PART TWO:

"TALKING PAST EACH OTHER"

"Dear landlord, please don't dismiss my case I'm not about to
    argue, I'm not about to move to no other place
Now each of us has his own special gift and you know this
    was meant to be true
And if you don't underestimate me I won't underestimate
    you."

Bob Dylan, 1968.

The Ennui of Management?

("Ennui mental weariness and dissatisfaction arising from want
of occupation, or lack of interest" SOED.)

The organizers of this conference have quite clearly stated their agreed view that there is a
malaise in management. The Jackson Committee, which took very wide soundings of the
Australian manufacturing industry, concluded that:

> "As change becomes more rapid the task of managing is
> becoming increasingly demanding... Australian managers
> generally are ill-prepared for these responsibilities and
> pressures" (p.87 Their emphases.)

I share this view, and not just because of the experiences of myself and my associated
network of colleagues throughout Australia. A striking demonstration of the ill-preparedness
of management was seen in the public reaction to the Jackson Report and to the subsequent
White Paper. The Jackson Report pointed to the newly emerging role of the individual in the
workforce and called for a "general debate on the shop floor, in management offices and in
union offices" (p.193.) How many managers demonstrated their preparedness to initiate
such a debate in their organizations? The Jackson Report strongly argued the need for
Industry Councils that "would have the task of stimulating and bringing about appropriate
change and adaptation... (to) secure agreement and commitment to change." (p.220) How
many managements initiated discussions with others in their line of business to explore ways
in which such Councils might be brought into being and made to work? Where was the
widespread debate when the White Paper came down? Perhaps there was nothing to debate?
I doubt it! It could hardly be irrelevant to managers throughout the economy when the
Government declares that there will be no change in the ground-rules of the decision-making
process so roundly condemned by the Jackson Committee. They bluntly state that
"Decision-making on industry policy matters cannot, however, be delegated to groups of
interested parties, as this responsibility is held and exercised by Government." (p.34) No-
one, I hope, would wish to deny the Parliament the ultimate role of overseeing such policy
formation, but why do we so meekly accept the assertion that Government Departments
cannot be involved in genuinely joint-decision-making processes? Do managers really believe
that government departments are so uniquely well-equipped to make the final decisions that
have to go before parliament and its cabinet?

At least one other matter in the White Paper should have been, on the face of it, a matter of
concern to companies and to individual managers. The Jackson Committee broke new ground
for Australia by spelling out a set of five national goals. They needed this statement in order
to define what "new or revised policies for industry should aim at." (p.6) It was a statement
that was truly about national goals not just the manufacturing industry. They also culled
from a large collection of official documents a list of goals that the Australian Government
appeared already to be pursuing. Needless to say it was a scrappy list with no attention to
priorities or to how we ought to go about pursuing them. The content of the list could have
been drawn from the 1945 White Paper on Full Employment.

The Jackson Committee was explicit about the need to go beyond this. They felt that there had been substantial social and cultural changes in the years 1945 to 1975.

The White Paper stated that:

> "The Government will develop and apply policies on the basis of the general statement of purposes and basic goals formulated by the Committee to Advise on Policies for Manufacturing Industry."
> (p.16)

You have probably already guessed, the list of national goals the Government committed themselves to was the 1945 list!

Admittedly the government statement is so phrased as to misleadingly suggest that this is what the Jackson Committee was advising as goals for 1975 and beyond. If managers did their home-work they would not have been misled for long. Then they would have seen what was in store for them. Decision-making just as firmly entrenched in the government bureaucracies and guided by principles appropriate to a past era. I think that realization might have stirred some debate.

But, once again, no such public debate raged.

The four examples I have given of managerial apathy might all be put down to a low level of management education. The Jackson Committee certainly suggested that the low level and the inappropriateness of much of our management education might be a factor in the malaise of management.

I do not doubt that these are contributory factors, but I am sure that we should not stop at this explanation, even if we wished only to discover what would be appropriate management education.

Too many of the managers and managements that I know were apathetic in the face of the challenges of the Jackson Committee and the White Paper despite the fact that they were highly educated in management matters. They read the reports and participated in some of the many educational events organized around these reports, and did nothing - or at least nothing of a public nature or that I could pick up on the grape-vine.

This was not an isolated experience. Last year I felt moved to publicly analyze the cases of two large organizations, one a multi-national and one a Federal Department, where major initiatives in organizational development were frozen by a loss of "organizational nerve." I found the parallels quite striking and deeply disturbing. Both organizations had for several years engaged in extensive and expensive educational programmes for their managers. In both cases the top leadership openly sponsored the movement toward greater participation as being in the best interest of the organization; in both cases the middle-management went along with the process then went cold;

in both cases the top management made noises, and then fell silent. This happened despite the fact that in both cases the results achieved in the initial changes fulfilled expectations.

Why did middle management stop in mid-course and top management acquiesce to what was effectively mutiny amidships?

In a similar vein people have been asking why top management so frequently appears to walk away from confronting union demands. I shall not try to encompass that relationship as there are too many good economic reasons for some managers to duck that kind of confrontation. I think I can raise my questions by sticking to the two areas I have identified. In both of those areas management had it in their power to make the going. In both they baulked, despite the fact that by so doing they could only bring discredit to themselves and decrease the probability of organizational survival.

We have for several decades accepted the notion that managers do not usually set themselves a level of goal achievement above that of "satisfying." The managerial behaviour we are now considering is something else again.

Please do not think that I understand what is going on. Please tolerate a few suggestions about what just might be involved.

If an individual accepted a challenge to his or her autonomy in dumb silence, or gave up on the pursuit of a very promising course of action because of the difficulties it involved, we would be inclined to say that he or she was gutless.

The management behaviour I have been discussing warrants that description. I do not think this word describes the individual managers. Why then do managers today so frequently act as if they were gutless?

In one place the Jackson Committee suggested that managers simply could not keep up with the rate of change. This, you may remember, was the message of the best-seller, Future Shock. I think this is a gross and dangerous oversimplification. We are not just confronted with a bewildering array of new means of pursuing old goals nor even accessibility for the masses, of goals that once could be pursued only by the ruling elites. If that was all there was to the upheaval of the past twenty years we could easily order our affairs so as to stay in control of them. The world of the military people underwent just such a quantitative change and, at least in the wealthy conditions of the U.S. military, they responded with a massive increase in so-called recurrent education so that their personnel could keep abreast with new weapon systems and with computer-based management science techniques so that decision-making could be made on a really up-to-date data base. These adaptations fell apart with the transition from peace to Viet-Nam.

Elsewhere the Jackson Committee stressed that much more was involved. The world confronting the Australian manager in 1975 was one in which people were already striving after goals that were never any part of the traditional ideals of societies dominated by elites.

It was a world undergoing profound qualitative changes of a kind that we found particularly hard to grasp. For one thing the change seemed to be in the very social ground that our institutions and organizations typically take for granted. It was nothing that could be ascribed to the rise or fall in power and influence of any institutions. Thus our ordinary ways of coping by re-distributing institutional power were at a loss. For another thing, there was no body of ideology or ideologists that could give us any clue of what it was all about, where it was going. It was like the welling-up of an underground spring. The beatniks, the hippies and the student activists could not tell us, but waved us on to the ideas in the books by Marcuse, Watts, Laing etc., which they gave little time to studying. We went to the writings of these social philosophers to find that they were leading nothing. They were not the Encyclopaedists who heralded the French Revolution or the Bolsheviks who heralded 1917. They were picked up in the ground swell, not the makers of it.

I do not think I am exaggerating our ignorance. It is possible now to see the critical role of the beatniks in 1956, but in the decade after 1956 they were treated as some sort of social disease. They and their ideas were certainly not treated as matters for serious study. And this was despite the fact that the same sort of craziness was sprouting up around the world. In 1967-8 the penny half-dropped. Professors by the hundreds, literally, put pen to paper to describe and seek to understand what had happened in their staid old universities. Some, to their credit, recognized that the events of 1967-8 portended very deep rooted changes in western culture. But still no picture emerged. The western intelligence agencies representatives came together in Washington for the first week of June, 1968 to pool the evidence and understandings. They felt there must be some institution behind it all. Still no picture emerged.

These people recognized that we were into a turbulent social condition. They were well-educated, well placed and highly motivated to try and understand what was going on. They could not put the puzzle together. So, what can we expect of managers who are not necessarily broadly educated, not well placed to engage in studious activities and must necessarily be motivated by a narrow set of concerns? If they felt they had to learn about what is going on where could they go? The professors could not tell them.

Where does that leave the managers?

I think that that leaves them in an environment of high uncertainty, not just an environment of rapid change.

Put anyone into such an environment, regardless of their education etc and we know pretty well what can be expected. Their behaviour will be marked by its being:

(a)   exploratory, tentative. Even the most innocent proposal is treated as if it might turn into something too hot to handle;

(b)   trial-and-error. "Suck-it-and see" - no commitment if it can in anyway be avoided. No strategic objectives;

(c)   vacillation. Today's hot-bake bread is tomorrow's stale loaf;

(d)   contradictory. An order to managers to introduce participatory schemes goes
        out on the same day as an instruction to Personnel to recruit extra foremen.

This sort of behaviour would lead us to doubt the mental stability of a normal person in a normal environment.   In a turbulent environment however, a person has insufficient knowledge of what leads to what, of what is connected to, and could influence what.

That person behaves accordingly and behaves in a perfectly human fashion. It only looks funny to those who do not see the environment. For the manager as decision-maker these characteristics are well summed up in Jordan's Law. Simply put, this affirms that if people are expected to choose between different paths across a field that they believe to be landmined they will not be much concerned about the advantages of the shortest, the quickest or the cheapest path. They will. try to put off taking any path.

There is one more point I would like to add here. There are some people who grow up with little sense of responsibility to others, and hence little sense of how yesterday, today and tomorrow have to be tied together to make a livable world. This state of mind, usually referred to as the psychopath, has a great deal to do with what happens to some children in their families, but precious little to do with intelligence or social skills. In a turbulent environment these people are kings, at least in the early years. They do not care what they gamble on and they are prepared to offer the firm, responsive leadership that was so valued when social environments were only disturbed and reactive. They are prepared to act as if the business of leadership was gamesmanship.

Michael Maccoby has recently suggested that in American corporations the gamesmen type are replacing the so-called organization man described by Whyte and Riesman in the 1950's. In the more stable environment of the fifties the gamesmen would have been seen as too brash and fickle, with too little consideration for traditions or the feelings of their elders.

I think Maccoby is right about this trend, and I think the same trend can be seen in Australian management. The description could probably be applied to a minority of managers only, but it remains a source of concern. The greater adaptability of these gamesmen gives temporary advantages to their organization and their careers, but threatens to intensify the general turbulence to no-one's longer term advantage. That is, as an organizational response to turbulence it is mal-adaptive.

If the general run of managers are to be enabled to work at their function some other strategies must be evolved. In particular, they must be strategies that reduce the burden of uncertainty currently placed upon them, and enables them to do what the gamesmen do, but in socially responsible ways.

Trevor-Owen of ICI (UK) has written a brilliant summary of the diverse efforts that have been made to tackle the last part of the problem and, of course, Maccoby has suggested his own solution.

The central core of these efforts is in democratic forms of team or project style management and the development of broad company philosophies that come to have the force of a sort of guild law.

The other side of the problem was squarely confronted in the Jackson Report.

These people have made good, well thought out suggestions and in many cases were able to point to practical demonstrations of feasibility. But, as I discussed earlier, managers are generally baulking at following up these suggestions. Hence I see a more basic problem - why will not managers try to help themselves out of the painful paralysis inflicted on them by turbulence?

The answer has to be, I think, that there is something out there in the future that they fear will turn out more painful than even their present circumstance, if they fool around with the system. They are in a situation of, "better the devil you know than the one you do not."

Or, if you like, the situation is that of a person with a raging toothache, but lives in mortal fear of what a dentist might do to him.

What can this widely shared fear be? It is obviously not something dispelled by rational analysis or empirical demonstration. It is obviously not just a very complicated problem like building the shells for the Sydney Opera House.

I think that I have begun to get a better idea of what this fear might be.

In the mid-sixties, reflecting on our experiences in starting up the Norwegian industrial democracy programme, I called it (after Eric Fromm) "the fear of freedom."

Today I would still call it that. It is the fear of what might happen if one let oneself go and of what might happen if people were not constrained by their institutions, laws and social mores.

However, there is a big difference. In the mid-sixties I saw it as a fear that was focussed on the work-place. For that reason I thought it was a fear that could be overcome by careful, step-by-step demonstration that there was nothing to fear from democratization of the work-place; that greater mutual benefit, mutual respect and co-operation were the outcomes.

I no longer think that the focus of that fear was, or is, just on the work-place. That was my hang-up as a social scientist whose main life's work was on work. My recent studies strongly suggest that the focus all the time was the fear of what was happening in the society at large. What I now suggest is that from about 1956 our western societies have been in a cultural revolution. The traditional authority structures in all walks of life have been denigrated. Managers, like everyone else, have been exposed to this in their communities, their churches, their leisure activities and above all in their relations with their children. They have also lived with the erosion of the traditional status discriminations.

Over the past twenty years these experiences were corroding the confidence of managers much more than I had realized. They were after all very much an integral part of the native-born male Establishment. Their authoritarianism in the workplace gained its justification from the good job they were supposed to be doing in supplying the society at large. The widespread challenges they saw in society - the long hair, scruffy cloths, sexual license, drugs, dropping-out - could not but make them anxious of the very ground on which their career achievements were based.

If they had any theory about what was happening in those past two decades it was either that there had been too much permissiveness and indulgence of children, women, aboriginals and other inferior beings or that some evil organization was bringing it about by pushing drugs, ideas and porn onto those innocent inferiors. In holding these theories they were not distinguishable from the academic students of these social changes. We were all at sea, except "the prophets writing on the sub-way wall."

Faced with the challenge of creating new participative forms in their own work places and their sectors of industry, I think they felt they were being asked to add more fuel to a social conflagration that would consume all that their life's career stood for.

