SOME OF THE PROSPECTS FOR AUSTRALIAN PRODUCTIVITY

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In the past, and in most current thinking, the major contribution to improved productivity has been in capital investment in technological change and managerial devices to improve the effort-reward balance e.g. individual schemes, closer supervision, work programming. The technologies that offer productivity improvements usually seem to require production on a larger scale.

However, strong evidence is emerging that the major source for improvement in productivity is now to be found in the more human use of human beings in the productive process. The human use of human being entails more than trying to get more effort out of them. It entails using their powers of "judgement, evaluation, learning, reasoning and creativity" – step by step, in that order (Amber and Amber, 1962, Emery 1966).

The most widely accepted way of so involving employees in the productive process is that of implementing the principle of self-managing (semi-autonomous) groups. Work groups or managerial/professional task forces, of team size, are led to take over much of the responsibility for the control and coordination of their activities and the utilization of their potentialities to achieve agreed organizational objectives.

Alternative ways of involving employees have been tried in Europe and the U.S.A. Because of our peculiar history, neither of the important alternatives have been given much of a try in Australia. We can expect that some people will ignore the context within which these alternatives emerged and the fate they suffered and seek to flog them to an inexperienced market as first-hand goods.

The European alternative, for many decades, was to introduce into industry variations on the Westminster theme, consultative committee, works councils and worker representatives on boards. Not one of these systems has proven itself capable of involving more than the minority of employees interested in playing factory or office politics (or just interested in the personal status or the relief from work for a few hours). When we took a hard look at these systems, at the joint request of the Norwegian Employers Federation and the national trade union body, it was not hard to see why they had failed to effect any change in worker involvement. These bodies deal with what is left over after management and the unions have staked out their territories, the prerogatives. If either management or the unions are weak greater powers my be ostensibly attributes to these representative bodies but the exercise of their powers is determined from the outside by the strong party, not by their in-plant

electorate. The electorate cannot but be aware of such swindles. The other face of these systems is that the elected come to see themselves as the elect. They are no longer just another Joe Blow employee. They are constantly tempted to strike out on their own for cause or for profit.

Not the least of the disadvantages of these systems is the tendency to arouse union suspicions that management will exploit them to undermine union influence, and the tendency to seduce management into the conceit that they now have their fingers on the pulse of their work-force e.g. Mt. Hammersley and Philip Morris, Australia, 1976.

The particular system of worker representatives on the board introduces special disadvantages with respect to future growth of productivity. (for fuller discussion of these systems of representative industrial democracy, see Emery and Thorsrud, 1969).

In the U.S.A and ICI (UK), there was during the sixties a good deal of experimentation with 'individual job enrichment'. In these experiments the specifications of classes of individual jobs (telephone, draughtsmen, etc.) were re-written to include ancillary tasks and allow greater discretion about appropriate courses of action. These changes aimed at, and usually achieved, a more meaningful task e.g. a change for the telephony to follow through a customer contact from ordering to invoicing, more variety in the work, more opportunity to learn and a chance to exercise discretion.

This alternative, usually associated in Australia with the names of the American psychologists Fred Herzberg and Scott Myers, ground to a halt in practice and was roundly condemned at the Ford Foundation sponsored international conference on Quality of Working Life, Arden House, NY, 1972. The foundation had insisted on the participation of U.S. unionist and this was, as I saw it, the crucial factor in all parties striking off this alternative.

