

ENVIRONMENTAL REGULATION –
HOW EFFECTIVE?

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This paper presents one view of the world of environmental regulation. It is a world made up of the elements of Legislation, Administration, Industrial and Environmentally related Economies, the Media and the Public. How these elements tend to relate bears considerable influence on the effectiveness of environmental regulation; and much land reclamation is done in conformity with regulations.

Regulations bring different associations to different people. To the free-enterpriser they weave a rope by which he is strangled; to the bureaucrat they weave a fabric which often fails to cover the critical parts. Both would agree they absorb a great deal of energy. Because regulations are becoming more and more a fact of life in land reclamation it is useful to speculate on their impact, their effectiveness and on the environment within which they are written. We can start with an historical look at mine regulation in British Columbia.

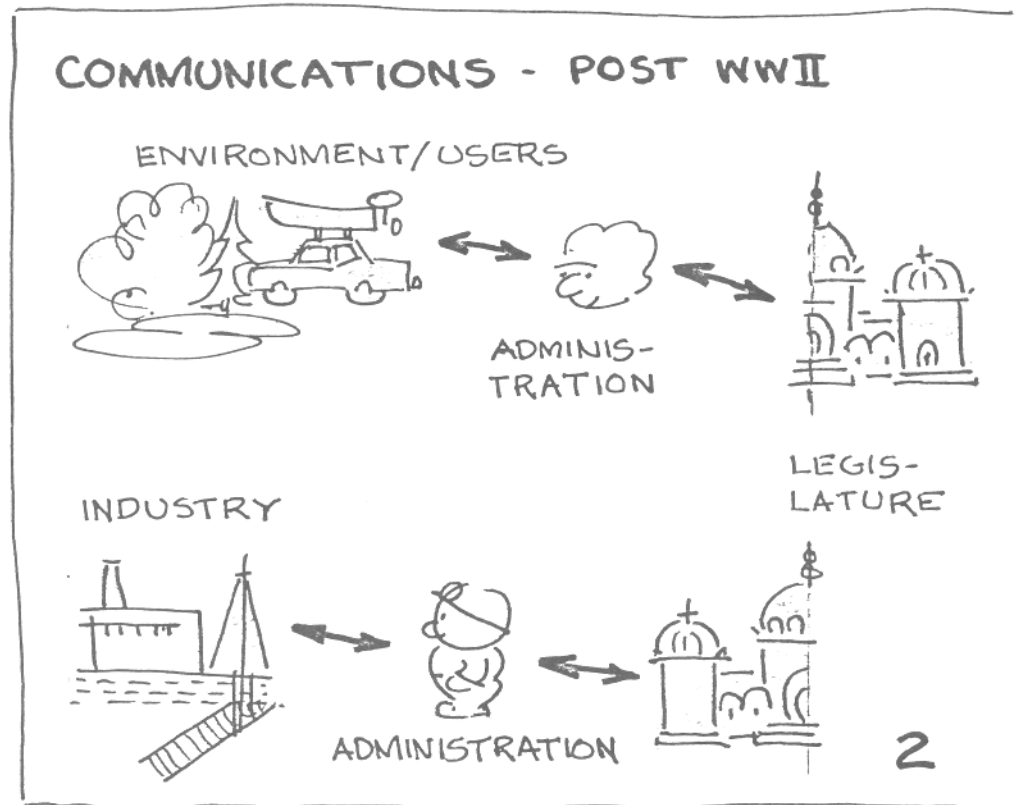
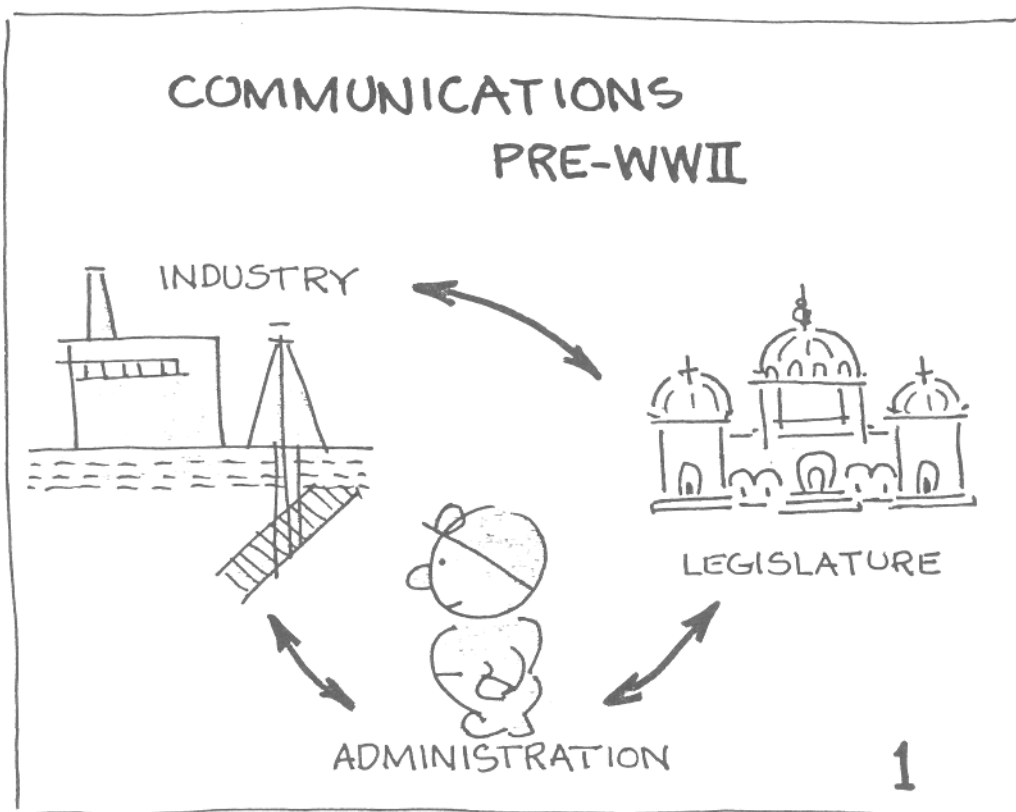
In the past the exercise of regulations involved an inspector, the industry, and the authorizing legislation (Figure 1). The effort required to be invested in communications was minimal.

