an oppositional character. I will go one step further, asserting that *all* work culture is oppositional in work situations where capitalist productive relations obtain. This claim will be defended during a consideration of the nature of the opposition in terms of class relationships in the workplace.

Weir (1974: 36) characterizes work cultures as 'arsenals or weapon-systems in class conflict' (cf. Brecher, 1972: 233ff). The opposition expressed with cultural armaments goes to the property heart of capitalism itself. The attempt to assert control that characterizes work culture involves the various commodities used in production, and above all, the commodity of labour power. In purchasing these commodities, capitalists expect to determine the nature and conditions of their employment. The commodities are not supposed to dictate their modes of employment, anymore than I expected my pen to decide when and where to write this article, to choose the paper, or to judge the quality of my arguments. But through the creation and deployment of work culture, workers begin to resemble vivified pens, or better, the bucket-carrying brooms of the sorcerer's apprentice. Their insistence upon some say over their mode of employment consititutes at least a partial rejection of their commodity status and a resistance to managerial efforts to treat them as just another 'production factor'. This rejection, this resistance, is *ipso facto* a challenge to the private property relations at the centre of the capitalist order; it is, after all, the right of private property that capitalists invoke as they demand that their commodities obey them.

My use of the term 'resistance' is quite intentional, and it thrusts my analysis into an ongoing debate. Burawoy (1978: 273) rightly criticizes Braverman for speaking of worker 'habituation' and missing any creative response on their part. But in his own analysis of informal work groups (1978) and of 'games' (one type of work culture created in those groups), he speaks of those worker responses as 'adaptation' and consciously distinguishes that from 'resistance'. Indeed, he argues that such responses are one way in which the 'relations in production' reproduce the 'relations of production', by providing an ideological cover for the expropriation of surplus value. Games accomplish this by allowing workers a small measure of choice and control, thereby acting like a safety valve which operates to de-emphasize the many restrictive conditions of work surrounding the games and to encourage workers to accept these conditions as 'unchangeable and unchanging'. So it is that the creative responses of workers are but more chains to drag in their wake.

But Burawoy, like the critical theorists whose influence upon his work is openly admitted, has missed the 'other side' of culture. Culture has both oppressive and liberative aspects. On the one

hand, it allows individuals to accommodate themselves to social structures, but on the other, it provides them with autonomy from those structures and makes possible their transcendence (Gouldner, 1971: 53f, 225; cf. Weir, 1974: 32f). This is not an 'either/or' proposition nor is it a matter of 'progress' from one aspect to the other. In a similar vein, Beynon (1973: 102) argues that the 'fundamental point about capitalist production' is *not* that it is 'like a football team *or*. . . like two opposing camps' but rather that it 'involves both', and I would simply add that this is mirrored in the process and products of work culture. The contradictory adaptive and resistive aspects of work culture reflect a central contradiction of capitalist production which Burawoy himself takes pains to point out: workers both gain (use value) and lose (exchange value) in it.

Burawoy does recognize that the games and other worker responses may have some important relationship to resistance, but he has nothing more specific to offer. I suggest the following: in the process of creating and employing cultural responses, whether 'restricting production' or 'just horseplay', workers also create relations with one another that are essential for such dramatic examples of class conflict as slowdowns and sitdowns. *Without* those bonds, which are created *at the same time and through the same mechanisms* in which Burawoy says workers are creating themselves as compliant workers, class conflict would only exist as a hypothesis.

That workers do not conceive of their actions in terms of class conflict is not terribly important as far as managers are concerned.[9] Unlike some radicals of the ivory tower, managers must pay more attention to what workers do than to what they say or think. There is no time to accuse employees of 'false consciousness' when they are bit by bit taking over the plant. The point is that the use of work culture to challenge 'managerial prerogatives' represents a major form of class struggle whether workers conceive of it that way or not. I repeat that there can be no effective struggle without this culture or the groups that create and re-create it, for the only alternative is the ultimate futility of individual resistance. Work culture is *the* form of the self-activity of the working class in the workplace.