This is, I believe, too much to ask of the ordinary mortal manager.

The industrial leaders who figured so prominently in introducing democratization of work, men like Martin Siem, Per Gyllenhamar, Arnold Risson, Keith McGavin, Jarlsby, Harman, these were not ordinary managers; as is well shown by their careers. We also know that a significant minority of managers have opted in mid-career to call it a day.

The managerial drop-outs tell us about the counter-cultural forces operating on management. The other minority tells us that it is not impossible for human beings to overcome their fears. Neither minority tells us what to do to help the great majority.

There may, however, be a way to overcome the fear of freedom induced by the cultural revolution. (That is, assuming that that is what the fear is about.)

If managers could gain reassurance from their own experience that the cultural revolution was leading to new but orderly forms of social co-operation and co-ordination throughout society, then I think the ordinary manager would tackle with a will what the Siems and. Gyllenhamars have done. It is this that seems to be needed, not further work-site demonstrations or scientific reports of such demonstrations.

How can this reassurance be gained? On past experience this would seem a very tall order. The youth have refused to see types like managers as other than "lifeless squares" and the Womens' Liberation Movement have cast them as "male chauvinist pigs." There would seem to be little room there for mutual respect and co-operation.

I am not going to deny that that has been the scene in the past. I do think it is on the verge of a substantial change.

From 1956 to the unholy blow-up in 1967-8, the youth and the Beatniks were pretty well saying that they were going mad and doing their own thing, the rest of the society could stew in their own stale juices. From 1967 on, they were telling us that they would not tolerate the co-existence of our traditional way-of-life. With their electronic guitars they tried to bring down the walls of Jericho. They very loudly trumpeted the coming of the new age of Acquarius, and they outraged social convention in every conceivable way.

Where do we find ourselves now? If Jericho is the Establishment, then we find that the walls have crumbled, but not fallen. To the counter-cultural revolutionaries outside, this is a cause of considerable despair, and has been during the past few years. Of much greater significance for our common future is the fact that the walls of the city are no longer properly manned, and that those within are in no way united in defence of the city. The strains of music they hear from the outside, are those of the songs "Fernando" and "Argentina"; songs of remorse and grief for the hurtfulness of two decades of revolution. This is not the sound of hostiles. Punk rock poses a question here.

I do not have a good track record for listening to the sounds of music, out there. I suppose I have marched to the beat of my own drum, and the sound of war. Now I find those sounds tuneless, empty and meaningless. I think we should listen to the strains of the music coming in from over the walls of our particular Jericho. I think we should listen because a plague has emerged, as so typically happens with the siege of a city.

The plague is clear and simple in its manifestations. "Youth unemployment" it is called. It has spread like a plague throughout western societies, and no doubt the other societies. I think it represents a stand-off ie. "I will not employ you unless you toe the line" -
"you can stuff your lines." This is, of course, but the sharp end revealed by erosion of the work ethic. The cure of this plague seems as broad in its implications as the cure of the plague of management malaise, and to have the same origins. In both cases there seems to be a demand that a willingness to co-operate is demonstrated, and not just in the world of work. The majority of our managers will, I now believe, need the reassurance of seeing participative processes working in their communities, churches, schools, voluntary associations and in their families, before they will take a leadership role in the workplace and in their industries.

Parameters of Improved Industrial Communications

Introduction

This paper is about those conditions which, if present in good measure, enable people to talk with and understand each other and, if lacking, spoil the effects of any attempt at communication. That is what I take the notion of "parameters of communication" to be all about.

I will not be assuming that what I say can be translated into a direct statement about conflict. However, with good communications there is a better chance that we will fight about real conflicts of interest and invest no more effort in our fights than is timely, and warranted by what is at stake. That is, we might rationalize some of our conflicts.

Further, I am not assuming that the only purpose of industrial communications is to rationalize conflict. I will assume that improvements in industrial communications might have something to do with co-operation.

Now, we human beings, like every other species, can communicate with our kind. We would not be in existence if we could not. At a more practical level we have all experienced occasions when communication with others has been a joy: something that gives us pleasure and interest.

If we can identify the conditions under which successful communication occurs we should find it easier to identify what is lacking in many of the instances when we try to communicate at work.

These conditions have been identified, with sufficient precision for our roughly defined purposes. (Emery & Emery, 1975.)

These optimal conditions are most frequently experienced when two people are discussing a joint task when the object of their exercise is right in front of their eyes, eg. two men voluntarily moving logs.[1]

There are four conditions that need to be met if people are to be spontaneously moved to communicate and to go on doing so with each other; not just engage in an exchange of one-way messages.

1. **Openness;**

    Each must feel that they are in a situation which is open to their inspection or inquiries and they must feel that things are what they appear to be, ie. no camouflage, no tricks, no lies. The only obstacles to further understanding of the situation would be felt to be level of interest and sheer ability to communicate. Differences in viewpoint would not deter communication if each person felt that it was open to them

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[1] Footnote: Paper presented to a conference on "Employee relations and benefits: Studies in productivity." Organized by the Business Law Education Centre, Melbourne, 17-19 March, 1977.

to explore and determine differences in standpoint or interests. Such differences are more likely to invite communication, eg. when strangers meet in a train or bar.

2.   Basic similarity:

Each must assume that the other sees him, or her, as equally human: that if they were in each other's boots they would see, feel, think in the same way. Any indication of contempt is a sure way to make sure that communication does not take place.

3.   Mutually shared field:

Each feels that the other is aware of his interest in the situation and will take it into account in deciding his courses of action. In motoring we call that courtesy and make sure to signal our intentions and notify our intentions when we receive the other driver's signals.

4.   Trust:

Repeated experience of these conditions being met, enhance the individuals' sense of the openness of the world he shares with others, of the mutual respect and consideration that can be expected. Such a person is more likely to accept the risk of initiating communication or of making the necessarily one-sided disclosures at each point where the communication needs to move to a deeper level. If in the past the first three conditions have not usually been met then bringing them into being will not initially bring about effective communication.

I am suggesting that when these conditions are met human beings will spontaneously exert themselves to establish the communications appropriate to the situation they are in. I think this would be the case even when the people occupy different standpoints or have different interests in the outcomes of the situation. This last point is rather important. In competitive games the communication is between people in starkly different positions but a distinction is always made between communications that feign to give a different message and what we see as lying and cheating. In the first case, there is no problem about relating the distortion of the communication to the difference in interest. In cheating there is a double-bluff. Not just to give a false appearance, eg. a feint by the right fist, but to lead the other to attribute the appearances to a false cause; in particular, to shift the blame for the deception of the other onto some other person or event.

In lying and in cheating there is only a semblance of a mutually shared field. The liar, the cheat, the confidence trickster must all appear to be equally interested in the matching of skills or in the equal readiness to take risks with their future. Nothing could be further from their real intention. They have no intention of letting an outcome depend on the competition of skills or of risking anything in a joint venture.

This distinction is not irrelevant to industrial relations. There must be few amongst you who have not heard a manager or a trade union official say of an opponent that "he is a right b.... but he is as good as his word," and to emphasize that they prefer dealing with such a person. Bluffing and haggling do not detract from communication. Lying and cheating do.

What I am trying to say is that differences in stand-point and interests are not an adequate explanation of the subversion of communication and the unwillingness to communicate that prevails in industry, between all parties, managers, employers, officials and members.

I think I have something of an explanation. I would like to broach it by first considering what happens in ordinary human circumstances when one or other of the four conditions for effective communication is not fulfilled.

What happens to communication when the first condition of openness of the situation is not met. The simplest answer is, paranoia. If one party feels that the other is deliberately concealing some critical facts about the situation they will construct theory to fill the gaps in their knowledge. It will riot be a neutral theory. It will be a theory that also seeks to explain why the other sought to deceive, by words or silence. I can give a simple example of this from an outer Sydney factory engaged in manufacturing TV sets. A worker heard a supervisor being instructed to draw up a list of the persons on the main assembly line. She communicated this fact back to the people on the line. They quickly agreed that this could mean only one thing, that management were trying to work out who to declare redundant. The rest of the shift was spent in arguments between the workers about what principle should govern layoffs. As it so happens the intention of management was to achieve a just distribution of some benefits, not lay-offs.

What happens to communication when the second condition of assumed basic similarity is not met? What happens is silence. Both sides ask themselves, "what is the point of trying to say anything to them, they would not understand." The most poignant illustrations of this principle are the Works Councils and Consultative Committees that people continually try to set up in industry. No matter how these bodies are set up they never seem to be able to go beyond the forms of communicating to communicating about any serious content.

For all of the paraphernalia of elections, etc. they still sit around the meeting table as "them and us, and we know what they really think about the likes of us."

When the third condition is not met we get the sort of communication that can be so often observed in North America. What appears to be an animated dialogue turns out, on closer listening, to be two animated monologues.

What happens when there is a past history of mistrust? Most of us have had recent experience, I expect, of trying to correct or even counsel an adolescent. The adolescent, or at least many of them, feel that they have been conned by parents and teachers for the greater part of their life; here is another adult coming at the same old game. Their response, not surprisingly, is sullen incommunicativeness or brazen contempt.

I have dwelt on these four conditions because they provide a practical set of guidelines for anyone to work out why communications are going adrift and directions for solving the problem.

I am well aware that we have been offered a great many other guidelines to so-called "effective communication." Most of these seem to be concerned with the mechanics and the skills of communicating, not with whether people are interested in communicating and motivated to make a good job of it. These matters of the mechanics and skills are irrelevant if there is not a mutual interest in communicating and a willingness on all sides to work at the problem. If there is interest and willingness there would probably be little need to turn to others for solutions of the practical matters of how to communicate.

There are also, undoubtedly, matters concerning motivation to communicate that go beyond the four conditions I have specified. However, I see no point in getting too fancy. These conditions are enough to make the difference between ineffective and effective communication.

Now I must turn to the other side of the penny. Communication is not simply a matter of how individuals have evolved. We have also evolved organizational forms that are vitally dependent on communication between people and yet themselves provide very distinctive media within which communication flows more or less readily.

The importance of communication to the maintenance of organized human activity has been emphasized to the point where, quite wrongly, it has over-shadowed consideration of the fundamentals of control and co-ordination. Perhaps it is for this reason that there has been a general lack of awareness that different forms of control and co-ordination create different medias for communication. In some cases the differences in the medium seem to be as great as that between water and air for radio communications. Nevertheless, choices are constantly being made for specific forms of organization in the innocent belief that quite independently some decisions can be made about communications, internally and externally. I suggest that if one is one hundred percent concerned about communications, and not just ninety percent concerned, then attention would first be given to the forms of control and co-ordination.

Let me spell this out by describing what happens to communications in two very different forms of control and communication about which we have practical experience.

The form of organization with which we are most familiar is that in which a foreman or supervisor is set over the workers to control what the individual worker does and to decide all that is necessary to coordinate their work. A superintendent is set over a number of foremen to make sure that they individually come up to the mark and to decide all that is necessary for the co-ordination of the work of their sections. And so on upwards until you have an organization of many thousands, in what is best described as a bureaucracy.

I think we would be well rewarded by closely examining what happens to the communication process in such an organizational environment.

Three features stand out:

1. **Asymmetry**

   Communication in such an organization is pre-dominantly between subordinate and boss. Not between peers, although they may be working alongside each other, and despite the fact that it is a peer who is most dependent on the quality of the work one has done. In this form of organization the superior must at all times assert his prerogative to make decisions about coordination: only thus can he exercise the control over his subordinates that his superiors expect of him. Imagine what this does to the communicative process? The balancing effect of question and answer that predominates in the ordinary conditions I have described is absent. In this organizational context the questions are formulated by one party with a view to evoking a response that will serve that party's ends. The questions are not formulated so as to respect the other person's feelings or perceptions of the situation. No allowance is made for the fact that the other might feel that from his viewpoint the question proceeds from false assumptions. No attempt is made to phrase the question so as to convey also an invitation to ask for a reciprocal giving of information or opinion. The characteristic form of the question in this type of organization carries the rider, explicitly or implicitly that "I want an answer of Yes or No, I do not want any maybe's and I certainly do not want any excuses." With that sort of questioning the response pattern is fairly predictable. The respondent knows that in this situation it is every man for himself. He will give only that response that best protects his own interests: or might bring him subsequent favours. Since he was given no invite to converse it is very likely that the form of his response will also carry no such invitation.

   A manager could easily get the impression that his subordinates are a sullen, uncommunicative lot. The subordinate, who is not a crawling con-man might also be forgiven for having an uneasy feeling when he sees the boss coming over to talk to him.

   In this organizational setting each attempt at communicating is likely to be seen by someone in the hierarchy as a threat.

   I have dwelt on the question-answer process because this is at the heart of normal human communication. However, in these asymmetrical relations there is a relative absence of discussion and a preponderance of communication through orders, orders to do this and to do that. These orders require responses not replies. Wilfred Brown argues strongly that this communication is nothing but the transmission of orders however they are dressed up:

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"...a manager cannot give advice to his subordinates (since technically this is an instruction.) The more deeply one thinks about these managerial-subordinate communications, the clearer it becomes that they are always instructions." (Brown, 1965, p.69-70)

From below to the top flow reports, written where possible so as not to invite discussion. This is the sort of communication we expect between human beings and machines - instructions in, dial readings out.

The second characteristic of communication in bureaucratized organizations is its **egocentricity**. This is not surprising. The system principle in bureaucratic organization, the principle which gives uniformity to all of its parts and its standard operating procedures, is that every individual be tied down to specific personal responsibilities for task performance. Considerable ingenuity is put into machine design and work measurement to split tasks up into one-person-shift units to enable this allocation take place. Locked into this type of organization an individual's interests are best served by looking after himself. It is no concern of his to communicate information upward or laterally if it is only going to benefit others. It is of no concern of his to pay attention to, let alone remember, communications directed to him unless there is obvious benefit to him, personally. If the person is drawn into communication his contribution is most likely to be that "I did not do that," "I did this," "I want this," "I think this," or "I'm alright Jack." It is much less probable that he will couch his communications in terms of "we did this, we think this, we want this." (Wertheimer, 1945)

This egocentrism is inherent in the system. It bugs union activities as well as management. Although unionism is based on notions of "we-ness" and fraternity the officials find, in their daily activities, a marked reluctance of workers to identify their interests with more than the narrowest possible group with job specifications or skill requirements closest to their personal ones.