This picture changed, however, after the Second World War. The Government was reminded at this time by the new generation that past activity had left obvious gaps in the landscape and a renewal was due. The response was the creation of new legislation and administrative machinery. The situation started to become complicated (Figure 2).

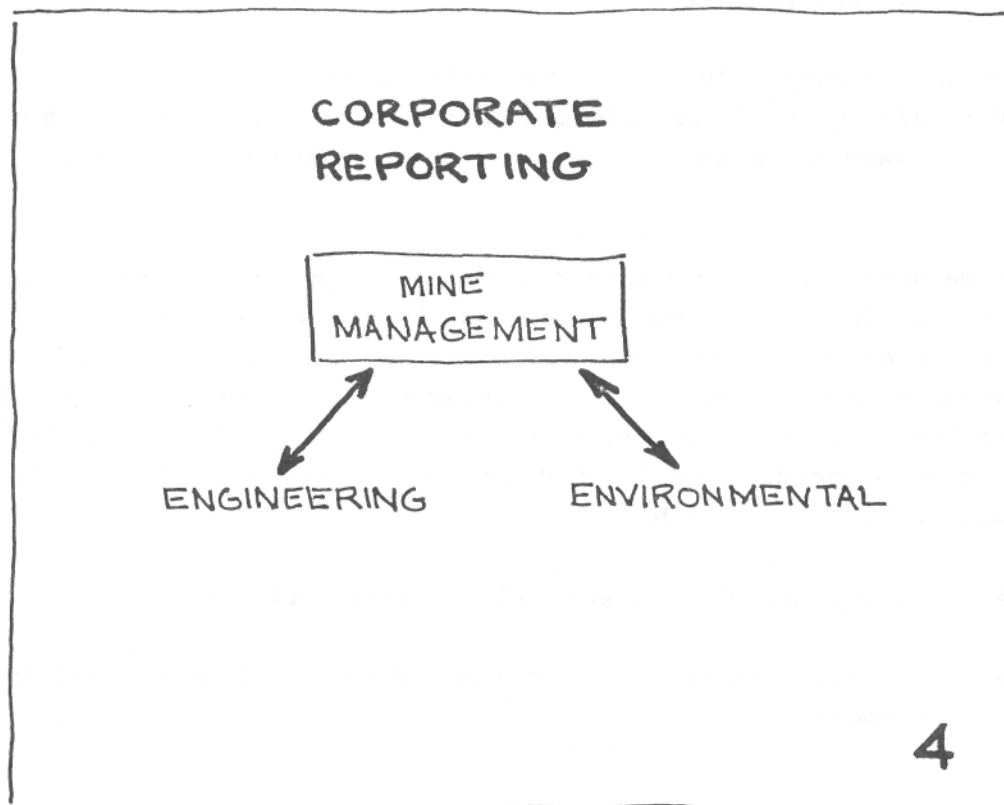
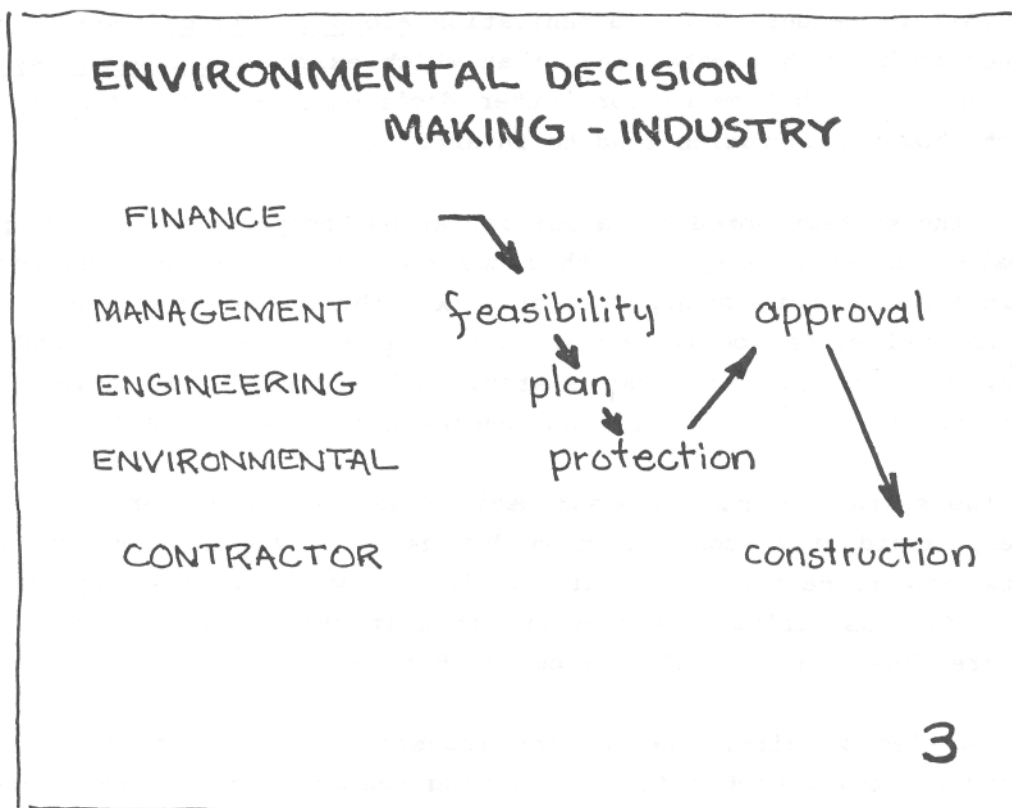
On the minesite the new standards increased both the cost of work undertaken and the cost of management. By trial and error mine managers discovered that internal environmentally influenced decisions could be made as indicated in Figure 3. Certain functions were assigned to given sections, while some decision making was shared. It was determined that in balancing environmental risk against cost, decision making was most effective if advice came directly from the environmental authors rather than through engineering (Figure 4). Decision making took more energy than it used to, but it was still possible.