Some might object that workers occasionally use their collective cultural powers to increase production. But here the earlier comment about restriction versus control of output gains meaning. In-

creasing production constitutes just as certain a rejection of commodity status as decreasing production, for in pursuing either end workers assert their right to decide on the pace of production and refuse to be treated as predictable, dehumanized abstractions.[10] The problem for managers is that any group which chooses to increase production can choose to decrease it as well; as Glaberman and Rawick (1973: 39) observe, the knowledge of what makes a machine run also contains the knowledge of what makes it stop running. Some managers, more likely those who face intense competitive pressure, may opt for the increased production and ignore the fact that the work group's decision to provide it contains the seeds of a challenge to the 'place' of managers. Managers in the more monopolistic firms, able to afford a class-conscious concern with 'the long run', may well do otherwise. This is evidenced in studies of the past decade that show the lengths to which these managers have gone to wrest all control of the work process from workers, and underscored by Edwards' (1979) conclusion that the managerial development of bureaucratic control evinces a desire for standardized and predictable rather than erratically maximal productive behaviour on the part of workers.

If in the process of exercising some collective control over the work process workers refuse to be treated as the abstract 'productive factor' kind of human being, they also create themselves as another kind of human being with certain types of relationships to other human beings. The concepts of capitalist qualitative efficiency and socialist qualitative efficiency, as developed by Gordon (1976), are helpful in exploring this aspect of work culture. Gordon says that a production process is qualitatively efficient for capitalism 'if it maximizes the ability of the ruling class to reproduce its domination of the social process of production and minimizes producers' resistance [to that domination]' (1976: 22). Conversely, a production process that is qualitatively efficient for socialism is one that 'continually develops workers' capacity to share equally in mutual, responsible, and collective social relationships... [and allows workers to] maintain sufficient control over the productive process' (1976: 28). Relating these conceptions to the present discussion, a production process that stimulated the formation of informal work groups and the creation of work culture would be qualitatively efficient in the socialist rather than the capitalist sense. Such a process may be accurately labeled a 'socialist production process', for within it workers can begin to

develop socialist relationships and thus create themselves — in however tentative a fashion — as socialist human beings. The technology itself, then, may provide the fertile ground for the seeds of the socialist alternative. But that notion demands an answer to the central question of this article: aside from factors cited elsewhere, what is it about a production process that marks it as qualitatively efficient in one sense or the other by hindering or supporting informal work group formation and cultural production?

Before putting forward an answer, I want to re-emphasize the importance of the question as I have phrased it. The question is not concerned with the effects of technology on 'job satisfaction'; an answer in those terms would only perpetuate the obliviousness to worker self-activity so commonly found in sociological treatises. Nor will the impact on skill level be of interest, at least insofar as that influences the individual's capacity to control the production process. In contrast, my question mandates an examination of the ways in which technology affects the ability of workers to *collectively* respond to a production process and to the productive relations in which it is embedded.

Technology and Skill, Groups and Culture

Just as technology affects an individual's ability to exercise control over the work process through its impact on skill level, I will argue that it affects the potential for *collective* response through that same impact. A brief consideration of the nature of skill is thus in order.

The level of skill required for the successful prosecution of a particular work process is a function of the degrees of variability in it — whether in materials, tools, products, the physical environment or the social environment — and the necessity for worker intervention to cope with this variability.[11] Working with skill can then be defined as controlling the work process by solving the continuing problems it presents through those variable elements. The objective *involvement* of workers in their work is the critical result of any work process requiring skill, simply because such a process demands an integration of mental and manual labour in a continuous and creative interaction with the variable features. This involvement, of course, is something much more than the largely passive 'attention' other work processes require.

The significance of involvement, and thus the significance of the exercise of skill for the formation of informal work groups and the production of work culture lies in the fact that, by definition, the involved workers encounter a wide variety of situations in their work that would benefit from or even require group interpretation and response. Some may be problematic situations that would stimulate the development and application of a collective body of knowledge by the workers who collectively face the same situations. Others may be exciting or dangerous situations that can only be fully shared with those who understand them at both the grey-matter and gut levels. In sum, a production process with a technology that demands the exercise of skill simultaneously grants workers a measure of control over the production process *and gives them a work-based reason to form the groups and develop cultures centred around the maintenance and extension of their control.* Workers in such a process simply find that their job gives them a lot of reasons to talk to each other about the work. To put it another way, their involvement in work leads them to become involved with one another. In contrast, work processes that require less skill and more routine provide that much less of an associational motive. As several observers have pointed out (e.g., LeMasters, 1975; Mills, 1956), workers in those rationalized work processes generally avoid any mention of the work with one another beyond what little may be necessary for the work performance.[12] But if workers do not discuss their work, and perhaps even purposefully avoid any such interaction, the process of informal work group formation and cultural production is obviously hampered.