The other, the third point, I would like to make about communication in a bureaucratized organization is that it takes on the characteristic of communication between **them and us**. In a way this is not too different from the two points I have already made. It points to the hardening of the arteries of communication under persisting conditions of asymmetry and egocentricity. As a bureaucracy matures the differences between subordinate and super-ordinate become increasingly marked out as status differences. Not just by floor-coverings, size of desk etc., by esoteric education that could not be obtained on the job. A status gap between communicant is always a potential barrier to communication. When status differences on the job crystallize into apparently different kinds of people and different lifestyles then we can expect that problems in communication will start right with the origination of the message. The moment the source of the message is identified a good deal of discounting takes place, even before the message is read.

Let me sum this up.

The way in which the problems of control and co-ordination are solved in a bureaucratic form of organization creates serious problems for the flow of communication. I have highlighted the problems that flow from asymmetry, egocentrism and the "them-us" attitude. The total syndrome could well be labelled "seriality." Communication is overwhelmingly determined by who is first, second, third etc. The bureaucratic organization shares this property with bus stop queues, supermarket check-out queues and many of our sick families (particularly those that produce schizophrenic adolescents.) In the relation of seriality the other persons in the queue who are up ahead are a source of worry and envy because they might take up all the best opportunities. Those behind are a matter of no personal concern. It is "tough luck for them" and "in any case they probably deserve no better than the lowly order they occupy."

In Living at Work, Phillips and I described the reactions of the tailenders as the "dumb ox syndrome" and "the disadvantaged worker." (Emery and Phillips, 1976) For those high in the order of seriality we would have to note the prevalence of arrogance and status-consciousness.

What is absent in this communicative process is some point of reference whereby the communicants can see themselves as relating as parts within a whole: relating with respect to their differing activities and concerns but with reference to some common interests and understandings.

I have summed up. Now let me try to draw some conclusions before examining what efforts have been made to correct the situation.

The most significant conclusion is that communications in industry cannot usefully be looked at in a vacuum. Whether we like it or not they occur in the context of the existing pattern of control and coordination. This context is a communications media and, to a disquieting degree, the medium turns out to be the message. Because it is a background phenomena it is - easily overlooked. In our work we time and again come across senior managers of large bureaucracies who are convinced that their organizational troubles would be over if only they could improve communications. This is like a native fishing with a spear and claiming that his aim would improve if only the water did riot refract the light.

I have been saying rather more than that. Bureaucratic organizations constitute a special kind of communications media. Water, air, print, radio waves all constitute media, but they are relatively stable and we can learn ways to compensate for the particular distortions they generate. I have been suggesting that the bureaucratic organization constitutes an inherently unstable medium: always purposively amplifying or attenuating messages in ways that have nothing to do with the truthful correspondence of source events and messages.[2]

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[2] In the interest of brevity I have omitted consideration of the other major source of instability that lies in the grape vines of the "informal structure" that are almost always generated by bureaucracies. See Emery and Emery, 1973.

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I am not saying that there is no room for improvements in communication within existing structures. There practically always is. I am saying that we should be very modest in our expectation of how much improvement can be gained by investing time, effort and money along these lines. We certainly cannot expect any efforts along these lines to change the nature of the organizational animal.

Recognizing this difficulty people have sought other ways to improve communications. In effect they have said, "Alright, if we cannot talk properly with each other, in the workplace and in our formal relations of subordinate-superordinate, let us pick a time and place where we can sit around the same table as equals, and talk man-to-man." There was the obvious difficulty that it would not be much of an interpersonal situation if every one tried to squeeze into the meeting place. An equally obvious solution seemed to be at hand - the election of representatives as used in parliamentary democracies. So works councils and joint consultative committees of various forms were brought into being. As Wilfred Brown so astutely observed, "All this thinking is subconsciously postulated on a belief in the existence of the 'split at the bottom of the executive system.' Why should peripatetic contact between high-level managers and representatives achieve so much that daily and hourly contact between operators and their managers cannot do - unless there is a barrier at that level." (p.205, 1965)

Great numbers of these bodies have been set up, usually in Europe, and some like the Whitley Councils in the British Service, date back to the First World War period. Every large scale study of such bodies yields the same result, widespread apathy of the workers toward them, wide-spread apathy of management and unions toward them. These representative systems have not proven an effective means of achieving their intended aim, to bridge the gap at the bottom of the executive chain. As far back as 1952, the National Institute of Industrial Psychology, after a study of 751 cases in British establishments, each with more than 250 employees, advised that we toss in the sponge and go back to tackle the problem at its source. Having measured the widespread apathy their report concluded that

> "We would emphasize then, that the first requirement of joint consultation so far as the worker is concerned, is the development of the consultative relation in the primary work group, between foreman, charge-hands and operatives... it is at this level that conditions will be created in which workers will be enabled to resolve their personal problems constructively to find satisfaction in their work and to increase their motivation, sense of responsibility and the desire to co-operate." (p.218-219, 1952)

For the benefit of those who know something of the history of this field of enquiry I must hasten to add that the NIIP was a government supported research body and certainly could not have been described as under Tavistock influence. In fact I know that they were unaware that, in that same year, 1952, Eric Trist, Tommy Wilson and myself were demonstrating in practice in some British coal mines that there was a way to cut the Gordian knot.

One would have thought that the weight and authority of this evidence would have convinced people that they had no option but to go back to square one and find some way in which they could organize themselves to get their jobs done and still be able to talk to each other.

Generally speaking no learning seems to have taken place. If you look at the scene today in Scandinavia, Australia, and of course, the Bullock Report in Britain, then you would have to wonder about the quality of communications between social science and industry. I quoted the 1952 study just to show how long the facts have been around. I could have just as easily quoted studies of a similar weight done in the past ten years and coming to the same conclusion. Similarly, I could have quoted empirically-based studies to show that the Yugoslav workers' councils are no exception to the general rule of worker apathy. The Yugoslav Workers' Councils do perform much better than the usual Works Councils in two ways. They are much more concerned with serious matters and the management and trade union officials are not apathetic. Both management and union officials are subordinated to the external control of the Communist Party. If one ignores this external control mechanism, or, if one blatantly assumes that the communist party bureaucracy is the workers then and only then, can the performance of the Yugoslav Councils be quoted as some evidence for the value of so-called "workers control." The evidence on these representative bodies, Yugoslav and Western, is so consistent that I see no point in further reviewing it.

The point that I think we should seriously take up is why in so many parts of the world we keep coming back to this same old blind alley.

During the fifties and the sixties I think we were, with the best of intentions, deluding ourselves into thinking that we had found other new ways to improve communication on the shop floor without bothering ourselves with the apparently immutable aspects of organization, ie. control and co-ordination. In the fifties we thought that training our foremen in human relations would open up our workplaces to straight-forward, man-to-man communications. By the sixties it was clear that this only increased the turnover or the sickness rates of supervisors. By then two other panaceas had appeared on the U.S. scene. Instead of supervisory training in human relations let us make the worker happy and then he will talk. Again there was no talk of the organizational context, only of job satisfaction, job rotation, job simplification, job enlargement, job enrichment. Again a fade-out. Patchy, non-persistent results at best. Little wonder. It was an effort to provide for unskilled and semi-skilled workers the kinds of jobs that skilled workers already had. But the gap at the bottom of the executive chain had always been just as great when the employees were metal craftsmen or wood craftsmen. Being craftsmen had done little indeed to reduce their sense of them and us.

The other panacea derived from a good commonsense inference. If the human relations training of foremen was being negated by the pushy, results-now attitudes of middle-management, then why not expose management to human relations training? At least they might then be able to direct and support their supervisors in appropriate ways. The National Training Laboratory at Bethel led the way into this and it became the in-thing for management development. By the mid-sixties the same line of thought was bringing T-grouping, theory Y and the managerial grid to corporation vice-presidents and even presidents.

Turning managers into nice, insightful people appeared to do no more to temper the harsh realities of bureaucratized work than had human relations training for foremen. Even when both were done nothing much seemed to happen.

I do not think that the failure of human relations training and individual job enrichment is an adequate explanation of why today we still find people fumbling to reintroduce the old forms of communication through representative bodies. The main pressures seem to come from politicians and trade union officials. There is widespread concern for greater participation in all matters that affect the quality of life; industry is widely recognized as an archaic form of autocracy and hence there are potential votes to be gained by politicians from espousing so-called industrial democracy. From the union viewpoint it is simply a matter that knowledge is power. If, in the establishment of representative forms of industrial democracy, organizations can be forced to reveal more of their plans and their other affairs then the unions are better enabled to fight for their members' interests in the Arbitration Courts or by direct "industrial action."

Neither the politicians nor the trade union officials are concerned with the original issues of non-communication at the shop floor level. Their concerns lie elsewhere and their interests are best served by the continued existence of this split. This is true of both urban political parties in Australia and the employers bodies as well as the unions.

I am not quite finished with this matter.

There are a handful of big organizations in this country who have recently taken this path of establishing consultative bodies. As far as I can work it out, they felt that they were sufficiently sophisticated to be informative in these settings, but not too informative and that they reckoned that they would more than make up for their gift of information by getting up-to-date intelligence on what their workers were thinking. It does not always work like this. Two of these companies last year found themselves lulled into a state of contentment and then very shocked by events which revealed widespread discontent. The minutes of the preceding joint committee meetings revealed no hints whatsoever that this might happen.

I think we must try to bear in mind what happens when a representative is chosen. Up to the declaration of the election he is one with his peers, only more so because he is after their votes. The moment he is elected he is a different person. He is certainly not your ordinary Joe Blow. He is special and his former peers regard him as such, although they may not put it in as flattering terms as he would. What has happened in this process is not very helpful to communications. The them and us still exist in the joint councils, even though it might be somewhat blurred. An additional them and us has emerged between the worker electorate and their representatives. The workers will seek to keep their representative in the dark. The representative has to go back for regular re-election and hence he will not wish to be seen as actively aiding management.

Are we then in a trap? Stuck with bureaucratic forms of control and co-ordination and unable to find effective ways of communication?

This is only a rhetorical question. What Trist, Wilson and myself were doing in 1952 to create effective non-bureaucratic work systems has now been done hundreds of times over by many people in many countries and in just about every branch of industry you could think of. I have no intention here of repeating our discussions of our notions of semi-autonomous group working or self-managing work-groups (Emery & Thorsrud, 1969.) It is relevant, however, to ask whether such changes in the context of control and co-ordination make any real difference to communication. If so, how significant is the difference?

I will give just a couple of extreme examples to indicate possibilities we are talking about. I do not for one moment imagine that most organizations will manage to realize these potentialities any more than I imagine that many of us are going to run a four-minute mile.

The first is a very simple example of the upward flow of information and ideas. The Hunsfoss Pulp and Paper Mill was one of the first of the Norwegian plants to move over to semi-autonomous group working. Before the change they had introduced a quite respectable suggestion scheme. During the six years of its operation it had yielded, on average, one useable suggestion per year. During the year after the change from a bureaucratic structure there were 53 adopted suggestions. That would suggest to most people that there had been a radical change in the climate of communication. I might add that monetary rewards were attached to the old suggestion scheme but no one raised the question of rewards for good ideas after the change. A closer look at the ideas put forward is even more revealing. They show that it was not just a new sense of interest in the task and more openness for communication. Some of the problems they cleared up must have been known to the operators for years, and in the past they had just shrugged them off as none of their business. In coming up with suggestions to solve these problems they were showing a sense of responsibility for the overall operations of their department, not just their narrowly defined job. I suppose the lesson is obvious. If you give people responsibility for something they will seek to make whatever communications that will help them carry that responsibility. If that "something" for which they are responsible is narrow then so is their concern about communicating.

Those same workers at Hunsfoss pressed for an information centre to track what was going on hour-by-hour in the plant. I last saw this, on an unannounced visit, some eight years after the change-over. The information centre had been evolved by them, not management, to the role of a control room of an automated process plant, with additional data on multi-skilled training, etc.

This sustained demand for communicating relevant information compares rather favourably with the perfunctory entries that used to be made into a limited set of log-books in the old bureaucratic system. Those log books, like the laboratory tests for quality, fed back nowhere in the system in time to correct any operation. Perhaps it was just as well. The log books bore about as much relation to reality as the lab book of a first year physics student (I ran statistical analyses over those books.)

The second example is more complicated. It arose from some calculations we did in sorting out a problem of management structure at Volvo's Kalmar plant in January-February, 1975. The accompanying diagrams illustrate the alternatives we were considering. Diagram 1 represents a typical formal organization of a bureaucracy. The second diagram (refer to page 56) probably comes closer to representing the real flow of communication, as additional lines of communication to specialist functions are imposed, and as an informal network develops. The third diagram represents a typical transformation to a democratized form. The reduction in the number of levels is usual and not at all an exaggeration. I have represented the operators as working in four groups of a size like that at Kalmar. With a different sort of task the best arrangement might have been six or eight smaller groups. As we will. see that variation in work group size would not have much affected the differences in the communication patterns.

A little bit of simple arithmetic will indicate that we are confronted with two different worlds of communication.