Within government, however, two systems of communication developed. They could be called the Mine Development System, and the Environmental System. System in this context does not infer an organized hierarchy

FIGURES 1 AND 2



FIGURES 3 AND 4



structured to deal systematically with issues. It is the one suggested by the social scientist, and is based on a tendency to communicate in a given pattern (Figure 5). Communication along the lines shown must be conceded to be much greater than that which exists between the systems shown, not that that makes for better decisions, but that more clearly reflects how bureaucracies tend to interface.

Each of the systems noted has a particular philosophy. Mine development is coal-oriented in keeping with industries' requirements, and regulation is achieved through approval of work method. The philosophy of the environmental system on the other hand is protective. It responds, or reacts, in part to the first system, and regulation is oriented to definition of pollution limits and enactment of reserve areas.

These two systems consume a great deal of each other's energy. They do however, avoid much confrontation because the application of their efforts and respective legislations is to two different aspects, as noted. In considering effectiveness then it should be remembered that there are these two viewpoints from which to judge.

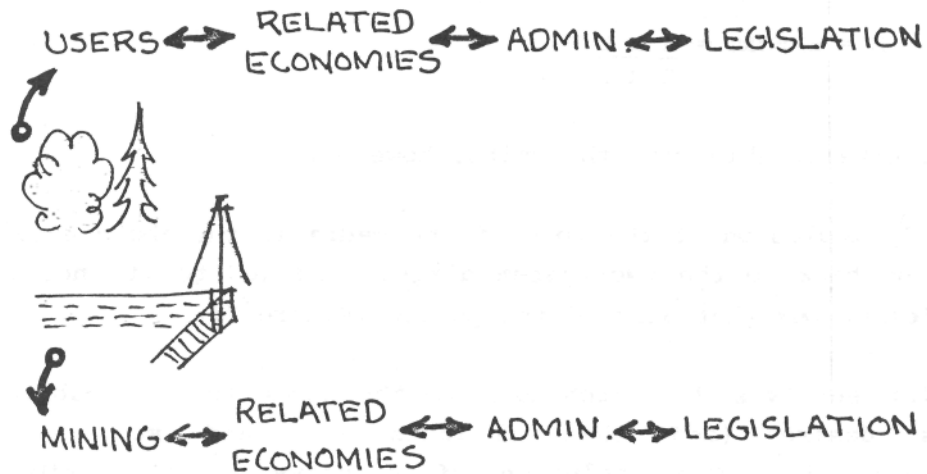
There is also a third, that of the industries. Their concern is for cost and schedule, most critically during the pre-construction phase of a new development proposal.

When such a proposal is made which will increase mining activity, and therefore also that of the affected environment, both systems previously suggested place a manpower demand on not only the project, but on each other.

On a time scale, this occurs at the project's period of maximum deficit (Figure 6). The environmental scale has been magnified in the illustration, as in actuality environmental costs may only be in the order of 5% of operating cost. This cost is bearable during operation, but it is critical when front-end money, and the possibility of a "No", and time delay is also faced. Several factors will influence just how large the introductory deficit will be:

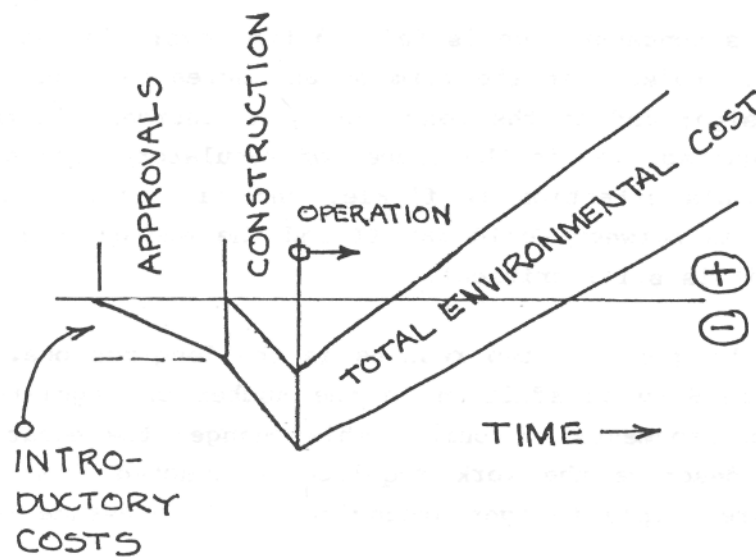
- A the extent of environmental resources affected.
- B the effectiveness of the environmental planning done by the company.