Throughout the sixties we, who were working in Europe, kept an open mind on the U.S. alternative. We accepted the theoretical possibility that there might be circumstances where individual job enrichment was the best solution to involving employees. Between 1952 and 1972 we had worked our way through many different technologies and many different cultures and not found such circumstances. We had also closely followed the US and ICI (UK) experiments and felt that more could have been done, of lasting value. We had no desire to quarrel with colleagues who, in a different social context where trying earnestly to achieve the same ends as ourselves. Nevertheless, we had eventually to ask whether there was some reason for the shortfall in their efforts. The most obvious reason, arising from our field experiments, was that modern productive processes demand a high degree of interdependence between the individual jobs that contribute to the final product. Fiddling with one or two of the jobs can achieve little; all, or at least a majority need to be changed so they ca reflect this inter-dependency in the face of a wide range of challenges. A second important reason emerged from my recent study for the

Australian government of our urban work force (Emery and Phillips, 1976). This data leads me to think that only one-quarter to one-third of our working-force would respond in desired ways to the opportunities provided by such enrichment of their jobs. Far too many employees would find such a broadening of their job specifications an opportunity to cover up their lack of commitment to doing their jobs, i.e. more room for non-checkable excuses for mal-performance.

This system has come under very heavy fire from unionists, and for good reasons. It threatens the privileges of the skilled worker, and hence the leading role of the U.S. Machinist Union in attacking such proposals; it enhances the role of employer as patron at the expense of collective solidarity. (Scott Myers stated at a Melbourne seminar that workers at Texas Instruments did not try to negotiate a share of increased productivity because they had better jobs – and no union). I think that the problem with the U.S. alternative is deeper. It leaves the supervisory that still remains solely in managerial hands: it is primarily responsive to labour market conditions and not in any certain predictable way to the contribution that employees make to productivity. It has an openness for exploitation by a young go-getter manager that probably accounts for U.S. management going cool on the ideas as well as unions.

THE EVIDENCE

Two classes of evidence seem to be involved. The primary evidence should tell us the kind of increase in productivity to be expected by taking the path of self-managing groups and managerial project teams (hopefully with some of the finer detail about where these improvements can be expected). The secondary evidence I will evoke is of people, with experience and material interest, who have come earlier to the same decision point and who might be considered as exemplars.

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To indicate the kind of productivity increase, we can aim for with the introduction of self managing work groups. I will table some results for a couple of successful implementations of the principle.

> *Example 1*. British coal mine: comparison of two coal faces. Each worked by 41 men in the same seam and identical technology. Measured over all shifts for 65 weeks.

	Conventional organization	Semi-autonomous group working
Per cent of coal 'won'	78	95
Hours/man-shift of paid 'make work'	1.32	0.03
Absenteeism (% possible shifts)	20.0	8.2

Emery, 1969, p. 286-8

Example 2. Norway fertilizer plant.
Proposed manning level based on the traditional scientific management principles, 94 people. Manning level achieved with semi-autonomous group working, 57. (Emery and Thorsrud, 1976).

Example 3. Australian Public Service: a personnel and records section.
Average error rate in make-up of salaries:

Before	27%
After introducing semi-autonomous groups	3%

(Gorrie, 1973)

Example 4. Bharat Heavy Electrical: fabrication dept. Average use of craft skill per shift:

Before	2 hours 20 minutes*
After introducing semi-autonomous groups	6 hours 26 minutes

(De, 1976)* Note: this is the order of under-utilization that has been reported to us for two Australian heavy engineering operations.

Example 5. Hunsfoss Pulp Mill.
Adopted employee suggestions for improved productions:

Under formal suggestion scheme 1958-64	1 per year
During 1966 under group working	53

(Emery and Thorsrud, 1976).

I have deliberately chosen from amongst the most outstanding successes I know, as one might draw attention to the fastest miler, the highest jumper. My intention is to indicate the magnitude and the diversity of the *possibilities* for productive gain if human potentialities can be released. I am not suggesting that all conditions lend themselves to achieving as much as the above mentioned achieved but, at least, if we know that what has been proven to be humanly possible we might drop some of our assumptions and look more closely at how we manage our own productive enterprises.

It was results like those quoted above that led the Norwegian employers and trade unionist to a joint national policy for bringing about this form of participation in the workplace. Subsequently, the other Scandinavian countries followed suit in their own ways and at their own tempo. The West German government decided that they should go down "the Norwegian path", as they called it, but in a German style. In 1975, they allocated DM 170 million for field experiments like the Norwegian one to demonstrate to Germans that it can be done in Germany. In 1976 the French government allocated a relatively miserly 24 million (?) francs (about 5 million Australian dollars) for the same purpose. A similar proposal is at committee stage in the U.S. Congress. It may stall there.