Formal Reporting Channels and Task Mediated Relations:

Steps removed from policy maker	Bureaucratic (Diagram I)	Democratized (Diagram III)
1 step	3	1
2 steps	4	1
3 steps	18	4
4 steps	26	-
5 steps	34	-
Total of formal reporting channels	85	6
Task mediated hierarchical relations (formal reporting channels)	85	6
Task mediated relations between peers (max.)	-	744
Paper generating function (channels x by steps	339	15

The estimate of the "paper generating function" was derived on the assumption that at each step in the chain of communication another bit of paper has to be generated. This seems to be a modest assumption. No allowance has been made for summarizing communications, but then no allowance has been made for the feed-back loops whereby an original message upwards generates "please explain" notes, requests for more details, etc. The U.S. war historian S.L.A. Marshall, who has probably done more field studies of communication in a bureaucratic structure than any other person in our age, recommends a stronger assumption. As he puts it, in the military context:

> "The flow of orders and instructions is toward the front.
> But the prevailing flow of information ... is ever towards the
> rear (the top) and the volume of it seems to increase
> according to the square of the distance from the fighting line

> ... it is a little bit absurd ...To reverse the flow, or rather to
> equalize it, so that all levels may be served according to their
> necessity - there truly, is the real problem ... complicated
> unnecessarily by the blindness and the indifference of men."

These examples were chosen to indicate the very wide range of possibilities with which we are confronted. These improvements are premised on the introduction of self-managing groups. They do not, however, confront the problems of communicating to employees about those sorts of matters - that are traditionally dealt with at managerial and board levels.

We have in practice broken the back of the problem that Wilfred Brown and the NIIP posed - the gap at the bottom of the executive chain. Now we are confronted with two more problems.

Back in the early sixties Thorsrud and myself thought that by this first problem we would be providing mouth-to-mouth resuscitation to works councils and other such bodies. It has not worked out like this. In plants where the workers have been given and have accepted responsibility for self-management at shop floor level they have turned their backs on the so-called representative structures, and, in some cases, have arranged with management to have them abolished. The mill at Hunsfoss, that I earlier referred to, is a case in point. In the 1973 elections for plant corporate assemblies (a Politically instigated law) only 32% of the Hunsfoss employees bothered to vote (only 23% of the blue-collars.) In six comparable firms, still working a bureaucratic system, an average of 66% voted. I was in the plant just after election day. The reason was obvious. From their eight years of experience of shop floor democracy, those sorts of representative bodies simply seemed unreal.

We got a similar message at Kalmar. Wanting to sound out the ideas I have discussed above, we asked operatives whether the ideas might be floated at the works council. We got a solid no. Even the elected representatives made it very clear that they had no brief to act on the behalf of their electorate in such important matters.

I do not accept this as the end of the road. I know that whenever we do surveys of the views of workers there is little interest in the decision-making process at managerial and board level. Except, of course, on decisions that directly impinge on them, eg. transferring operations to another geographical site. I cannot accept this indifference at face value. The hang-up is, I think, that workers will not accept that representative systems add to their learning, or to their influence. They have precious little control over what the representative communicates, in style and mannerisms if not in words, and reporting back is almost always a farce. They do know that the representative, having made his mark, is sorely tempted to use his position to further his personal ends.

As a community we seem to have forgotten that there is another way to achieve representativeness other than by the ballot box. It is the system used for selecting juries, juries that may decide on life and death. It is the system, that was most favoured by the Athenian democracy to which we extend so much adulation. Thorsrud and I saw it operating under our very eyes when the Porsgrun fertilizer plant opened up in October, 1967.

The system they operated was that all workers served by rotation on the management team for a fixed period. Whilst serving on the management team the workers were fully privy to, and free to feed into, the management decision-making process. Whilst present they represented no one but themselves, ie. an operator who would soon be back operating under the constraints of such decisions as the management were making.

At the time, 1967, we thought it an interesting innovation but I do not recall that we saw its strategic significance. It is no longer an isolated example, eg., B.H.E.L. at Tiruchirapalli and Dynovac, Melbourne.

Participation at the board level poses different problems.

In the early sixties we had a close look at what it means to have direct worker participation at board level (Emery & Thorsrud, 1969.) By a close look I mean interviewing at length people who had actually served as worker directors and corroborating their evidence with interview of those who chaired those boards, the others who served on those boards and the board minutes. A great deal has been published on this matter since we wrote. Precious little empirical evidence has been added. I still think that people do not realize that a company board is as potentially hostile to its management as it is to any other employee. Worker directorships are still, on our evidence, a self-defeating way of increasing communication. They will just drive communication at board level further underground.

I think there is a practical way in which the kinds of decisions typically arrived at board level can be opened up for wider communication. This suggestion has nothing to do with circulating minutes of board meetings or the like. That would only alert competitors and bore the employees.

A great deal can be gained if a company spells out in writing its company philosophy and objectives so that everyone can see the context within which the board is going to make its future decisions. Such a statement is useless if it only states that the company intends to operate within the law and will always try to be nice and considerate to its employees, its customers and the community. To be effective the philosophy statement must be seen to rule out some management practices that are legal but are detrimental to some other interests, and it must be seen to assume some responsibilities beyond those stipulated by law or by contract.

The best example I know of is that adopted by Shell Refineries (U.K.), (Hill, 1970.) This philosophy statement was adopted only after its contents had been argued all the way from the international board to the shop floor and their union representatives. All levels of staff were involved in groups of about forty for two-and-a-half or one-and-a-half days. I mention these facts, not because I think that this much effort is now needed to generate a company philosophy, but because this tremendous exercise in communication (which by the way led to no measurable loss of production over the period) did show what had to be stated and what could be communicated. The three most critical matters to emerge were the concepts of capital, profit and the special role of human resources.

So long as capital was identified as privileged access to resources, that were social resources and remained such, there was no conflict. It was not seen that nationalization of resources gave any guarantee of better trusteeship. Provided the philosophy ruled out the option of generating profit by exercise of monopoly power there was no trouble with the concept, except amongst the middle management. Middle management felt that even if the company played by the rules it should aim at only satisfying levels of profit not maximum profits. The workers and their representatives had no trouble with the idea that the company should seek to generate every bit of profit it could through increased efficiency. The handling of the human resources question was very interesting. Shell, like B.P., and many other firms in science-based industries, had always been a pretty outstanding employer, but in a fairly paternalistic way. The message that came through was that paternalistic care and job security were far less relevant than whether people got a chance to grow in their work and improve their marketable skills. The greatest concern was for security vis-a-vis the job market not just within one organization.

After this philosophy was adopted it did become a practical working basis from which people in Shell Refineries argued about what decisions to take. That, I think, is the test. If a company philosophy statement is to be worthwhile then it must have a demonstrable effect on the decision-making in the company.

In this paper I have failed to discuss many things that appear to be central to our present-day problems of communication in industry. I have stated my reasons for not regarding questions of mechanics as central. I have not devoted space to the "open government" question because I think it is obvious that the company law must be changed to demand fuller disclosure to employees, shareholders and the community. I have not explained my reasons for not discussing shop stewards, collective bargaining and the like. My reason is different. These matters are central but they are in such a state of transition that I do not think much can sensibly be said about them. Under the old authoritarian conditions the shop steward was seen by management and union officials as a potential rat-bag and troublemaker. With a move toward self-managing workers I think both sides might find the shop steward to be the most valuable line of communication they have to the shop floor - but more as an ombudsman. Similarly, if management and unions find that they have a common task in extending effective self-management on the shop floor they will find a basis for mutual trust. They will not be prepared to go through the nonsense of pretending that every disagreement has the status of a dispute so that they can take it to the Arbitration Courts.

I realize that what I say is bad news for those who seek to politicize industrial relations. But then I think they are engaged in their fathers' problems, not ours.

For our part I think we should consciously set ourselves the task, to put it a Chinese way, of moving away from the three bads of asymmetry, egocentricism and them-us and towards the four goods of openness, respect, mutual concern and trust.

In the preceding remarks I have laid stress on the organizational context of communication. It would be foolish of us to overlook that there is an even broader, deeper and more pervasive context. Since the mid-fifties a new spirit has come to pervade the western societies.

This has had all sorts of crazy, outlandish and faddish manifestations. For a number of good reasons it is clear that this change is not going to go away. We are all going to have to adapt to it or crawl away to some funk hole. Industry does not provide many funk holes. If there is a single unifying feature in all of the lib. movements, pressures of participation, open government, corporate social responsibility, etc. it is the reversal of the age old principle that the individual is here to serve his institutions. Everywhere the demand is now being made that the institutions serve the individual, or else. Individuals are refusing to be cast by the institutions in their definitions of "the good Christian, the good worker, the good wife, the good scout, etc." They are insisting instead that they be supported and enabled to do their own thing with their lives.

I am suggesting that we are in the throes of a cultural revolution. It is the cultural assumptions on which our institutions, organizations, and age-sex statuses are based which are being revolutionized not just the organizational forms as such. Any organizational attempt to communicate to employees, customers or the general public now has first to pass the acid test of "are they with it?" If the signs are that they are not, that they still think the organization is God, then a good deal of tuning-out will automatically take place.

Many managers and union officials obviously think that these changes are matters that they can gradually adjust to, eg. get a new "with it" logos for the organization, allow the junior staff to have their hair fairly long, introduce a company bulletin and an illustrated version of the annual report for all employees.

I have some bad news for those who comfort themselves in this way. An organizational change can be gradually adapted to. A cultural change cannot. Either you see the light or you don't. The neatest illustration of the principle is the perception of reversible figures. In one orientation you see an old hag looking to the left; in the other one sees a beautiful young woman looking to the right. When you are seeing one you just do not see the other, and when the reversal spontaneously takes place it does so instantly. There are no transition phases where one sees a bit of each. Note also that nothing has changed in the picture itself, no new data has to be added in order to see something very different and no new learning is required.

The difficulty in cultural change, eg. the change-over to democratic work forms, is primarily in the difficulty in seeing things. You see the old hag as clear as clear can be and yet here is this other fellow raving on about the face of a beautiful girl and, in the process creating something of a credibility gap.

A small but outstanding example of cultural change occurred in the Hardawar plant of the B.H.E.L. when efforts to democratize work came up against the caste system. We need not have worried. In the old perception of work it seemed entirely fitting that an outcaste should sweep the floor. In the new perception the sight of a man doing nothing but sweep the floor seemed incongruous. It was still the same man, the same broom and the same factory floor. But the man could be seen as a man, not just an outcaste.

I have never seen this point put more beautifully than in a passage in the writings of Solomon Asch:

> "...let us perform a fantastic experiment in imagination and ask how an average Southerner would act if he woke up one morning to find that no one in the white and Negro environment observed or respected the discriminatory racial practices. Disregarding the bewilderment that would follow such a drastic change and the great individual differences in adapting to it, we are inclined to believe that the structure of emotions, beliefs, and habits formed in the course of a lifelong experience would in most instances be undermined and supplanted by the newly prevailing relations, with little need of painful or prolonged "rehabilitation." There might even be many who would experience the change as a great relief," (1952, p.578).

In my experience the change from industrial autocracy toward industrial democracy at the work-face is of the same nature. Workers with very little formal education and even with a poor grasp of the English language have no trouble in grasping the concepts of organization and, within a couple of days in an appropriate setting, gaining confidence in using these concepts to redesign their own work organization. They often, however, have difficulty in believing their own eyes. It is hard for them to believe that management is genuinely concerned with them as individuals and even harder to believe that the over-riding concern is not just to screw out more work for less pay. Management also has some problems with its eyes.

If I am right about this then it is a caution against assuming that some people might be so dyed-in-the-wool that they just have to be discarded in the interest of change. It is no good judging a person because, "he does not show the beginnings of an understanding." We can validly make that sort of judgement in a learning process but in the process I have been outlining the beginning and the end are pretty much the same thing. In some cases a state of disturbed, confused concern presages the perceptual reversal but the absence of such a state tells us nothing.

Not being a learning process in the simple sense there is little we can achieve by teaching people. I suspect that a reversal of perception can be induced only if a person is willing to take a long hard look at the matter.

THREE TYPES OF ORGANISATIONAL INFORMATION NETWORKS
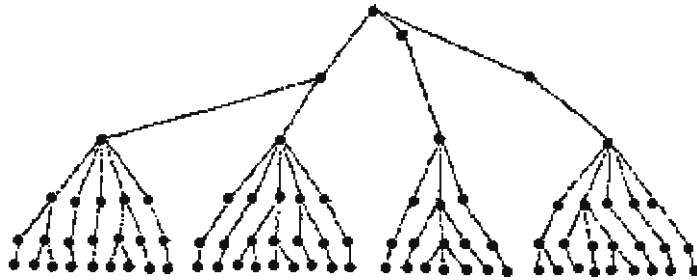
Figure 1

Bureaucratic
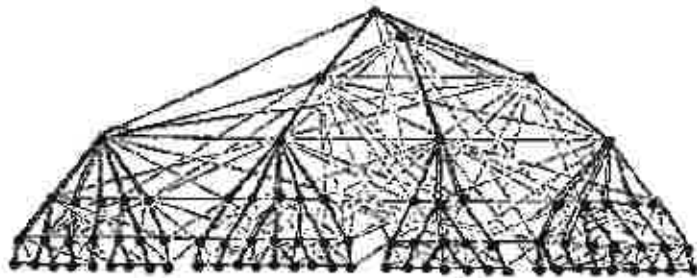Tree

Figure 2
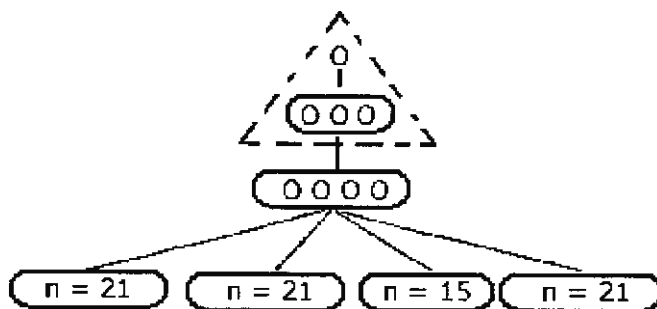
Potential Bureaucratic
Mesh of Formal-Informal

Figure 3

Democratic Structure

n = 21   n = 21   n = 15   n = 21

A Concern for Quality

Let me start with a field report from "Women on Assembly Lines":

> "The supervisor was unable to control the quality of the products. The rejection rate was on the increase, reports from the Quality Control were generally unfavourable, and the upper management expressed concern about the situation. To keep the rejection rate down, the supervisor put one worker on full time inspection of the units finishes by the assemblers before passing them on to the Quality Control section. In protecting herself she removed responsibility from the jobs. The workers became more careless. The weekly report on mistakes lost its meaning to the worker as they no longer regarded mistakes to be completely their responsibility. The worker on full time inspection was supposed to pick up the mistakes."