What has just been presented represents a piecing together of several bits of sociological knowledge. The idea that skilled workers are more likely to form cohesive work groups with an intricate culture devoted to control of the work process is not new; in Sayles' (1958) typology of work groups, the relationship between skill level and the capacity for united action is quite evident. The notion that skilled workers have a high rate of interaction with one another is not new either; Broom and Selznick (1970:15) found that these workers 'constantly meet to solve problems in the course of their work' (cf. Blauner, 1964: 47). Even the relationship between the phenomenon of involvement and cohesive work groups has been noted before (Salaman, 1974; Hall, 1975: 192f), although other researchers have treated involvement as a subjective state whereas I have indicated that it is more important to understand it

as an objective characteristic of the work process as well. What is new is the connection I have made — the assertion that the technology of a work process plays a significant role in the provision of a motive for the creation of informal work groups and work culture. That assertion, by extension, yields a new explanation of the connection between the deskilling commonly brought about by technological rationalization and the disintegrative or 'decollectivizing' impact of that rationalization on groups and culture.

As noted earlier, many others have recognized the decollectivizing effect. The political significance of that effect, however, has not been appreciated because the observers neither saw the connection that Weir made between informal work groups and work culture, nor grasped the importance of that culture as a weapon in worker-manager conflict. Such are the perils of concentrating on job satisfaction, assuming worker passivity, and perhaps even assuming an identity of interest between workers and managers (a trademark of human relationists). But with the understanding presented here, one can see that the most important effect of technological rationalization has been overlooked. Not only does such rationalization make many of the existing *products* of work culture obsolete; it interferes with the *process* of response-making by lessening workers' propensity to engage in the cultural process. Thus, a rationalized technology makes it more difficult for workers to collectively and creatively respond to that particular technology *and to future modifications of the work process.* Because of the long term impact on the process of culture, this effect of the design and implementation of rationalized technology is the most important means by which technology can be made to keep workers and managers in their respective places. And once technology has been used in this way, managers are able to turn their attention to a different kind of rationalization, to be considered next.

Managerial Recollectivization

Once technology has been used to decollectivize the workplace, conditions are ripe for managers to attempt to substitute a set of cultural products that are more favourable to management. This is a vital project for managers, because the employment of a given technology and an organizational form will never yield the desired

productive efficiency unless this cultural substitution has been accomplished. Bureaucracies full of written rules are worth nothing unless workers believe in the value of adhering to written rules. And assembly lines will not spew out the requisite number of products unless workers behave in ways deemed appropriate for assembly line work. From a managerial standpoint, what is required is the complex of cultural traits that Berg (1979) identifies as 'modern industrial man'. This creature 'attends to schedules, to abstract rules, and to objective evidence', 'increasingly accepts an elaborate division of labor and the need for coordination', and 'is also responsive to the need for strict hierarchies of authority, for machine production's imperatives, and for the separation of product and producer' (Berg, 1979: 18f). A modern industrial worker would demonstrate through attitude and action that he is comfortable with a thoroughly rationalized work process, and thus, that he is every inch a cultural creation of managers.