COMMUNICATION - DECISION MAKING



5

PROJECT FINANCIAL STATUS



6

C the effectiveness with which the two systems previously described can work together.

D the attention focussed by the media.

An engineer would be inclined to write an energy conservation equation to describe the work required of the company to satisfy the demands of the regulatory machinery:

$$E = \text{EFFORT} = \frac{A \times D}{B \times C}$$

He might have trouble with the units, however.

To justify inclusion of the role of the media in the above equation, we have to go back to the two-system diagram and add to it, not only the media element but that also of the public (Figure 7).

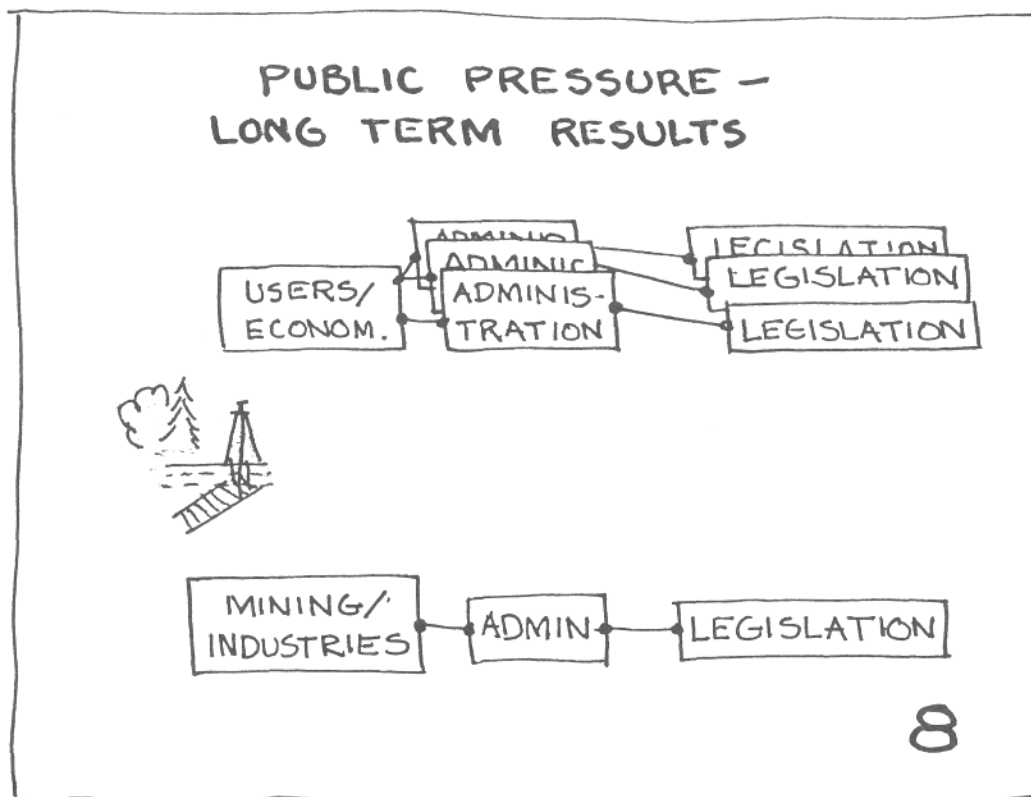
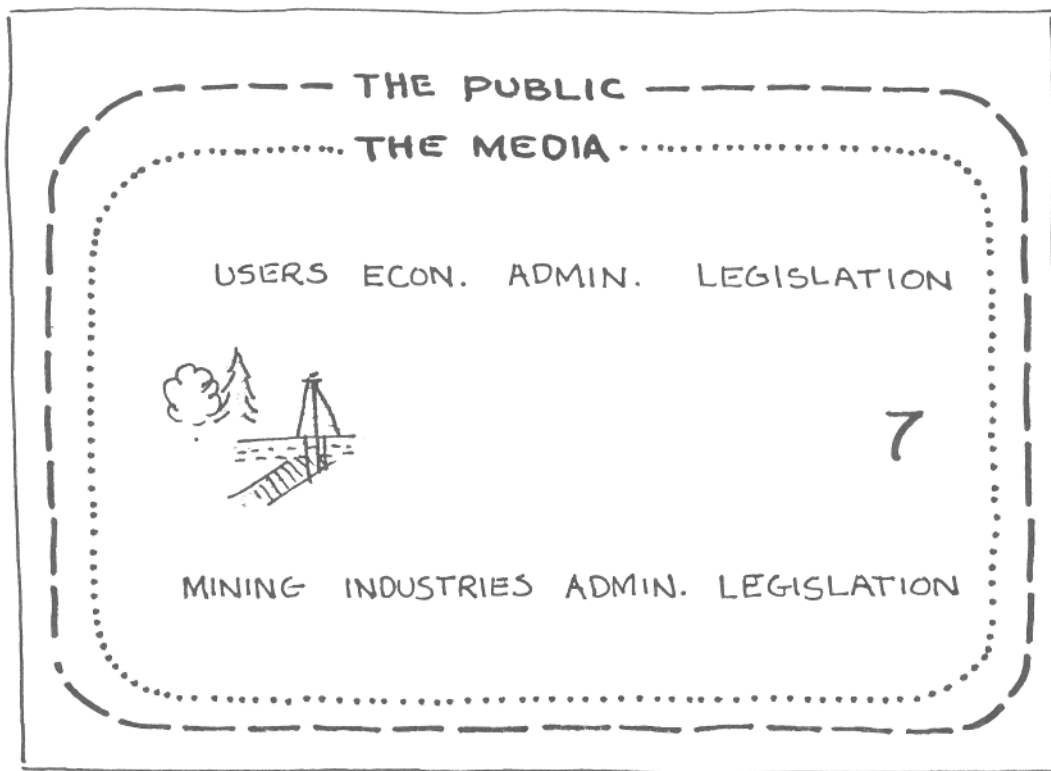
The media survives by merchandising the news to the public. The public's desire (and that includes you and me) is to be sensationalized. The inclusion of a heavy interpretation toward disaster serves both groups.