Just a vignette from an Australian factory, but it makes a point of fundamental concern for all who seek to design systems for control of product quality. This was an unsophisticated system that the supervisor introduced. I suggest that that is irrelevant. If the concern of management for quality manifests itself in ways that reduce the concern of operators for quality then, no matter how sophisticated the controls, the system is off on the wrong foot. Any system that suggests that quality control is the business of full-time specialists runs the risk that the operators will see that all that is expected of them is quantity. A second principle is suggested by another study that Dr. Yuen did of a television assembly line, here in Australia. She studied it while working on it. Here quality control rested with a group of men physically separated from the female assembly line. They checked and made good. Their daily summary report went upwards but never came down to the women on the assembly line. At that level the only feedback was indirect and very ambiguous eg. sackings, line changes and changes in supervisory practices that could well be for other reasons. The assembly line was not usually under pressure and Dr. Yuen found in discussion that quite a number of the women were trying to make checks on their own performance to see if they were getting better.

It the management cannot be bothered to give feedback to those responsible for making the mistakes they can hardly expect those people to feel responsible.

A third principle emerged from Dr. Yuen's study of the stereo record player assembly section of the same factory. There a new technician-cum-supervisor worked at his own specialist tasks in the same work area as the women assemblers. He also checked for defect and answered queries about problems as they cropped up. He soon found that the women knew so little about the sets they were assembling that they did not know the difference between what was trivial and what was a potentially serious defect.

This was making his task harder so he took it upon himself to use the spare moments to systematically teach them. When senior management eventually caught them out at this the women took considerable pride in displaying the knowledge they had thus acquired. I think the principle is clear. If people do not know about their product and what it is about the productive processes that produce a good product then no amount of concern on their part, nor feed-back from management will enable them to contribute me, meaningfully to quality control.

From Dr. Yuen's first hand observations at three Australian work-sites I have drawn three principles for the design of quality control systems (for non-automated production systems). I suspect you must be wondering where this charade stops. What, you might ask, gives such ordinary commonsense observations the status of design principles?

I have deliberately chosen to label these as principles, because they are fundamental to any individual's ability to sustain interest and involvement in his task. Let us consider the first principle. We negate this principle if we insist that a person leaves quality considerations to others and just applies himself to maximizing production whilst sticking to standard operating procedures. If an operator accepts this definition of his task then we can be quite sure that he will set himself against the spirit, and sometimes the word, of the standard operating procedures. Even if he sees that the material is faulty, the previous workmanship slip-shod or that the tool setting is misaligned, that is no business of his so long as he can pump out the product. Anyone who thinks that operating procedures can be so specified as to guarantee a good standard output should ponder on the reasons for the disastrous effects of "work to rule" strikes in such well-established systems as railways. What I am trying to say is that, if we set up a situation where the goals of the individual are different to those of the organization then, by what logic do we justify our expression of disappointment, even disgust, at people for pursuing those individual goals. They are showing commonsense, ours is the twisted logic.

I think the second principle is equally simple and general. On some jobs it is easy for an operator to see if he makes mistakes. Thus a miner knows if he is lacing a tub of coals with stones: a clerk knows if he is lacing the records with average not actual figures when he cannot be bothered to check the files. The first principle is about this sort of mistake. In many jobs there are mistakes that cannot be picked up because for instance production pressures do not allow for an adequate review of one's work, one does not know what constitutes a significant mistake, or there is an element of interactive indeterminacy, such that your action on the product does not constitute a mistake until it is complemented by a bit of indeterminacy further down the line. If any operator is to show concern for quality in this situation they must have feedback in a form, and in time, for them to learn from their mistakes. If this is not forthcoming how can any person sustain an interest in achieving or sustaining personal targets for quality production.

The third principle needs no such discussion. If employees are ignorant of what they are doing, of what values are any quality standards they set themselves? How well can they fill in for the inevitable shortcomings of specifications?

There is an over-arching principle in all this but I will defer consideration of this principle until we have had a look at the contention that the first three principles are nothing more than commonsense. First I want to have a look at what we mean by commonsense and then at how much commonsense we seem to have in Australian industry.

Commonsense is what we all show when we are not being stupid, ie. when we are seriously trying to add up what the possibilities are for doing what we want to do now, or for setting things up for what we would like to do later. I think we can spare ourselves a more technical definition of what it is to act intelligently. The point is that people are not lacking in commonsense as much as they are deprived of social environments that give adequate sign posts to the exercise of their commonsense. The fact that the principles expounded are obviously just commonsense is less important than the fact that managers so often find themselves in environments where commonsense is discounted in favour of esoteric principles derived from the study of man in the abstract. I suggest that, just about all that the social sciences have to tell us, that is of worth, is to be found in the naive psychology of every man.

For most of this century scientific psychology has agreed with Skinner that:

> "The vernacular is clumsy and obese; its terms overlap
> each other, draw unnecessary or unreal distinctions and
> are far from being the most convenient in dealing with the
> data."

In this decade we have come to recognize that these are not the hang-ups with commonsense. Take an example. Just any individual, regardless of culture, schooling or so-called brains, will get angry if he or she is confronted with a challenge to what they believe to be right or proper. That is, we all know when it is appropriate to be angry, or what we have to pretend to believe if we want to fake anger. It is just commonsense to be angry under those circumstances. This commonsense principle makes a nonsense of most of the fancy theories that psychologists have come up with. Commonsense does us little good if, however, the signposts are misleading eg. if a smile is interpreted as friendliness when it is simply a smile of self-satisfaction; if sign posts are absent, as in multi-cultural situations; or if a person is too inebriated to read the signs. These sorts of errors occur to our embarrassment, all of the time, and particularly in social systems that have been designed in defiance of commonsense.

Having said this much in defence of commonsense as a guide to interpersonal behaviour let me now state that the most troublesome thing about commonsense is precisely that it comes too easily and naturally. It comes as naturally as talking and walking: But then we know how these activities are disrupted when we become self-conscious of our talking or of our walking. Similarly, most of us either cannot or will not interrupt the free flow of our thinking by subjecting our commonsense to rigorous conscious analysis. However, just as accent and gait betray hidden assumptions about the particular environment in which skill in language and walking developed so, I suggest, does everyman's commonsense carry tacit assumptions about people that derive from the earlier environments in which they grew up. In new and different environments these tacit assumptions can play tricks with commonsense.

If there were a generally valid logic in our commonsense that could be spelt out, as it were, in words of one syllable then each of us would have a chance to extricate our commonsense from the distorting, outdated and idiosyncratic assumptions we have unwittingly carried forward from our past social environments.

There is such a logic and a good deal of it has been spelt out first by Fritz Heider in 1958, and then in the seventies by a strong group of linguists. (Labov and Fanshel, 1977.) What is involved is much more than "lateral thinking", "clear thinking" or the "Kepner-Trego" problem analysis, although I am in no way disparaging of those contributions.

As an example we can look at the simple notion of making a request eg. requesting operators to be more careful; to check what they have done; to avoid doing X. We know that sometimes we have only to voice our request and it is met and at other times we might as well have saved our breath. Faced with problems of this nature we often think we might get more success if we make our requests in clearer language, or if we made them in a nicer manner or tone , or that they might have got across better if they had been seen to come from the top man in the organization.

What the analysis of commonsense has revealed is that four pre-conditions have to exist before another person will accept a request as valid, as something he realizes, upon being requested, he ought to do. He may not in fact get around to complying with the request but at least the communication has got across to the extent of inducing some willingness to comply. The logic of this can be expressed as a rule that human beings follow, even though they could no more explicitly formulate it than they could spell out the rules of grammar they follow in their use of language:

Rule of Requests.
If A addressed to B an imperative specifying an action X at a time T1 and B believes that A believes that

1	a)	X should be done (for a purpose Y) (need for the action)
	b)	B would not do X in the absence of the request (need for the request)
2.		B has the ability to do X (with an instrument Z)
3.		B has the obligation to do X or is willing to do it
4.		A has the right to tell B to do X,

Then A is heard as making a valid request for action. (Labov and Fanshel, 1977).

This set of conditions is logically necessary and sufficient for a heard request to be accepted, as valid. It should be noted that this explication invokes only the commonsense concepts of can, want, willing and ought; it makes no use of the technical and esoteric jargon of the motivational psychologists.

Now, put yourself in the position A. It is clear that you, in making your request, must have some way of predicting what B will believe about what you believe; you have to know what B thinks you have got on your mind. If, for instance, B believes you and he are in a "them-us" relationship then condition 3 is in jeopardy. B ,will automatically think that A cannot expect me to believe that I am really one of them. Thinking that B will proceed to think that "That is no request it is an instruction. O.K., let him try and enforce it. (Wilfred Brown, 1965; pp.69-71, for an excellent exposition of the complementary problem of a senior "advising" a subordinate.)

Obligation and responsibility are a cluster of commonsense concepts that have powerful implications in human affairs, and prove on analysis to have clear conceptual underpinnings. Thus, we find that "it is pointless to talk of obligations where in truth the individual does not accept any responsibility" (Fingarettee, 1967, p.15.) Responsibility emerges only when an individual accepts as his concern that which another individual or group offers to his concern (ibid, p.8.) When people use terms like "them" and "us" (or the term "stranger") they are demarcating some of their concerns from the concerns of others, and thereby delimiting what they feel responsible for or obligated to do.

An unwillingness of operators to accept responsibility has been widely experienced by managers concerned with improving product quality. I suggest to you that that experience has been largely derived from making "reasonable requests" that do not in fact flow from the four pre-conditions outlined above. Additionally there is the experience of operators allowing obvious defects to pass by without comment. Too often the commonsense response has been to apply "the carrot and the stick." The reasoning being that "if the operators will not respond to reasonable requests then we will have to bribe them with rewards for ideas on improvement and/or we will have to make them sorry for being careless." This sounds like an answer, but what sort of answer is it? Note the not very subtle transformation of the problem to which it purports to be an answer. The problem was to create a stronger orientation of the worker to the task. In the newly defined situation the emphasis shifts to the relation between the operators and the supervisors. The perceived request is now "Don't let me catch you doing this or failing to do that." This is not quite the same as asking that you help me to prevent this happening or to make this other come to pass. If this becomes the style of work then there will be much polishing of three brass monkeys but little improvement of quality standards. It is a solution that makes the initial problem worse.

Surely, you might think, we have enough commonsense in Australian management to avoid such an obvious trap? There are some simple ways to answer this question. If our managers have fallen into this trap they will have removed responsibility for quality from the operators and lodged it with special quality inspectors. Likewise, with that shift in responsibility they will not bother about feedback to the operators about errors because these are things that the inspectorial system is responsible for screening out. In a fairly recent survey of the Australian urban work-force Phillips and myself found that in heavy and light industry, building and retail trades only about one-third of the respondents considered that they were expected to give primary concern to the quality of their product. Regarding feedback we found that only sixty percent, overall, felt that their jobs were so designed that they usually got the feedback necessary to correct their mistakes.

We observed marked biases with respect to age and education. The young and the less educated were much less likely to get jobs that required them to be conscientious about quality or to be fed the sort of information that would enable them to contribute to maintaining quality.

Figures such as these suggest that either there is ,not much commonsense amongst our managers, or that there is a widespread corruption of their commonsense. I think the latter is the case. I think that most of our managers have come from social backgrounds and/or have so dedicated themselves to advancing their careers in narrow social environments that their commonsense is riddled with tacit assumptions that barely held true of the work-force even when they were becoming implanted. I think, for instance, that they start thinking about quality control problems on the tacit assumptions that operators are stupid, indifferent and, in some cases, malicious. Assuming this about a broad class of people their commonsense leads them into questionable courses of action.

Is there evidence to suggest that these assumptions are, to say the least, old-fashioned?

I think so. First, let us consider the many thousands of Quality Control Circles that have emerged in Japanese industry. (Please do not baulk at this reference as I will come to discuss the limits of this reference.) Juran, who has studied this movement, noted that the Japanese rejected these tacit assumptions and asserted as the basis of their quality control, movement that:

> "We really don't know the cause of our quality troubles; we don't even know which are the main troubles.
>
> Hence, we must teach people how to analyze the trouble pattern in order to identify the main troubles.
>
> We must teach people how to list the suspected causes of the main troubles, and how to discover which are the main causes.
>
> We must help people to secure remedies for these real causes.
>
> We must teach people how to sustain these gains through modern control methods." (Jones, 1977)

As far as I can judge, from the evidence available to me, this has been an eminently successful programme. It works to the extent that each Circle averages about US $3,000 savings per year. It has little use for the carrots. "The groups work in their own time and may not be paid for their time... However, the cumulative effect of the different groups is indirectly reflected in year-end bonuses" (ibid, p.99.) There is little use of the stick, "...this is achieved without placing demands on the time of management and engineers, who are then free to devote themselves to inter-departmental and upper-level projects. ... there is little staff intervention; experience has shown that this tends to discourage collective initiative." (ibid, p.99)

In the Japanese programme there is a very clear statement to the operators that management accepts the overriding Maytag principle that "quality cannot be inspected into a product"; management lays on a solid off-the-job training programme so that operators understand not only what they are involved in but also what techniques of quality control they can use; operators are actively encouraged to set and adjust, on appropriate feedbacks, the quality standards they seek to achieve.

To this you must be inclined to answer that it would never work here.

This brings us back to the problem of tacit assumptions. I am not for one moment questioning the greater degree of "we-ness" that the Japanese have in their large corporations. I do question our prevalent assumption that Australian employees "couldn't care less."