Managers have striven to make their employees approximate that cultural model of the individual. While a complete typology of the ways and means employed to that end has not yet been developed, an examination of several methods should provide sufficient illustration. The first of these is simply to directly implant the desired cultural products into workers. The example of computer programmers, as considered by Kraft (1977), provides a case in point. The culture created by members of that occupation in its infancy was made at least partially obsolete by the technological changes that fragmented the task of programming. And it was never what one could justifiably label a 'well-established occupational culture'. With programmers softened up by these changes in their work, managers introduced their own preferred culture and called it 'professionalism'. This was not, however, the professionalism that one associates with occupations that autonomously control the course and content of their work, and that has long been a favourite topic among sociologists. Instead, it is an 'anonymous and compliant individualism', a 'code of behavior to be adhered to by programmers but drawn up by their employers' (Kraft, 1977: 103). Those who are 'professional' in this twisted sense will not organize collectively, much less take collective action in response to the features and conditions of their work. As Kraft also notes, they will view changes in the work that result in further fragmentation and deskilling as being 'reasonable' and 'efficient'. This result re-emphasizes my earlier comment about the

importance of decollectivization for minimizing the potential for collective worker resistance to rationalization over the long term; it seems that rationalization creates the conditions for its own continued growth.

For the foregoing process of cultural subsitution to work, certain conditions must be present. Appeals to professionalism may only work with people who have been made receptive to them, especially through the educational system and the mass media. Workers who have had a long tradition of cultural resistance may struggle against the implantation of a new culture, at least temporarily, even while the rationalization of the work process is undermining their traditions. In the face of these and perhaps other obstacles, managers can attempt to make the cultural switch through an intermediary: the immediate supervisors of workers. In the railroad industry, college-trained supervisors were first brought in in large numbers during a recent period of intense technological rationalization that resulted in a considerable deskilling and decollectivization of operating railroaders (Grzyb, 1977; Kemnitzer and Spier, 1975; Spier, 1963). The managerial advantage in drawing new supervisors from the campus rather than from the traditional source — the ranks of production workers — stemmed from the fact that these new men had not undergone a lengthy and intensive enculturation process among the men they were to supervise. When instructed by their employer to instill new values and beliefs in workers, and to insist on new norms of acceptable work performance, they would be incapable of resisting such dicta through an appeal to an authentic workers' culture. Through this change in recruitment policies, then, management was better able to keep both workers and their supervisors in their places.

It may not always be necessary, possible, or financially feasible to recruit college graduates for relatively low-level supervisory positions. In the steel industry, reports Stone (1974), a period of intense technological rationalization was followed by a decision to retrain foremen by educating them in the new ways of doing things that their managers preferred. This may not have been quite as effective as hiring foremen who had no prior contact with production workers and their culture, and might have been a consequence of the relative rarity of college graduates in the era considered by Stone. And yet, the results may well have been acceptable if the 'retrainees' were carefully chosen — in any workplace one can find those who are never successfully enculturated by their workmates.

Note that in all three of the examples considered thus far, technological rationalization preceded or was at least coterminous with the attempt to enforce a new set of cultural products. This may not be a coincidence. Over the years, workers develop a sophisticated practical understanding of the real workings of a particular production process, and that understanding is a vital part of work culture. Such knowledge arms workers to resist those supervisors who might try to impose a new culture while still innocent of the ways of the shopfloor themselves. But technological rationalization can make much of that knowledge obsolete, leaving workers at a disadvantage relative to their supervisors, who will likely have had at least a classroom introduction to the changes wrought by rationalization. While this disadvantage is not ordinarily permanent, workers will be in a weak position while they seek to learn the mysteries of the new process. In that way, technological rationalization shifts the cultural initiative to management.

The foregoing remarks also suggest a clarification of Edwards' (1979) analysis of the relationship between 'technical control' (control of worker behaviour through the physical organization of work) and 'bureaucratic control' (control of worker behaviour through the social organization of work). Not only does the former chronologically precede the latter in the history of managerial efforts to gain control of the work process, but it also paves the way for the latter through its impact on the cultural process and products created by workers.[13] This will also be seen to hold for the final example of cultural substitution to be considered.

In the previous illustrations, the cultural substitution effort was concerned with cultural products alone. But in recent years, managers have increasingly attempted to rationalize the *process* of work culture as well, and I will refer to this phenomenon as 'managerial recollectivization'. Once the weapon of technology has been used to decollectivize the workplace, managers will find it possible to construct their own kind of work groups among the workers. 'Their own kind' simply refers to work groups that will not produce an oppositional culture. In fact, since it is a common belief among managers trained in human relations that workers in harmonious and cohesive work groups are more productive, these managers may find it not only possible but very desirable to attempt recollectivization in the face of a decline in the rate of growth of worker productivity.