By focussing generally on the environmental side and more particularly on the project proposal phase, the media, as a system, survives. In the process, however, much public energy is directed not only toward the project but toward the administrations and legislation.

The result of this concentration is felt in two ways: in the short run by the particular project, in the form of an increased requirement for environmental design; and in the long run by an increase in the amount of regulation required, and in the number of regulatory bodies created. Although the media's attention is fickle, and our current favour may simply be a fill-in between World War II and the energy crisis of the next millenium, it is still critical.

The more far-reaching of the two results is the long-run one. This is depicted in Figure 8 by an addition in the number of regulatory loops created in the environmental circuit. This changes the equation which was proposed to describe the work requirement exacted from industry. There are now more people to "get around to". If we assume that there

FIGURES 7 AND 8



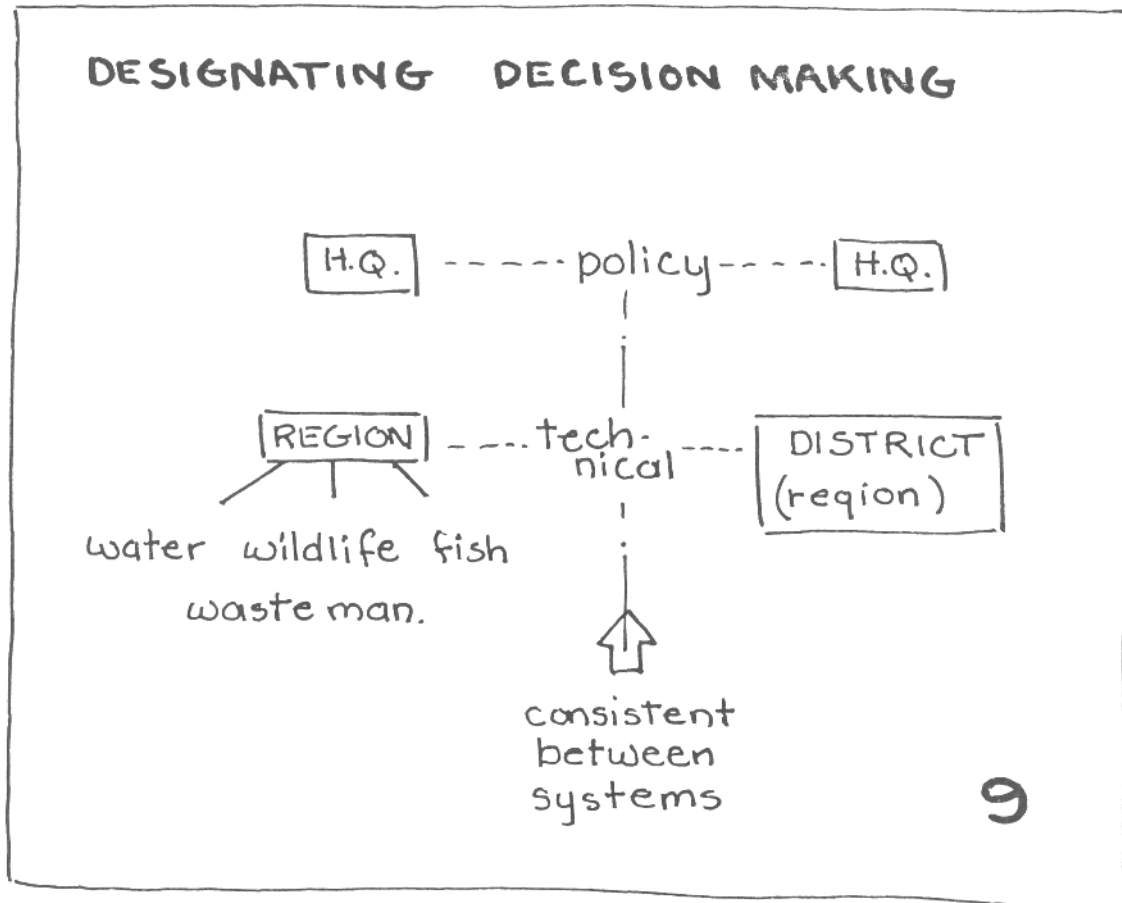
is no overlap in jurisdiction there may be no problem. But unfortunately many of the environmental sections of various acts do overlap, and factor "B" - the effectiveness of environmental planning done by industry - can be reduced. Further with respect to factor "C" - the ability of the two basic systems to work together - it was suggested that effort undertaken by one system induces an energy requirement from the other. More regulatory loops mean a greater work commitment, but unless considerable care is taken, no greater efficiency will result. I would like to argue, for reasons that are as old as the first bureaucracy, that growth is more predictable than efficiency, and future projects will tend to be forced deeper into a preliminary deficit.

The multiplication in loops includes not only the Provincial but the three other levels of Government. Being somewhat insulated from each other the jurisdictional overlap expands without too much mutual confrontation, but with progressively higher demand on the project. One result of this is that over a period of time the development dice become loaded in favour of larger companies, as they are the ones that can better afford the introductory costs. They may feel that they are being penalized the heaviest, but there is an argument that in comparison it is the smaller companies who are faring worse. The status of the sand and gravel industry provides evidence to support this.

In summary of the above, there are three viewpoints from which the effectiveness of environmental regulations can be judged: the mine agencies'; the environmental agencies'; and the industries'. It may be unrealistic to speculate on absolute numbers in this regard, however, it can be productive to consider ways and means of improvement.