From the Emery/Phillips study we find that approximately thirty-four percent of people are turned off their job when it is defined primarily in terms of quantity produced, only thirteen percent when quality is stressed. Interestingly we found that the relative emphasis on quality or quantity had no observable effect on efforts to change one's job. In all other contexts that we have examined job satisfaction and efforts to get another job have been very closely related. That it is not so in this case suggests that "quantity controlled jobs" are more easily cheated to make for a soft job.

We do not have the cultural traditions of the Japanese but we have clear evidence that our own people take more satisfaction from jobs in which they are expected to take care than from a job that is just of pumping out product.

In fact it is clear that if one wishes to produce an attitude of carelessness in the Australian work-force, then a good start can be made by so designing jobs that they have no responsibility for caring.

The Japanese have carried forward, into their largest corporations, their old cultural traditions of group working and group responsibility. They have done this to the extent of guaranteeing tenure of the sort that we extend only to civil servants and academics. They have gone out of their way to minimize any sense of them and us between management and operators.

We do not have that cultural background, although I would argue that we had an equivalent heritage of group working until recent years, and we certainly do no longer have such a cultural homogeneity.

Does this mean that we cannot expect to emulate the Japanese Quality Control Movement?

I believe that there is evidence to suggest that this movement could be emulated wherever there are human beings. It is not a peculiar product of Japanese culture.

Our field experiments under real life conditions of being profitable experiments, have shown that when jobs are so designed that it makes sense for operators to concern themselves with quality; when operators are so educated that they know what is going on under their noses;

and when they have the tools, statistical or laboratory tests, to know when they are making errors, then we find that Quality Control is in a different world.

That is, when we design jobs so that they take into account the sort of commonsense principles that I discussed in the first part of this paper then we can expect any ordinary person to take some responsibility for the quality of his product. They do not have to be first steeped in Japanese culture or be swaddled in the paternalism of the Zaibatsu.

Moreover, if we look closely at the Japanese experience we find that the reason for its success does not lie in Japanese culture but in the simple mechanism of helping groups of operators to manage their own affairs. Not surprisingly they found that this sense of self responsibility would only develop when management and the engineers were kept out of their hair. This is no different in principle to what we have been demonstrating for years in setting up semi-autonomous (or self-managing) work groups. (Emery and Thorsrud, 1976.) Our experience with such self-managing groups have been quite uniform regardless of whether the groups have been Scandinavians, German, Dutch, French, British, Indian or Australian. Cultural differences seem to have had something to do with the difficulty of establishing such a way of working but no apparent effect on the conscientiousness with which people fulfil their new responsibilities. I do not wish to labour this point as I have dwelt at length on the evidence in other writings. I will refer briefly to two cases just to indicate the magnitude of the effect of building quality control systems around groups of workers who accept that they have a primary responsibility for the quality of their product. The first case is that of a paper pulp mill. For six years before changing over to group working they had had a very respectable formal suggestion scheme; it had yielded an average of only one acceptable suggestion per year. In the first year of group working fifty-three acceptable suggestions came up although no monetary rewards were offered. (Emery and Tliorsrud, 1976, p.79) The second case is that of a personnel section of a Federal Government Department. Before moving over to group working the section had an official average error rate in the salary statements it issued, of twenty-seven percent (the actual rate was over forty percent.) During the first year of group working the error rate was brought below five percent and held there. These were mainly junior clerks and unfortunately, in one sense, they made themselves look so good that they got accelerated promotion and took away with them their experience of self-management. (Gorrie, 1973)

What I have been trying to say is I think quite simple. If we accept the Maytag principle that "quality cannot be inspected into a product" then we have to request co-operation from the operators. Such requests will fall on deaf ears if the them-us syndrome prevails. I suspect that anything that starts to counter that syndrome will show positive results. At Consolidated Fertilizers' Pinkenba Plant, in 1975, it started when the then Distribution Superintendent foreswore writing any more detailed directive instructions to reduce contamination in the end product and instead sent an informal personal letter to each of the crane drivers. He got results. Not unnaturally he built on this by moving responsibility for quality control further down to a group of the operators. I am suggesting that the appropriate objective for such involvement is that eventually the first responsibility for quality rests with groups of operators who accept also responsibility for quantity, for through-put and whatever are the other key parameters of production, eg. safety.

I think it is quite unsound to design any productive system that treats one parameter in isolation, even when it is such an important parameter as quality. We have had two unfortunate cases in Australia where self-managing groups were introduced without setting quality standards. In both cases a bull-gang developed and in one the shop stewards brought the experiment to a halt. I do not think that such a bad atmosphere would result from Japanese style quality control groups that had responsibility only for quality but I think it likely that they would-run into union opposition on the usual charge of "class collaboration." The more serious risk is that they would run out of steam as quality suggestions increasingly conflicted with standards set for quantity etc. Over which they had no influence.

Conflicting paradigms of work

In the past decade or so we have seen the emergence of a new paradigm or model of work. (Emery, 1978, Jenkins 1974) Proponents of this new paradigm claim that it explains much that could not be understood within the old paradigm, and much that was just swept under the carpet. They are also not averse to highlighting "facts" that seem to them to show that the old paradigm is in difficulties eg. Lordstown and the prevalence of the so-called blue-collar blues.

At the same time it is clear that the old paradigm is very much alive and stoutly defended.

In this paper I do not wish to review the pro's and con's in this conflict. I want to confront the question of "what is necessary to resolve such a conflict: of paradigms?" There could be no doubt about the outcome I desire, but I am also concerned that it be resolved as rationally as possible ie. that the costs of the conflict are kept commensurate with the benefits.

If this is indeed a conflict of paradigms then this is a difficult question, and probably one to which a clear answer cannot be found. I have already made several tentative attempts to answer this question, and have been closely in touch with Merrelyn Emery's study of the general question. This time I try again making much more deliberate use of the work on the succession of scientific paradigms that has been done by Kuhn, Polanyl, Likatos and Feyerabend.

First of all let me explain why I think we are confronted by a conflict of paradigms and not just a dispute about some social scientific theory or method. Kuhn offers two criteria as to whether a new scientific development has led to a new paradigm:

(a)   whether it attracts an enduring group of adherents away from the traditional concerns and methods of the field;

(b)   whether it proves sufficiently open-ended for the new practitioners to become a community of mutually relevant solvers. Both of these criteria have been met in this case as was amply demonstrated at the international conference at Bear Mt, N.Y., October, 1972. (Davis and Cherns, 1975) Kuhn's criteria are adequate if one thinks of the side range of implications a new idea would have to have in order to divide a community of scholars into two communities.

Nevertheless, it may be helpful to peruse even an incomplete list of the focal matters of attention of the old and the new paradigm of work. As Table 1 shows the differences are extensive and not obviously reconcilable.

Table 1
Primary foci of interest of the two paradigms.

The traditional paradigm	The new paradigm
"the factory gate"	"the factory floor"
wages and conditions	job design
strikes, absenteeism, turnover	job satisfactions
negotiating mechanisms	co-operative mechanisms
legislation	local agreements
labour market oriented	concern with managerial practices

The list is incomplete, but I think it is prima facie evidence that we are dealing with different frames of reference, not just disagreement about some finite body of evidence. This being the case we should give thought to the lessons learnt by the historians of science, namely, that:

(1) established paradigms are never overthrown simply by factual evidence; only by an alternative paradigm;

(2) new paradigms are not accepted and endorsed just because they better explain some new facts;

(3) every successful paradigm has been accepted in the face of facts that contradict it.

Kuhn puts the matter quite bluntly when he states that "The competition between paradigms is not the sort of battle that can be resolved by proofs." (P.147)

He advances a number of reasons for this. First, "Neither side will grant all the non-empirical assumptions that the other needs in order to make its case." (p.147) Second, they will usually disagree about what are the significant questions to resolve. Third, the proponents of the new paradigm will use much of the conceptual apparatus and methodology which they grew up with in the old paradigm, but use it in new ways that will not only be incomprehensible to the old guard but seem like "bad science." Last, and most important, "the proponents of competing paradigms practice their trades in different worlds" (p.149)

These matters pose a serious barrier to fruitful dialogue:

> "Just because it is a transition between incommensurables, the transition between competing paradigms cannot be made a step at a time, forced by logic and neutral experience. Like the gestalt switch, it must occur all at once (though not necessarily in an instant) or not at all." (P.149)

Kuhn brings home just how serious the barrier is by a telling quote from the great physicist Max Born in reflecting on his long career in science:

> "a new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it." (quoted p.150)

I am not yet as pessimistic as Born about the outcome in the conflict between the old and new paradigms of work. If we look closely, however, it is not difficult to detect all of the distorting processes that Kuhn describes.

Let us consider how things look from the point of view of a proponent of the old paradigm.

Paraphrasing Polanyi's description of political science the old paradigm of work can be described as holding that:

> "industrial Relations is necessarily shaped by force, motivated by greed and fear, with morality used as a screen to delude the victims." (p.141)

When I speak of someone as a proponent of this paradigm I mean that they know deep in their heart that this is the way industrial relations are, like it or not; they know that there is a vast body of experience confirming this picture; this is the picture they work with in their various professional roles as labour economists, lawyers, occupational psychologists, managers and trade union officials.

The very facts and interpretations that seem so obvious and convincing to the supporters of the new paradigm are seen by the others as trivia compared to the problems they face, or as merely re-affirming what they have always known.

Thus, for example, confronted with evidence that workers and management do a much better job together in democratized settings, they reply that that is old hat. They already know that appeals to morality can be used as "a screen to delude the victims." They can point to the Hawthorne experiments and the widespread Human Relations movement of the 1940's and 1950's as examples. Having thus "explained" the facts they are little motivated to look more closely at them or to trouble themselves with attempts at replication. And for good reason. If they chased after every red herring they would never progress in the tasks that are defined in their paradigm as important.

If one can go further to point out that this is hardly a case of duplicity because elected union officers have participated in designing and monitoring these democratized work settings, then it is easy to point to historical examples where union officials have been less than scrupulous in defending their members' interests.

If the evidence went further to show that the changes persisted far longer than could be accounted for by a so-called Hawthorne effect or a clever deception, then one could usually point to an improvement in wages and conditions. Hey presto, says the protagonist of the old paradigm, there is your answer. It was the material gains that the workers could see in the new system that got the work out of them. Hence it is all explained by the old paradigm.

On the face of it this rationalization seems to be the simple fallacy of teleological explanation.

This would imply simple-mindedness on the part of the defenders of the old paradigm. The matter is not as simple as that. The change-over in a work-place to the new way of working would almost always involve the workers in discussions with management and their union representatives; discussions - that would encompass the carve-up of productivity gains. They will, therefore, normally have expectations of material gain; it might still seem like a gamble as to whether they can make it, but in their minds it is quite likely a reasonable gamble if they accept the proposed democratization of the work. So the counter-argument for the old paradigm is not the silly one of "they eventually got more material reward and that is why they started working more co-operatively in the first place." It is the plausible argument that they had prior expectations of rewards, and hence they set after them. Because this is a plausible and logical argument the defenders of the old paradigm again feel little need to waste time on the so-called evidence.

This sort of short-circuiting makes it very difficult for a fruitful exchange to take place between supporters of contending paradigms. In this hypothesized case, for instance, the exchange would probably have been given up before they got to looking at cases where these results have been found even there was already an incentive scheme in existence and cases where such results have been sustained for years in the absence of any obvious material flow-on.

I have been presenting an hypothetical case. Just in case you think the reality is very different I suggest that you consider the recent debate between Stuart Sweeney and myself in the Flinders University Labour Bulletin, the debate between the editor of Omega, an international journal of management sciences, and Alf Clark and myself, Godfrey Gardiner's very recent article on "Workers' participation: a critical evaluation of Coch arid French." (1977), and Fred Herzberg's Old Turk article. These depict two worlds apart. Those speaking from the old paradigm show a blindness to the supervisory problem which is central to the new paradigm; those speaking from the new paradigm show a casualness to measurement and experimental design that outrages the protagonists of the old paradigm. These blindspots tell us something about the assumptions implicit in each paradigm that are not allowed by the other side. This is not a difference between one paradigm being scientific and the other non-scientific, although each makes that claim. Science needs both relevance and precision, but as Zadeli has pointed out "in the study of complex systems, there has to be a trade-off between relevance and precision. "Whether one paradigm has made a better trade-off than the other, will not be determined by any specific set of findings, by any so-called critical experiment and certainly not by point-scoring in the sort of intellectual debates I referred to. This question will be resolved only when all concerned, not just the active protagonists, feel that one of the paradigms is giving them a better way of coming to grips with reality. Naturally I mean this in the sense that a successful scientific paradigm gives a truer picture, not just a handier myth.

I wish now to come back to my opening question. If it is pointless for the protagonists to try to convert each other and obviously pointless, I now think, for them to wastefully destroy each other (because some useful work will continue to be done by those sorts of

people even in out-moded or faulty paradigms then what can be done to rationally resolve this conflict between the paradigms of work?

First and foremost I think the protagonists should tend to their own gardens; plant and cultivate their own crops. This would be idle preaching if there were not now available ample historical evidence that scientists may provide the conceptual nucleus around which an alternative paradigm might emerge, but they have precious little influence over those forces that determine its actual emergence. What I am saying, I guess, is that scientists, including social scientists, can help trigger off significant changes but thereafter they might just as well stop playing at being God. It is their's to propose, not to dispose.

Is there no more to the matter than this? Do we just wait, as Max Born suggested, till one or the other side dies out?

I suggest that there are several ways in which the contending parties would remain in contact even if they had enough sense to avoid direct combat. First, there is the uncommitted audience, people finding their way into the world of work and just looking for whatever paradigm gives them the best feeling of understanding what they are going into. As Kuhn points out the entry of a new paradigm into textbooks and curricula is a sure sign of change. Second, when we have two contending paradigms each forms a sort of perceptual ground to the matters that are focally attended to by these hung up with their own paradigm. The opposing paradigm is not attended to and not seen clearly. Even the brave and dedicated efforts of the rare individual going out to closely inspect the so-called critical experiments of the other camp only deepen the cloud cover. (Carey and Gardiner) However, we do know that variations in the ground can change the apparent colour of the figure that is being closely attended to. I suggest that if those who are concerned with the new paradigm of work do a proper job of cultivating their own garden, then their neighbour might feel that theirs is looking sickly or drab (without even really knowing why.)