Managerial recollectivization is usually implemented under such familiar and misleading titles as 'job redesign', 'job enrichment', 'participative management' and the like. That this collection of currently fashionable buzzwords often conceals a process of recollectivization becomes readily apparent when the influential *Work in America* (1973) report is examined. In the appendix entitled 'Case Studies in the Humanization of Work', a list of experiments aimed at improving morale and enhancing productivity is provided. In the 'Technique Used' column of that list, terms such as 'autonomous work group' or 'team' repeatedly appear, and are implied in many of the experiments that do not explicitly mention them. The description of the famous Topeka dog-food plant experiment, which was incorporated into the *Work in America* report as a model, includes the managerial creation of 'autonomous work groups' as the first in a series of recommendations derived from that experiment.

Of course, those groups were intended to differ from the informal work groups that workers themselves create in at least one crucial aspect. The managerially-created groups are expected to develop a culture that will keep workers and managers in their places. Walton's review of the Topeka experiment is blunt on this point: 'The self-managing work teams were expected to evolve norms covering various aspects of work, including responsible patterns of behavior...' (1974: 237). To insure that workers would not develop an oppositional culture, however, 'team leaders' were drawn from the 'foreman-level talent' and were 'largely responsible for team development and group decision making' (Walton, 1974: 235). Under the beguiling title of 'facilitative leadership', the recommendation of this procedure was also incorporated into the *Work in America* report. The procedure further emphasizes the distinction between managerial recollectivization and the creation of informal work groups by workers who freely 'hire and fire' their leaders as well as determine group composition.

The key phrase in Walton's description is 'responsible patterns of behavior'. The phrase is echoed by Davis, a central figure in the Tavistock Institute, who calls for the development of 'responsible autonomous job behaviour' (Davis, 1976: 96). His discussion of terms leaves little doubt that 'responsible' means that work groups are to be held responsible for acting in ways consistent with managerial goals, and that they are to be 'autonomous' mainly in deciding if they are acting responsibly. In short, their members are

supposed to pat their own backs, slap their own wrists, and kick their own behinds — rather like children being expected to internalize values. Elsewhere, in a description of the early experiments in British collieries, Davis and his Tavistock colleague Trist (1974: 246) were quite direct about the aim of their efforts: 'primary work groups' reorganization'.

Managerial recollectivization, then, not only seeks the creation of rationalized work groups, but also sets certain constraints on these groups in hopes that they will only produce a rationalized work culture. This suggests a new interpretation of the experiments encompassed by this comparatively new form of rationalization. The *Work in America* authors worry that 'workers [will] feel that participative management is merely a refined Tayloristic technique for improving productivity at their expense' (1973: 105). Well they should worry, for the analysis I have presented indicates that most if not all of the experiments *are* 'refined Taylorist techniques'. Managerial recollectivization is a logical extension of Taylorist rationalization rather than, as the report's authors claim, a retreat from the excesses of Taylorism. The technological rationalization advocated by Taylor removed the *individual* skill of the worker and placed it in the machine where its application would be more amenable to managerial control. The rationalization represented by managerial recollectivization goes a step further, removing the *collective* skill from authentically autonomous informal work groups and relocating it in a group that owes its existence to and is therefore more likely to be under the firm control of managers. The collective skill is none other than the skill of free self-organization of work that would be so essential in a socialist society. When workers are robbed of it, they are left with mere 'self-direction' ('the lack of immediate external controls') rather than real 'autonomy' ('freedom to make decisions in one's own interests') (Edwards, 1979: 146), just as rationalized technology left them with mere 'dexterity' where they once exercised 'skill'.