Interest in Australia built up slowly in the early years of the seventies but is now very widespread in both the private and public sectors and with employers of blue collar, white collar and professional/administrative staff. The Giles report on these developments for the A.I.M. should provide an up-to-date account. The interest is not confined to employer circles. Several important trade union figures appear to have at last publicly acknowledged that productivity pursued in a humane, participative way can be a matter of joint interest to themselves and management. A great deal of suspicion continues to hang around but we have been seeing changes of heart that would have been quite unthinkable even two years ago.

POSSIBLE POLICIES

The overriding requirement that people will cooperate to enhance our productivity cannot be met, I believe, with less than a new philosophy of management. Two reasons stick out:

a. Productivity, as in Productivity Councils, is still a bad word in many union circles, more so on the shop floor. It connotes traditional practices of tightening job times, stricter discipline, eliminating rest pauses, short cutting safety practices etc. Mostly things that are contrary to the human use of human beings.

b. A philosophy of management that is firmly based on the human use of human beings is not going to be confined in its effects to the workplace itself. One can expect it to change the characteristics of the labour market

> as people seek challenge in their work rather than security and marginal economic advantages; as they seek, and expect to find, learning on the job rather than in a half-useless proliferation of academic certificates; as they seek to find themselves in creative work rather than in the sand-hills and surf. One can expect that people whose dignity is constant enhanced in their daily work, not belittled as is so frequently the case now, will not quite tolerate the indignities to which they are subjected by bureaucratized agencies supposedly making expert decisions about their children's education, their family health care needs, their transport, etc. Neither can we expect such people to accept a diet of TV and spectator sports as proper use of their spare time.

These two reasons alone would seem sufficient to demand a statement of philosophy that makes it very clear that it is intended to pursue greater productivity (not greatest possible GNP) in ways that directly and immediately enhance the lot of the worker and release him back into community life as a much more independent and self-respecting person.

The key elements of such a new philosophy have, I think, been spelt out in the philosophy statement I worked out with Shell Refineries (UK) and which was endorsed by Shell's senior board (Hill, 1971).

I have always hoped that the ACTU and some suitable collection of employer associations would present the nation with a joint understanding without appearing to have been urged into it by government. It would have done a great deal for their public image and for their own self and mutual respect. Still, decades of masquerading non-cooperation behind the comforting role of the Arbitration System must have left a mark. In our historical circumstances government leadership may be needed to achieve a higher level of maturity. Such leadership could probably be acceptable from a government that was thought to be also appreciative of the gains in productivity achieved in traditional ways.

A statement of philosophy by any current government in a Western democracy is bound to be met with some cynicism. That is unfortunate but if a position has to be put that broadly then the only way to gain credulity, and hence leadership, is to be seen as stoutly pushing the barrow up hill. I do not think that pushing large sums of public monies around, a la Bonn, is appropriate. The German money is going to companies like Volkswagen and Bosch in conjunction with universities who previously showed very little interest in the field of work. In Australia, companies like Shell, ICI, CSR and even little companies like the old Luv Pet Foods made major efforts without calling on public funds. They did not need to. The sorts of changes we are discussing are not like major technological re-tooling. The changes over to self-managing, semi-autonomous groups may require some minor investments to improve the quality of the information available at the work-face or the means the workers have to process that information; and it may require some investment in