How can the proponent of the new paradigm so cultivate his garden? Ventures into the field will undoubtedly provide the main source of enrichment of the new paradigm, but only if there is a commensurate growth in the conceptual framework to sort out the dross and give a home to new observations. It is only in this way that it can be established, in accord with scientific traditions, whether the new paradigm is a genuine alternative and not some passing fad, like animal mesmerism.

As an indication of what I have in mind let me say that I think it is becoming of critical importance to better define the system principle underlying the new paradigm and, of course, the old paradigm. We have drifted into the new paradigm through all sorts of exciting experiences in the work place and a veritable melange of old concepts thrown together to make some sense of those experiences. A lot of this has been sorted out and I think we have a much better idea of what was arbitrary and irrelevant and of what seems essential.

I have carried this discussion through, perhaps inadequately, on a definition of the old paradigm that I cribbed from Polanyi and by simply assuming that we all knew what the new

paradigm is about. I think conceptual development would progress more readily if we can go beyond this to agree on the two system principles.

We immediately confront a barrier to communication between each other. Are we in fact dealing with "systems" when discussing paradigms? Even if we are, why should we be looking for a system principle? Why not a set of independent principles? My answers are brief and necessarily dogmatic. I do not think that a community of scholars would be held together by anything less than a system of interdependent ideas. I do not think that a set of independent principles would generate a system of interdependent ideas - such a set would generate endless schisms as first one then the other principle was taken to be the principle, and then all conceivable combinations.

The best guess I can now offer is that the old paradigm has evolved around the central principle that work can be effectively done only when people are organized in asymmetrical dependence. The sharing of parts is necessary to one of the parts (a supervisor) but not to both." (Feibleman and Friend. pp.36) The new paradigm has emerged around the organizational principle of symmetrical dependence. The sharing of parts is necessary to both of the parts. Neither part can survive separation." (Ibid, p.36)

This formulation is abstract. The practical realities are quite clear. The old paradigm's organizing principle is the Master-Servant relation; The organizing principle of the new paradigm is cooperation. I am suggesting that whatever one thinks about the overall field of industrial relations is determined by what one assumes to be the natural organizational principle at the work-face. I will go further to suggest that the acid test of whether proposed changes in work relations are simply ad hoc modifications of the old paradigm to allow it to survive a little longer or genuine, but possibly fumbling, attempts to extend the new paradigm is whether they undermine the Master-Servant relation. Note that the issue is not that of substituting a new Master-Servant relation.

By this criteria I would judge that representative systems of participation, individual job enrichment schemes and schemes for decentralizing to smaller worker places are all in the nature of amendments to the old paradigm.

It is useful to be able to conceptually clarify such issues, but by far the most fruitful line of development is to spell out the logic of human behaviour in those different systems. Little progress has been made on this since Morton Deutsch's classic paper on co-operation and competition.

I have suggested that instead of engaging in fruitless debate we might leave the resolution of the conflict to time and the ponderous workings of our educational systems whilst we get down to working on the theoretical and practical problems opened up by the new paradigm. There is one further possibility. As some of you may be aware the so-called Search Conference procedure has been widely used to resolve issues of social conflict. Could it not be used in this context? I doubt it. The one search conference we used to explore contending paradigms was nearly disastrous. Normally progress is made by identifying some relevant, over-arching interests or values within which the conflicts are explored.

In this instance the common over-arching interest was assumed to be "social science", but each paradigm assumed that it was Social Science, and every attempt to look at what they were both supposed to be about only deepened the division and raised tempers. There was a happy ending but only because, in a most convoluted manner they shifted to search common ground in their concern for people, not science. Now this happened with an international group that started off with high levels of mutual respect and even friendship.

Until I am sure how such a shift can be brought about I would not advise trying it again. The problem I started with remains for me as serious and as insoluble as ever.

It is on the cards that the active contenders in this debate will not play much of a role in resolving the conflict they helped to create. I will try to reason why.

As I see it, the choice to stick with an old paradigm is largely influenced by different parameters of choice than is the choice to go with a new paradigm (It would be surprising if a theory of choice did not make such a differentiation. Ackoff and Emery, 1972) The conservation choice seems weighted by considerations of familiarity and proven effectiveness (not efficiency); the two parameters that give most assurance about the probable outcome. It is a low risk choice that is prepared to live with evidence of some proven inefficiency. The radical choice seems also to be weighted with familiarity, but in addition with a sense of the urgency or importance of the end served by that choice. There may be little of a track record to warrant beliefs about probable effectiveness and hence few grounds for making assumption about probable outcome. It is therefore a high risk choice entered into because, for some idiosyncratic reason, the person has sufficient familiarity with the new notion to be surprised but not shocked, and has come to attach more than ordinary significance to the end the choice serves.

Insofar as the principle of "symmetrical dependence" has made inroads into many parts of society, eg. families, schools and voluntary organizations, many people are being inclined to entertain this as a possible alternative who would never be so disposed by their professional work experience.

I cannot offer much more hope than that.

Communications for a Sustainable Society - Year 2000

We could define what we think would be a sustainable society in the year 2000 and then work out the communications it will require, or, take the other track and explore those possible changes in communications that could produce a sustainable society.

The prevailing scenarios of an Information Society and of a Wired World seem to have followed the second course. They have not defined a sustainable society but assumed, like the Post Industrial theorists, Bell and Kahn, that it would have to be a projection of the main features of the post-war social developments. Making this assumption they have little else to explore but a sort of technical determinism: how new means of communication will transform the factory, the office, the home, etc. The question they have posed is, "which

developments in communications technology will best enable us to realize, in the shortest time and least cost, the developmental trends inherent in our societies?" The trends most commonly noted are those of maximising income, maximising leisure time, maximising individual choice, maximising individual security.

The assumption that our recent social experiences can be projected to yield a sustainable society in the year 2000 has been severely criticised on grounds of resource limitations, environmental pollution, decline of labour productivity etc.

It is my belief that the first line of discussion should still be regarded as open. Those who are concerned about the development and deployment of new communications technologies should give some thought to what alternative social forms may be required by the year 2000.

My bias in this matter is based on a general proposition which, I think, can be easily stated. Communication is one of the three essential dimensions of any form of extended social organisation; however, it is secondary to the forms of co-ordination and control that people choose, or are subjected to. Once the forms of co-ordination and control are decided the forms of communication are adapted to meet those requirements. Communication developments can, and have, drastically extended the time and space over which co-ordination and control are exerted, but not their basic forms. People appear to tolerate very gross inefficiencies in their communications rather than face up to changes in their forms of co-ordination and control.

It seems inevitable that the newly emergent problems of resource limitations, conservation and the recalcitrance of relatively affluent work-forces must lead to new forms of co-ordination and control, <u>with the inevitable consequence that new thinking must be done about communications.</u>

You might feel that I put this too strongly.

On the one hand, you might be inclined to ask why the communications sciences should accept such tasks when the so-called alternative forms of social organisation are so chimerical and, in any case, so ill-defined that we would not know the parameters for the new thinking.

On the other hand, you might be inclined to wonder why new thinking is required. Is not the field of communications suffering, if anything from a surfeit of new and radical thinking?

I do not think the alternative forms of social organisation are a chimera. As for the new thinking that is currently straining our intellects, I think this is a chimera. Instead, I think we are still at the wake celebrating our burial of Marshall McLuhan.

Clearly, if we are to accept the task which I have stated to be inevitable we would need to be convinced that the alternatives are more than just a variant of what has come before ie. something more challenging than the future depicted by the Post Industrial scenario. I think the debates of the past fifteen years have already sketched out the main choices that we confront. At one level, it is the contrast between the Post Industrial world of Drucker, Bell

and Kahn and the world of the Small and Beautiful of Schumacher. This is the contrast between a world run by three hundred great multi-nationals, based on high technology and high energy use, and a world of three million 'villages' based on low energy use and 'appropriate' technologies. (Marien, 1977). At another, more abstract, level it is the choice between seeking a sustainable society by designing in ever more specialisation, and hence a greater redundancy for any particular parts) or by designing for the greater multiplicity of functions of the individual parts, hence making them less replaceable. (Emery, 1967).

Much more has been done to spell out the details of alternative sustainable societies but it is enough, here, to note the magnitude of the differences between the alternatives. We are certainly not choosing between a Tweedle-de and a Tweedle-dum.

We should note, also, that the choice is now a real one. The probability of alternative social forms emerging is now sufficiently great for us to take heed and pay attention.

At the turn of the century it was possible for great thinkers, as politically different as Max Weber and Frederick Engels, to think that there was no conceivable way of organizing the great technologies of production, distribution and exchange other than through vast centralized bureaucracies, based on ever finer differentiation of specialized skills and knowledge. Lenin was just twenty years late when he in effect defined the basis of the future soviet society as electrification and Taylorism.

The academic sociologists have not yet recovered from such a display of unanimity. At the leading front of the world's major industries, however, the die has already been cast in favour of the alternative forms of organisation. They already know that they are at the end of the road for gaining more productivity with the old forms of specialisation and creation of redundant parts out of human beings. It is their theoretical understanding that they are at the end of that particular road; a road that has done them so well for the past two hundred years of industrialisation. In practice the backward sections of industry, transportation and commerce will still find advantages in adopting Taylorism, just as cottage industry continued to grow alongside factory industry in the early days of industrialism. This is hardly the point. The point is that the alternative form of co-ordinating and controlling work cannot but become the dominant form.

This changing reality has not escaped the general populace. The Layton survey of the Australian work-force (1978) revealed that approximately seventy percent thought that the most probable future was a low energy use society. Of these seventy percent almost half thought the most probable social adjustment to low energy use would be along the lines of the Schumacher scenario of 'Small is beautiful'. (The remainder could not see past the dismal prospects of a repeat of the thirties depression). In a society little given to idealism and served by very cynical mass media, this is a very surprising finding. The Layton survey asked not only what was considered the most probable future but also what was most desirable if energy continued to be in short supply. An amazing 70 percent opted for the Schumacher solution.

I do not think that these facts can be gainsaid.

Likewise I do not think that anyone is going to miraculously return us to the days of Saudi oil at a couple of dollars a barrel and of a pliant, industrious work-force.

We are, as I suggested earlier, faced with a situation where we must expect new social formations, demanding new answers to their new communication problems.

This brings me to my main concern, in this address.

I do not think that we are presently up to the task of thinking in new ways about communications for alternative societies.

The reason for my pessimism is the dismal track record of research into the media. I am not referring to our research into the technology of communication as that has gone from success to success at a dizzying pace. I am referring to our understanding of the role of the media in human communication. It does not matter whether one reviews the research that has been done on the film, the radio, the telephone or television. In each case we find that a great deal of information has been collected about who, when and where and about attitudes or preferences. The sort of data one needs for the ordinary mundane purposes of market research. We look in vain for a growing body of knowledge about the processes of communication.

I have had great difficulty in understanding what the blockage might be and it is only in the past year that I have begun to get an inkling of what it is.

The failure to make significant advances cannot be put down to any general lack of research funds. Neither can it be put down to a lack of challenging problems.

Thus, if we take television as an example millions of dollars have been pumped into research and there have certainly been some challenges.

The observed effects of television have been in marked contrast to commonsense expectations. Commonsense dictated that it had to be the greatest medium ever for educating masses of people. The evidence rapidly accumulated to prove it was nothing of the sort. In educational TV, we had "the scandal of non-significant differences". Even master-teachers could not make television an educator better than the run-of-the-mill teacher in the usual unmotivated slipshod classroom setting. Political issues disappeared from politics as television was enthusiastically espoused as the means to raise the level of political consciousness in the electorate. Knowledge about world affairs, and even interest in knowing, declined as television became the major source of news and current affairs.

Even advertisers learned that thirty seconds was a long time in which to say everything worthwhile saying about a product, on television.

One would have thought that these discrepancies would have triggered major scientific enquiries. They did nothing of the sort. Scientific enquiries remained locked into the same

paradigm of enquiry. They continued to ask the same two questions of television: "Do the programs change the viewer?" If so, "Does this change parallel the amount of viewing that is done?" If changes were observed and if these could, unambiguously be ascribed to the amount of viewing, or to the amount of viewing of certain types of programs, then grounds would exist for identifying television viewing as a cause of the changes. These questions assumed the very matter that was under challenge namely, whether learning was taking place while watching television programs.

The implicit assumption was that the human perceptual system could adequately process whatever was within its sensory limits, allowing only for upper and lower limits to the complexity of sensation or strength of signal. With this assumption, there was no occasion to question what was happening when the viewer was actually watching television. The answer was obvious: unless the viewer was interrupted by other people, by technical faults in the TV set or other outside events, he or she was simply processing information, visual and auditory. The processes involved could only be the same as watching a film.

McLuhan challenged that assumption. His challenge was welcomed by the advertising profession because they knew perfectly well that television was not at all like the other media they had used. The researchers ignored him because he seemed to be saying nothing that made sense, given their implicit assumption about the human perceptual system. On their assumption, what he had to say about television was simply wrong-headed and ridiculous. How could television be characterized as "cool" when, with the addition of visuals to the radio signals it required more processing work, and hence generated more heat? How could television be characterized as "low definition and participatory" when it undeniably offered more sensory information than any preceding medium? How could the medium possibly be the message when the medium only told us what sensory organs were being engaged? However, it is only when McLuhants challenge is accepted that the findings about non-learning from television begin to make sense.

We were led to accept this challenge in the course of a study that involved the future of cable television in Australia. After a very considerable attempt to make sense of published research results, we felt - in desperation - we had to ask "What actually takes place when a person sits down and looks at a functioning television screen?" Not, mind you, what does the viewer do after viewing but what is happening in the act of viewing itself.