A Caveat and Some Research Suggestions

In order to emphasize an impact of technology that has been previously absent from the literature, I have deliberately overstated my argument. Although I have concluded that technology can be used to disintegrate informal work groups and hinder the creation

of work culture, available evidence suggests that such a use is not always, if even regularly, a total success. The decollectivization/managerial recollectivization process, following Aronowitz's (1978) theoretical arguments, is a part of the *tendency* toward the real subsumption of labour by capital (which includes capital's domination of the social forms for class struggle in the workplace — such as informal work groups — that are created by workers). But it is only a tendency, however dominant, and to assume that it stands as an adequate description of empirical reality is to miss the counter-tendencies manifested in continuing culture-based resistance to rationalized work processes. Aronowitz notes that even in 'deskilled' or 'degraded' work processes, workers acquire new skills based on their connection to one another in production. These new skills consist of the social or interactional skills that Kusterer (1978) found among 'unskilled' workers. Furthermore, empirical investigation has not yielded a single example of a work process in which mental and manual functions are totally separated; most processes are not even close to this end of the continuum. And so the creation and use of work culture persists, although 'degradation has forced many workers to take their culture underground' (Aronowitz, 1978: 143).

Consider the automotive assembly line, an archetypically hostile environment for the development of informal work groups. It does not necessitate or even permit the existence of formal work groups that might serve as a foundation for informal groups. It certainly does not require the kind of skill that virtually forces workers to band together in search of solutions to problems inherent in the production process. And yet, as Watson's (1971) study of 'counterplanning' so clearly demonstrates, assembly line workers *do* construct informal networks with shifting compositions, if not groups, and they develop cultural solutions to such problems as poorly designed products, stifling factory heat, and imbecilic time-clock regulations. Or as Nash (1976: 84) remarks, 'walkouts and other expressions of intense conflict' could never have happened had there not been some cohesiveness among the men on the assembly line. Indeed, the idea that isolated workers could have pulled off the sitdown strikes of the 1930s or the wildcat strikes of more recent times should leave any sociologist worthy of the title doubled over with laughter.

In the electronic data processing industry, Greenbaum (1979: 154) found that programmers still form informal work

groups whose 'informal responses are made with unspoken cooperative effort'. My own conversations with several of the many managers of programmers found in the city where I am employed have provided confirmation of her observations. Perhaps it has something to do with what it takes to be a programmer, but it certainly seems that the cultural products programmers devise to resist rationalization are some of the most unusual to be found in any workplace.

Where managers engage in recollectivization, they may find that it is difficult if not impossible to restrain the workers' impulse to create their own culture regardless of any managerial specifications for 'responsible behaviour'. That is the message of the failed successes of recollectivization. Edwards finds that having 'some control over workplace decisions raises the demand for industrial democracy' (1979: 155), and cites General Motors and Polaroid officials who worry about 'too successful' experiments where workers refuse to restrict their decision making to matters considered suitable by those who manage them. Greenbaum cites the example of 'a programming team working so tightly together that management decided to break up the group... [because] managers no longer had control over the individuals in the group' (1979: 155). But the group resisted, and left as a group for another company! What these examples suggest is that what I have called managerial recollectivization may 'give workers a dangerous glimpse of what real power is like' (Goldman and Van Houten, 1980: 86). It almost seems as if managers are helping workers to see the alternative of the socialist organization of production.

The reality of continuing culture resistance — muted here, shouted there — only comes as a surprise because so few observers, Marxist and non-Marxist alike, have ever paid any attention to it. One who has (Berg, 1974: 105) found that workers were 'enlarging' and 'enriching' and 'restructuring' their work long before those terms gained currency in sophisticated management circles and gave legitimacy to behavioural scientists in pursuit of research dollars. Workers have long refused to stay in their places. The unanticipated effect of managerial recollectivization might be to give them a fresh reminder of this central aspect of their class history. In turn, managers would be left in the position of choosing between maximal quantitative productive efficiency and the capitalist qualitative efficiency of maintaining their control in the workplace. Which will be chosen seems hard to predict, and the

choice will probably never be a permanent one given the dialectic of workplace struggle and the various external exigencies faced by even the most monopolistic of firms. But I would place my bet on the maintenance of control, at least for those managers who can afford a long-term perspective; if a production process encourages workers to believe that they can collectively manage as well as produce, there will be no time to think about the economic costs or benefits of this or that new machine.[14]

I have retreated from my overemphasis on one side of the struggle for political as well as intellectual reasons. Ehrenreich and Ehrenreich (1976), who provided the term 'decollectivization' although without the analysis presented here, have argued that the phenomenon means that the workplace should receive less attention as 'the locale for the development of class consciousness' (1976; 13). This is a truly remarkable suggestion since the workplace received so little attention before that; whole books about rationalization (e.g., Braverman, 1974) made no mention of workers' cultural resistance. Ehrenreich and Ehrenreich recognize that workers continue to develop informal means of collective resistance, but that is apparently not enough for them.