training to create the degree of multi-skills which will enable to the group to cover for absenteeism and proceed to do its own in-group training. I do not think that there are any grounds for reimbursing an organization for the first class of investments. If the operators discover they need such aid for fine-tuning the productive process then management should have demanded it for when they were trying to do the same job from their office desks. In the training for multi-skills there might be some case for disbursing government monies as the disability arises from a labour market where all have been trying to get away with minimum multi-skills. Personally, I think that this is not a high priority and certainly does not justify the setting up of another self-perpetuating bureaucracy to work an industry levy system. The returns on both types of investment are so quick and so predictable that any viable productive organization should be able to plan for them within its own resources. I would regard claims on either of these accounts as proof of ignorance or suspicion of fraud. I would hope, however, to see an increasing number of claims from employers for support for what might be termed 'branch of industry training' in the technologies and sciences basic to their branch of industry. This could be a real contribution from TAFE to multi-skills in plants and offices. We had to introduce it in for example 2 above.

Apart from the intellectual leadership I mentioned earlier, I think that the major contribution that government can make is in helping people think through their problem in the context of their own particular productive process. We have done this before in Australia in developing an agricultural extension service that once just advised on the best varieties of seed, best trace elements, etc. and now advises on the best ways to manage a complete farming operation. Not always successful but it is the germ of an idea. Within the manufacturing sector itself, we apparently have some thirty odd thousand small and medium-sized businesses. A.I.M, I.P.M. etc have done a sterling job in creating debate about new ways of achieving productivity but they cannot get though to these 30,000 plus. An *industrial extension service* would seem to be a very beneficial government service. It would require a bit of planning.

The question of legislation keeps coming up in these discussions. I do not think that much can be achieved in this way. May be, at a later data, we may desire to legislate so that by a vote of his employees an employer is publicly identified as a bad employer. We might wish to deny such an employer access to public tenders but I do not think it would be helpful to press matters further, nor necessary.

The field experiments we carried out in Norway became demonstration sites with thousands of visitors, unionists and managers from nay countries. We had not counted on quite this scale of tourism but obviously it is an important mechanism of diffusion. The German and French investments may be aimed at this sort of payoff. We already have enough sites if organizations are prepared to host visitors. A federal extension service would help such organizations prepare to serve as demonstration sites.

A CAUTION. I have concentrated on what I think is the most rewarding prospect for increasing productivity. It is a path that enable us to recoup the massive investments we have made in education. I would not like this emphasis to be used as an argument against exploring other prospects. We get production from socio-technical systems not from just one or the other. The overriding principle to be followed must therefore be that of joint optimization. It is a sure source of error we concentrate on the human side to the neglect of the technical and forget the people. Any industrial extension service would have to look to the totally of the producer's socio-technical system: to be able to advise on technical bottlenecks and inadequacies of information flows as well as advise on better ways to work with people. Such a service should make a particular feature of advising on socio-technical designs for new plants, or major redesigns. In my experience it is easy to achieve joint optimization on green field sites and they provide excellent demonstrations of what is possible.

Of the technical trends apparent at the moment none seem so relevant to our circumstances as the 'computer managed parts-manufacturing systems' (CMPM). This had profound significance for the future of our manufacturing industry (though overlooked by the Jackson Committee). By marrying the now cheap microcomputer to general purpose machine tools, the costs of batch production can be brought within coo-ee of costs of mass productions. That is, someone producing for a small market can hope to compete on true costs with others that have a market large enough to justify by specialized machine tools and jigs that go with a mass production technology. (At the present batch, production costs run at 10 to 100 times mass production costs per unit).

The most variable cost in CMPM is the writing by humans of the computer programs that guide the machine tools. Our national investment in the CAE's has given us a great potential in this area. A national centre for such programming would bring these cost savings within the reach of even the small firm.

The Japanese and the U.S. are moving in this directions. They have not special advantages over us in this matter. If we mobilize our natural ingenuity, we will drastically reduce labour requirements in the difficult areas of the metal trades and lessen our costly dependence on highly protected mass assembly operations. The fruits of such a move could easily be seen within five years.