This seemed a simple, straightforward question.

However, we could make progress in answering it only by moving outside the traditional paradigm of perception. This was not a conscious decision, I was simply following my nose along a path I had been pursuing for years. I was made conscious of what I had done only when Professor Alex Waring drew my attention to it. It only occurred to me some twelve months ago, in the middle of a study of the telephone as a medium of communication, that the choice of assumptions about human perception was not just a matter of convenience: that it was not at all like choosing to use the wave theory of light on Tuesdays and Thursdays and the particle theory of light on the other days of the week.

As I followed up this hunch, by re-examining the areas of human communication where I had done research myself, it seemed that the unthinking adherence to the traditional paradigm of perception was probably the biggest single blockage to the progress of understanding.

We have assumed that human perception encompasses only the stimuli impinging on the physiological sensors and the internal processes whereby information is distilled by the brain.

How we get from these proximal stimuli and sensations to a knowledge of the distal outside world has been a vexing problem from Bishop Berkeley to the present day.

The problem has not been confined to how we infer the existence and nature of physical objects but extends to how we infer the behaviour and character of others, how we manage to usefully converse with others about matters to which we cannot point and to how we can infer the nature of our social organisations.

This assumption about the nature of human perception also implies such a formidable task of synthesizing and inferring that we expect only a gifted and highly trained person to be expert at it, and then in only some limited areas of inferred knowledge.

The assumption that perception arises from stimuli and the correlated sensations raises its own problems. Thus Helmholtz and Berkeley identified the two dimensional nature of the retinal image. It was assumed that this therefore was the nature of perception at birth. The problem of how we learn to perceive depth then became an enduring problem for modern psychology. Similarly the illusions. How did the eye come to be tricked into the Muller-Lyer illusion, or the moon illusion, when the stimuli and presumably the sensation were unchanged?

You may feel that these matters are only of concern to philosophers or experts in experimental perception, and of no practical concern in the larger area of communications.

Consider, however, how we have related the development of our communication technologies to human communication.

With television we have done the necessary photometric studies of the luminosity of the screen and the psycho-physical studies relating this to the sensation of brightness. So what. Such studies tell us nothing of what is perceived, only of what is sensed.

With the telephone we have, for instance, physically measured the strength of the signal received in the earpiece and the sensations of loudness. Again, so what?

In general, communication technologies have developed in the same way. The engineers and physicists undertake to communicate signals up to the point where the target subject can register the test pattern. The test pattern may be visual, aural or what have you but there is no requirement other than that it establishes that the required stimuli are loud enough, bright enough etc. to be sensed. No question of perceived meaning for the subject arises.

You could well be indignant at this point and ask why should the task of the systems designer go beyond this? What business is it of his as to what patterns the user wishes to impose after his test pattern has been successfully registered? What business is it of his as to what the receiver wants to infer from any pattern, even including his test patterns.

If you want to put it that way then I would have to hasten to agree.

However, if that is your first response then it does underline my concern that the old paradigm of human perception is very much alive and influential. It is only within that paradigm that this issue seems so clear and simple.

We are not likely to recognize such an influence on our thinking if we know of no alternative paradigm: no more than a fish, even with our brains, would see anything special about water. As it so happens this is the fiftieth anniversary of the appearance of the first thoroughly worked out alternative paradigm of perception. I refer here to Fritz Heider's paper on 'The functions of perception'. This paper completed the analysis Heider had begun with his 1927 classic on "Thing and medium".

Like Mendel's paper on plant genetics it had to wait a long time to be recognized. This recognition came in the mid-sixties. When James Gibson published his volume on The Senses considered as Perceptual Systems it was open to anyone to see what Heider had achieved.

Heider logically demonstrated that the confusion and paradoxes we have gotten into by trying to understand 'the synthesis of images out of sensations' start to fall apart when we can explain some characteristics of the synthesis on the basis of correlates between physical things and events that actually exist out there. In a manner which was not to be achieved even by Weaver and Shannon he succeeded in identifying the informational structure of the environment as an essential element in the evolution of the perceptual system.

Gibson went further to identify a great many of the actual invariances in the physical energy flows of the environment that organisms have evolved means of detecting.

The striking features of this Heider/Gibson paradigm are:-

1. the environment is recognized as having an informational structure.

2. this informational structure of the environment is embodied in the invariances that exist in the relations between energy flows despite fluctuations in the individual flows and regardless of whether they impinge on the sensors of an organism.

3. the perceptual systems of living species have evolved so as to detect and extract this information from their environments despite a great deal of 'noise' at the sensory level.

4.   our conscious feeling of sensations is all but irrelevant to the role of the senses as discriminating perceptual systems (Johansson, 1975)

This new paradigm allows us to think in strict and non-mentalistic terms about perception, not just sensations. It is also a paradigm that forces us to think in non-mentalistic terms about 'things' and 'media'. Such considerations were extraneous to the old paradigm of perception but now they are to be seen as intrinsic to the questions of what we perceive and how we perceive; and hence intrinsic to questions of human communication.

This paradigm rejects the two assumptions that underline the traditional paradigm :
(a)   Locke's assumption of the tabula rasa, the blank tablet of the mind at birth (1690).
(b)   Johannes Muller's doctrine of the specific qualities of nerves, 1826, implying the 'booming buzzing confusion' of the infant's perceptual world.

The puzzles about how we build up the associations enabling us to 'unconsciously infer' three-dimensionality and perceptual constancies (Helmholtz,1865) go by the board.

> "Sensations are not, as we have always taken for granted. The basis of perception.
> When the senses are considered as perceptual systems ('systems of detection' p.l), all theories of perception become at one stroke unnecessary. It is no longer a question of how the mind operates on the deliverances of sense, or how past experience can organize the data, or even how the brain can process the inputs of the nerves, but simply how the information is picked up. This stimulus information is available in the everyday environment, as I have shown. The individual does not have to construct an awareness of the world from bare intensities and frequencies of energy; he has to detect the world from invariant properties in the flux of energy. Such invariants, the direction of gravity for instance, are registered even by primitive animals who do not have elaborate perceptual organs.
>
> Mathematical complexities of stimulus energy seem to be the simplicities of stimulus information. Active perceptual systems, as contrasted with passive receptors, have so developed during evolution that they can resonate to this information." (Gibson, p. 319)

Johanssen and the Uppsala school have confirmed Gibson's finding that the physical correlates of the perception of v motion are the invariants in environmental stimulus flows that are described by projective geometry and vector analysis of the components of those flows. They have established, also, that there is no conscious choice involved, 11 ... the observer is evidently not free to choose between a Euclidean interpretation of the changing geometry of the figure in the display and a projective interpretation(p86). In computer language, the visual system is obviously 'hard wired' to extract this kind of higher-order information from the stimulus flux before it reaches consciousness.

In the field of colour vision Edwin Land and his colleagues have been able to demonstrate that "... the stimulus for the colour of a point in an area is not the radiation from that point" (Land, 1977, p. 115)

They have gone beyond this to establish that :-

> "Whereas the initial signal produced in the outer segment of the receptor cell is apparently proportional to the light flux absorbed by the visual pigment, the final comprehensive response of the visual system is lightness, which shows little or no relation to the light flux absorbed by the visual pigment." (p.110).

The information that people extract to establish the biological response of 'lightness' turns out to be a complex mathematical function of absorption and reflectance properties of the surface, and the properties of the illuminants and not of their absolute values but of their ratios as established for each of three levels of wave-length reception.

> "After the three lightnesses of an area have been determined by the three retinex systems (something between retina and cortex) no further information is necessary to characterize the colour of any object in the field of view... For each trio of lightnesses there is a specific and unique colour" (ibid, p.115). Q.E.D.

It goes against the grain to grant such complex analytical capabilities to the perceptual systems. Why, however, should we readily accept this order of capabilities in organs like the liver and the kidneys and expect evolutionary adaptation would be successful with any less capability in the perceptual systems?

The other side of this biological picture of the perceptual systems must be noted. Much of the information present in the environment of the evolving species must have been irrelevant to survival and "...accordingly the perceptual machinery provides no means for their extraction" (Julesz., 1975,p3.5). Julesz has discovered such a limitation in the extraction of information from the 'ground' in figure-ground perception. Those things that take on figural properties can be distinguished at very high orders of complexity but 'grounds' take on the properties of textures and;

> "Whereas textures that differ in their first and second-order statistics can be discriminated from each other, those that differ in their third or higher-order statistics usually cannot."(ibid p35)

He has established that this is not a learnt effect. It appears to be a limitation we share with other forms of animal life (as witnessed by their evolved forms of camouflage). In dyslexia and in the figure-ground reversal of high speed motor racing we appear to approach our perceptual limits.

The printed word and the racing car are man-made environments.

This new paradigm would appear to provide a welcome common focus for the many diverse interests involved in the study of communications. In particular, the field of 'ecological optics' that emerges as we concern ourselves with the informational properties of environments is an open field; it is no pre-defined preserve of psychologists.

To quote Heider, "The description of this environment to which the perceptual apparatus is adapted is a problem of physical science and as such is not part of psychology" (1930, p35). The point is that whoever does it they will be making a major contribution to the unification of communication studies.

Unfortunately we suffer from a lack of conceptual tools for analyzing the informational structure of environments and hence are poorly placed to identify what changes are wrought in such structures by the introduction of man-made media. Shannon's Information Theory is a physical theory but it is a long way removed from what is information in human communication. The theory of environments that was introduced by Trist and myself (1965) is too broad for the task, but I might just note that in terms of this theory it is most likely that our perceptual systems evolved in Type 2, placed clustered environments and not in the Type 1 placid, random environment that is presumed by the traditional paradigm.

We are in need of tools that permit us to scientifically make the kinds of distinctions that McLuhan intuited between Hot and Cool media. Not necessarily those particular distinctions but those kinds of distinctions. Whatever misjudgments McLuhan might have made he was certainly doing us a service in pointing to a neglected dimension in the world out there.

The lack is not complete. Some fruitful beginnings have been made and I suggest that these will need to come to the forefront of our thinking. Gibson takes us part of the way and, in the field of visual perception, has certainly made us aware of how much we have evolved a dependency on the information yielded by ambient light and how little on radiant light. Asch has made similar advances in analyzing the informational properties of face-to-face social environments (Emery & Emery, 1976, pp20-26). Heider and the socio-linguists have made real beginnings in the analysis of the invariances that carry the informational properties of conversational fields.

This latter has probably been one of the most striking challenges to our everyday conceptions and bids fair to revolutionise our ideas about the telephone as a media for conversations.

In keeping with the traditional paradigm we have tended to assume that in listening to speech the sounds we hear are assimilated to learnt vocabularies and grammars and we make use of other clues to infer what the other is meaning. For a long time psychiatrists, particularly those working in small group settings, have had their doubts about this. They have become convinced that sometimes they can hear another level of communication, what they call the music of the conversation, and that it is out there to be listened to and not at all like the process of making conscious inferences from a few clues. Studies such as that by Labov and Fanshel (1977) leave us in no doubts about that. They show that perceivable invariances in conversational fields directly yield us with information about invariances in the dynamics of interpersonal interaction (see also Heider2 1958). They find this so compelling that they

insist that speech must be seen as an action that directly changes the environment of the other. In effect they are saying that nothing could be more misleading in describing language than the old saying that 'sticks and stones may break my bones but names can never hurt me'.

These findings challenge our views of the telephone as a conversational media. We have assumed that phone conversations are a weak and phoney version of real face-to-face discussion because they lack the visual clues of gestures, eye contact etc. Labov and Fanshel find that speech is so redundant with information, even between people with so-called 'restricted codes' (ie. uneducated people), that the visual clues are unnecessary. We had a clue to this in the fact that people deeply absorbed in a telephone conversation hardly, if ever, engage in trying to visualize anything. We got something stronger than a clue when British researchers conducted experiments to measure the relative utility of different media as a means of persuading people to change their minds about social issues. (Short, 1976). To their surprise the telephone was proven superior for this purpose. The results were, as they put it, so counter-intuitive that a further series of experiments were conducted to try and uncover some flaw in the experimental design. The series only served to confirm the original findings.

This, and other evidence that we cannot review here, suggests that contrary to anyone's expectations the telephone released unsuspected powers of speech from the constraints imposed by face-to-face confrontation. McLuhan saw this and also gave what seems to me a reasonable explanation of why it did not earlier become the object of study - 'because we could not believe it'.

Whilst this state of affairs existed, unstudied, the technologists were preparing for the next obvious breakthrough - the videophone. Some are still wondering why such an obvious technical advance has had so little market appeal to the conversationalists among us!

I think there are lessons for us in the way we have in the past introduced new technologies simply because they give more or better signals. It might pay us to remember that we have evolved capabilities or picking up information from some arrays of signals but not from all possible detectable signals. If our society has to become a more humanised society in order to be sustainable then we might have to ask of such futuristic concepts as the 'paperless office' what kind of information environment they are going to present to the human perceptual systems.

Are we sure that we want people spending most of their working hours before VDU's? Do we want those technical improvements of the phone that improve its performance as an instrument of command or do we want those technical developments that help to ensure that no conversation starts on a phone without a joint decision of both receiver and caller? Do we want to place the powers of the computer in the telephone handpiece, at the disposal of the individual user, or do we want to enhance the controlling powers of the system managers by locating all memory functions with computers in the switching stations? Do we want the word-processor just so as to automate the routine parts of the typist's work or to overcome the now traditional barriers between composing, typing and editing ?

Such questions are going to multiply.

The fundamental question we must ask, if communications are to be a godsend and not a drag on our attempts to create a sustainable society, is :-

Does this just improve our means of commanding people at a distance or does it better enable people to mobilise the resources they need to make better decisions about their problems ?

Does it strengthen design principle
1.   with an ever-increasing specialisation and redundancy of the individual parts, or does it strengthen design principle
2.   toward the one-many-parts who is rarely at a loss to be useful?

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