I disagree. Work culture is what class consciousness is all about in the central organization of capitalist society. I would also argue that it is a very class-conscious group of managers who worry when workers regularly try to grab a bit more control for themselves, and who seek to thwart those attempts through the devisings of managerial culture. This struggle will continue to evolve, whether the contenders meet the scholarly criteria for 'class consciousness' or not.

The following remarks, then, are addressed to social scientists who think it important to find out more about what workers have done and are doing to gain, maintain, or increase their power over the work processes they animate. Just as the reality of informal work groups and work cultures have proven to be the wellspring of powerful weapons for workers, so will the corresponding concepts prove to be the essential tools for increased understanding. And any study devoted to culture must necessarily be one of those intricate qualitative investigations referred to as ethnographies. Quantitative studies of job satisfaction are appropriate for those whose concern is only with the worker as seller of labour power, but not for those who intend to study real workers.

The questions that might be ethnographically answered come to mind at once. How severe is the impact of technology analyzed in this article? What brings workers together in spite of it? Does a long history of resistance make a significant difference? Are there other industry-to-industry variations? It may be harder to study work culture, especially if it has gone underground, but study it we must if we are to avoid the scholarly inaccuracy or the unwarranted pessimism that results when one concentrates on what capital has done to labour and fails to see what labour has done to capital. If workers have had to develop new forms of organization and new cultural responses in environments that make organization and responses more problematic, can it be too much to ask that social scientists develop whatever new research techniques might be required?

Notes

1. This article could not have been constructed on anything other than the solid foundation provided by Stan Weir, the only scholar who has offered a comprehensive, class-based exploration of the nature of informal work groups and their cultural process and products. Weir's work (1973, 1974) already bears the same relationship to other studies of these groups that Braverman's *Labor and Monopoly Capital* has had to numerous labour process analyses authored during the last several years. That, plus the frequent exchange of ideas I've had with Stan, made it very difficult for me to sort out my own ideas so that I might properly credit him for all of his specific contributions as well as his general framework. Suffice it to say that owing to his primogenitor status, Weir should be given the benefit of any attributional doubts. In particular, the section of this article entitled 'Informal Work Groups and Work Culture' contains substantial portions drawn from Weir's analysis.

2. The citations from Merton, perhaps the person most commonly identified with 'mainstream' sociology, serve not only to underscore the age of a particular line of inquiry, but also to suggest that radical social scientists would find it worthwhile to discover or rediscover the insights offered by mainstream sociologists in such areas as industrial sociology, the sociology of occupations, and the sociology of small groups.

3. The distinction between formal and informal work groups is both analytically and practically important. Formal work groups are created by management where capitalist work relations obtain. Members of these groups are expected to relate to one another in an 'instrumental' or 'secondary' fashion, and for the sole purpose of pursuing the goals prescribed for them by management. In contrast, workers

themselves create informal work groups that engage in activities specified by workers. Within them, members tend to have 'primary' or 'holistic' relations with one another. The two types of groups frequently overlap in terms of membership, and either can be created in response to the existence of the other. What must be emphasized is that it is the self-activity of workers that serves as the distinguishing mark of the informal work group. The formal work group becomes an informal work group as well just as soon as its members begin to make collective decisions in their own interest and to carry them out. Whether the resulting activity fulfills or denies the wishes of management is *not* a factor in the formal/informal distinction.

4. Kornblum's work is particularly useful on account of his attempt to investigate the relationships between the informal work groups and the groups outside of the factory walls. In the present article, it is likely that I have missed important effects that arise in these relationships, simply because I restricted my attention to the work groups. Nonetheless, I want to underscore the conclusion I share with Kornblum: informal work groups must be at the centre of the investigation of group life.

5. Useful summaries of the sociological literature on small groups are found in Olmstead and Hare (1978), Wilson (1978), and Nixon (1979). Volumes specifically concerned with work groups include the classic works by Sayles (1958) and Seashore (1954), and the more recent effort by Zander (1977).