There is no further step that I think we should take on the technical side. We should go into the fundamental research on so called 'machine tools'. This is again something the Jackson Committee proved non-receptive to. It is not a matter of big money rather a think tank thing. Its potential is rather like that of the Design Council, standardization or inventors boards. The history of machine tool development has been that of a few genuine innovation and heavy capital investment down a tunnel-vision of step-by-step improvement. That is not where things are now at. In the early sixties, the A.D. Little Corporation produced for the U.S. government an analysis of

the basic unit operations involved in the productive transformation of materials. In 1966 a British based team (of which I was a member) established that these unit operations could be ordered to a more fundamental classification of tools and materials according to physical state e.g. solid, aggregate, fluid, gaseous. An institute dedicated to a constant reappraisal of such theoretical possibilities for material transformation is within our capabilities. It would more surely identify openings for increased productivity than the haphazard way we currently come upon new ways of mineral separation or the value of spark-erosion of metals.

SOME PERSONAL REFLECTIONS ON A GOVERNMENT INDUSTRIAL EXTENSION SERVICE

A number of industrial extension services are in existence e.g. UK, Norway, Sweden, France, South Australia, NSW. None of them are much good; not even the one's I advised on. A rethink would seem advisable before the Australian Federal Government took a step in this direction.

The principles are, I think, not much different to those spelt out in Emery and Oeser (1968) for agricultural extension services. There are differences with regard to priorities and methods and we now have more knowledge of the traps to avoid.

PRIORITIES

For Australian industrial and commercial enterprises, the priority targets would seem to be:

a. Small and medium-sized enterprises. The large ones will look after themselves or will know where to come if they need help.

b. Green field sites (for reasons given above).

c. Regional and sector penetration. Giving each region and each industrial sector a good demonstration model will be a more effective method of extending knowledge and arousing interest than the easier task of building on foot-holds that have been gained in one region or one sector.

METHODS

If the primary purpose is to engage human resources in the productive process, and secondarily, to lessen opposition to technical and procedural changes, then the mode of operation must be that of collaboration, not formal consultation a la PA, PE and McKinsey (Emery and Emery, 1974).

A national operation should seek to base itself on cooperation with a network of local resource people rather than a large staff of full time public servants. The ANU's Centre for Continuing Education has developed such a network in Australia.

The staff of such a service should all be short-term contract or secondment. They should be a self-selected group. This latter requirement should not be hard to fit into procedures such as those used by the UK's Civil Service Selection Board. Academic qualifications in either the social sciences or engineering should be strongly discounted against actual experience. No tertiary educational institution in Australia provides an education in both the social and technical dimensions.

TRAPS TO AVOID

EXPERIMENTATION. There is nothing left of any importance to experiment about. The issues at stake are basically commonsense. The difficulty we have experienced is that of taking a fresh look. Setting up experiments, as we did in Norway in the sixties, is now to create illusions of intellectual difficulty, and dependence on experts that needs not exist.

PUSSY FOOTING. Any extension service is going to encounter many who are unconvinced that they stand to benefits from change but could benefit from appearing to be progressive. They will always excuses for doing no more than is necessary to keep up appearances. If they can tie an extension service into their exercise it looks even more impressive.

MOUNTAIN TOP-ISM. (pardons to the Chinese Reds). Some organisations will make a song-and-dance about their efforts to humanize work which has more to do with their PR than with their long-run corporate intentions. Despite my personal involvement, I still wonder about Volvo's Kalmar and Luv Pet Food.

ACADEMICIZING. This is no longer a matter for academics, nor can we expect them to usefully contribute. There are individual exceptions, as we found in building up our network, but for the most part their involvement leads to a confusion of ends and an inflation of expenditures, to no end.

ONE-SIDENESS. Even if all the evidence favours my view that the main advances toward greater productivity lie with the human resources, there will be many cases where shortcomings in the technical process or in the information processing constitute an impassable barrier.

POLITICIZING. This is not a party-political matter. It is not only a political matter when the industrial organisations fail to provide leadership. When an industrial extension service politicizes its works, and we have one such example, its own possibilities for a creative contribution are cancelled.

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