We can start by searching our experience for examples of procedures that work (better) - and then speculate on the reasons "Why". Some do come to mind, for instance, the Regional Advisory Committee on Reclamation, which recommends preliminary approval to coal exploration proposals. This Committee resolves technical questions and problems in the region, and refers the ones that cannot be agreed upon, and policy conflicts, to Victoria (Figure 9). In 1980 in total 81 projects were reviewed without a single need for referral. This exercise has effectively brought the application of each Provincial Ministry's Regulations into alignment in technical terms, on the site, where they can be discussed with the companies.

FIGURE 9



The Regional Resource Management Committee is another example of the attempt to bring regulations into agreement. Two other examples of experimentation could be noted the ELUC Secretariat; and the Ministry of Deregulation.

Two things might be said of all of the above noted experience. Firstly, it would be surprising if the objective of more effective regulation could be reached through unilateral effort by one level of Government, when all four are involved, plus industry. It is a start but we are looking at only one of the dimensions of the problem.

Secondly, we may be ignoring sources of assistance which could be utilized in the development of more workable systems. That of the universities is suggested. Not particularly in the environmental field, but more generally in the administrative and social sciences areas, for it should not be forgotten that we are as much trying to make the machinery of Government function as to improve environmental practice. If I read my mail correctly the Banff School of Environment is working toward this view.

Research will play a key role in any attempt to improve administrative/ environmental practice. For example, it benefits the Mineral Resources Branch, the environmental agencies and the industry to have functioning such a workable arrangement as the Regional Advisory Committee on Reclamation, but it would be even more beneficial to have an analysis undertaken to document why such arrangements work and the nature of their limitations.

Questions for research might be considered in four areas:

1. The costs of environmental regulation:
 - to the environmental agencies.
 - to the mines regulation agency.
 - to the industry, both direct and indirect.
2. The benefits of environmental regulation:
 - in economic terms (if this is possible - which I doubt - with apologies to the economists).

- in comparative terms, i.e. on specifically determined sites/
what is the significance of the resources that have been
salvaged?
- 3. The effect on cost and benefit of making given changes in the
systems described.
- 4. The resources that Government, industry and higher education
can contribute to experimentation with change.

The above are types of questions which have been posed predominantly by engineers and biologists for decades. The answers which have been supplied have not been entirely satisfactory, and part of the reason for this is that they are usually provided by other engineers and biologists. The missing response has been that of the organizational analyst. He is usually found on campus attracted by the academic climate. Although rarely seen, this specialist in the social sciences has a contribution to make, additional to those of the physical and natural. His toys are not the trucks of the engineer or the species of the biologist; they include such things as organizations, goals, communication, decision making and change.

Before the field of environmental regulation develops further either through design, or by lack of design, this view could profitably be consulted, and the research previously referred to undertaken.

A further question is prompted then: Who would consult this view, and who would oversee the research?

The success of the Technical and Research Committee on Reclamation suggests that a panel or representative group from Government, industry and university might provide the balance necessary to support objective work. Considerable thought would be required to determine its feasibility, but it would seem to be worth the effort of trying.

This suggestion may appear to you to be wandering too far from the pragmatics of regulation. The alternative to doing things in a planned way, however, is to have events thrust upon you. B.C. has had its uranium inquiry and Ontario its sand and gravel review, to give only two recent examples of this. If a portion of the cost of inquiries such as these were invested in ongoing administrative research, I feel their

cost would go down, their benefit would go up, and their frequency would reduce.

In conclusion it is argued that:

- There is a tendency for environmental regulation to become less rather than more effective.
- The workings and problems of the regulatory systems which are involved are more complex than we are usually prepared to give credit.
- The best bet for improvement in effectiveness lies in the application of social and more particularly organizational science to understandings developed to date by the physical and biological sciences.
- This exercise should be conducted within a forum which includes the viewpoints of Government, industry and university.

Further speculation should await criticism. Yours would be appreciated.