6. Critical treatments of the human relations tradition have been authored by Baritz (1960) and Bendix (1963).

7. The seminal idea that these groups are in fact the site of cultural production, while seemingly obvious, is not to be found in any but Weir's work. Unfortunately, the most significant of his writings on the topic (1974) is not easily obtained. However, the autobiographical fragment (1973) in which he chronicles his discovery of the informal work group and his growing appreciation of its political significance will introduce the reader to some of his central ideas. A substantial theoretical contribution based in part on Weir's findings has been put forth by Aronowitz (1978).

8. As Weir (1974) reminds us, it was in informal work groups that the decision was made in recent years not to work wholeheartedly — a cultural response to the collective definition of work as a boring, exhausting, or meaningless experience. Soon the media were filled with pronouncements about 'the declining work ethic' on a *national* level, government commissions were set up to study the phenomenon, and social scientists were nearly forced to rediscover the workplace.

9. Marx's (1972: 105f) own words are instructive on this point: 'It is not a matter of what this or that proletarian or even the proletariat as a whole *pictures* at present as its goal. It is a matter of *what the proletariat is in actuality* and what, in accordance with this *being*, it will historically be compelled to do.' This part of his 'critique of critical criticalism' is still appropriate for those who concern themselves with what workers say while paying no attention to what they do.

10. Weir pointed out to me that *Cool Hand Luke*, the popular movie of the 1960s, provided an excellent example. In it, Luke (Paul Newman) is the emerging informal leader of a prison road gang. Near the end of a long and hot day that has left gang members totally exhausted, Luke convinces them to complete the final stretch of road in record time. The guards do not jump for joy at the sight of this increased production. Sensing that it is a matter of workers seizing control of the pace of production, the blind guard with silvered glasses moves his finger to the trigger of his shotgun. Perhaps he realized that increased production of this sort can also be the beginning of a revolution.

11. As Kusterer (1978) notes in his study of 'unskilled' workers, however, workers do try to transform some of the constants of the work process into variables. Thus, the industrial engineer's view of a given technology is not adequate for the assessment of the actual skill that will be exercised in using it.

12. In Spier's (1963) study of switchmen in railroad yards, those who worked in a traditional yard 'switched boxcars' (talked about the work with one another) during much of their time off the job. In contrast, switchmen in an automated yard requiring much less human skill assessed a fine against any workers who talked about the work during off-work periods.

13. I don't mean to say that technological rationalization always antedates organizational rationalization. The nature of a production process and of the work culture created in response to it would certainly influence the degree to which technological rationalization would prove useful in providing a friendly environment for organizational rationalization. The relationship could be reversed in some cases, with organizational rationalization being the pathbreaker. Indeed, the two forms seem to be mutually supportive of each other's progress in the modern era, and the complexities of their relationship are only comprehensible through historical examinations of particular work situations. But technological rationalization may well have dominated in the early years of industrialization, simply because capitalists were faced with a number of traditional work processes whose secrets were known only to workers and which may have required considerable worker skill.

14. Noble's (1980) analysis of the Pilot Program at General Electric's Lynn plant provides an excellent case study that illustrates these and others of the points made in this paper. GE's management had attempted to destroy an existing work culture (which was clearly oppositional) by introducing numerically controlled machinery. Belatedly realizing that this did *not* remove all need of worker knowledge and skill, management then instituted an experimental programme that they hoped would get the most of the new devices (and perhaps tell them what 'most' was in the first place!) by giving workers greater freedom and responsibility. This attempt at recollectivization and cultural specification by management failed when workers in the programme created their own culture almost from the moment the programme was introduced. The programme *did* yield improved production, but it was not at all clear that the programme was being managed by managers. The response in corporate headquarters, and to some extent on the local level, was to give only half-hearted support to the Pilot Program, and then to eliminate it altogether. The sacrificing of improved production makes it clear that GE's managers were afraid of what the workers saw as they got a first taste of self-management. (Noble's report is virtually impossible to obtain, but he assures me that it will occupy a portion of his next book, tentatively titled *Force of Production*.)

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