The Public Image of the Engineering Profession

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SUMMARY The elements that are important in determining the Engineering Profession's public image are discussed. Ways of improving the image are suggested, after considering the characteristics of the media and the nature of the "product" to be marketed.

1   INTRODUCTION

The engineering profession's influence on the material structure and lifestyle of the community is determined by what its members plan, design and construct. However, the profession's influence on community attitudes is determined by its public image. There is anything but universal contentment within the profession about our public image. To improve this situation, it is first necessary to look at the elements which determine it.

2   THE ELEMENTS WHICH DETERMINE THE PROFESSION'S CURRENT PUBLIC IMAGE

The Profession's public image is determined by media coverage, pre - existing attitudes towards the profession and personal contact. The three are somewhat interrelated.

2.1   Media Coverage

The media have considerable influence in determining public opinion. Public opinion can be directed by both the amount of coverage given to an item and the attitudes expressed towards it.

The word "media" can be taken to include the following:
- TV
- Radio
- Newspapers
- Magazines
- Film
- Books
- Theatre

All of these media play an important part in determining community attitudes.

Engineering currently receives very little media attention. The attention it does receive is often incorrect, incomplete and negative. The media thrives on sensationalism, and it finds little of this in the engineering profession. Anyone who has tried to get publicity for engineering activities will know how difficult it is to get any coverage at all for any of the positive things in which the profession is involved. Coverage also depends on whatever else happens on the day. So if Mrs. Ghandi happens to die that day, you've wasted your time trying to tell the public about your excellence awards or your Road safety conference.

2.2   Pre - existing Attitudes Towards The Profession

Attitudes popularised in the recent past by the media largely determine the disposition of the public towards new material being presented.

The image of the profession that is currently in vogue seems to be that engineers are conservative, narrow in outlook, socially dull and boring, and semi-fascist in political approach. This attitude does seem to be changing, but very slowly.

Many other professions seem to dislike engineering because they feel engineers have little social conscience or awareness, and have been trained to think in narrow mathematical and quantitative terms. The attitudes of other professions towards engineers has been pre-determined by their experience at University where Engineers have an uncultured 'Yobbo' image.

2.3   Personal Contact

Pre- existing attitudes are, in turn, dependent upon personal contact. Engineers do not live in a social vacuum. Engineers have friends, associates and acquaintances, all of whom form opinions of them. However, once an impression is formed, the feedback loop between media coverage and pre- existing attitudes can be difficult to break, even if there has been substantial personal change at the source.

3   WHAT DOES THE PROFESSION WANT ITS PUBLIC IMAGE TO BE ?

Some engineers think that the people they deal with have respect for engineers, and are aware of the importance of their work. However engineers who hold this view are usually older and occupy more powerful positions. Many engineers feel that the only people who know the value of their work are other engineers. The general public expects work to be done and gives only negative feedback when something goes wrong. Friends and acquaintances do not want to be bored with technical details and often only ask questions when things go wrong.

Members of the profession would like to be regarded as important members of the community. We already regard ourselves that way, but would like other people to hold this view as well. We would like the profession to be well regarded by the press and we desire ample coverage of engineering events. We would also like to have our opinions regarded in high public esteem, simply because we are engineers,

and therefore , by definition, should obviously have worthwhile and weighty opinions.

We are not getting the response we desire and therefore, we have a problem.

4   THE POSITION OF OTHER PROFESSIONS

Other professons are having similar problems and are also being forced to introspection.

4.1   The Medical Profession

The medical profession has lost considerable community esteem. Monaro (1984) blames this on a variety of causes, all of which can be attributed to the actions of others outside the medical profession. Nevertheless, he does mention factors such as investment schemes to minimise tax, and "a doctor's tendency to select a motor car in keeping with his image of himself".

However, the Medibank frauds were not mentioned; They were alluded to in the sentence "The washup of the (University) quota system presents a litter of dropouts, misfits, entepreneurs, and (sadly) some thieving rogues." In spite of the fact that an outsider thinks of Medibank frauds and money when he thinks of the medical profession, the profession itself does not seem able to come to terms with this. Monaro attributes the Medibank bonanza to a Government which wanted "to ensure the people's expectations were met." Nonetheless, his paper indicates the start of some healthy introspection, allbeit as a less than altruistic response to public pressure.

The engineering profession may well be in a similar position over the environment.

4.2   The Legal Profession

Lawyers also feel their image has suffered. According to Sackville (1983), the problem lies in their two conflicting objectives; to act in the public interest; and to protect their own interests. He considers the problem can be solved by making it clear which capacity they are acting in when they make public statements. Little introspection is evident in the legal profession. However, the Family Court bombings may well be forcing the issue. The whole area of Family Law is a glaring example of a profession unthinkingly applying old methods (in this case, the adversarial approach) in a new area where it is completely inappropriate.

4.3   The Accounting Profession

Artificial tax avoidance schemes have probably brought the standing of accountants in the eyes of the public to an all time low, according to Peters (1979). He quotes Mr Jack Storr, then president of the Australian Society of Accountants as saying that the job of restoring community respect is the main challenge facing the profession.

5   HOW CAN THE ENGINEERING PROFESSION ACHIEVE THE PUBLIC IMAGE IT DESIRES ?

5.1   Media Coverage

One solution to our image problem may be to undertake a publicity campaign to improve the public image of engineering. In considering this option, it is instructive to first consider the size of the problem. The following Table lists the scope of operations of the various media in Australia.

TABLE I
MEDIA OPERATIONS IN AUSTRALIA

Television Stations *	– ABC	95
	– Commercial	50
	Total	145
Radio Stations *	– ABC	136
	– Commercial	137
	– Public	38
	Total	311
Newspapers +	– Daily	64
	– Other	454
	Total	518
Periodicals +		1400
Film ! There were 19 Films made in 1983/84		
Books:= 2858 Books were published in 1983		

Sources: * Australian Year Book (1984)
　　　 + The Media (1981)
　　　 ! International Film Guide (1984)
　　　 =Australian Bookseller and Publisher supplement (August 1985)

It can be seen from this Table that all the media have large and diverse networks. It is beyond the reach of any voluntary organisation to fund nationwide advertising on any one of the media, let alone all of them, unless their own financial interests are very seriously threatened.

A motion was moved at the 1981 APEA Federal Council that a publicity campaign to improve the image of the profession be undertaken. The campaign was to cost $1.25 M . This sum was to cover the cost of making one 30 second commercial and screening it several times on all television·stations in the nation.

Fortunately, the motion was defeated. There was no guarantee that it would have had the desired effect anyway. Would 30 seconds change permanently anybody's bad attitude towards engineering? If the reason for the poor public image was some fault of the profession, then a publicity campaign could simply reinforce that and do the profession more harm than good. Furthermore, the press could lampoon the profession for feeling it needed to conduct the campaign in the first place.

Paid advertising is therefore far too cumbersome, expensive and risky a way to change public attitudes and improve the image of the engineering profession. It is therefore necessary to find ways of obtaining favourable free publicity.

We are in open competition for free media time. Almost every other profession and special interest group wants publicity. If the media covered every group the way each group would like, most of the listening public would be bored to tears and either switch off or select another medium.

The media therefore have their own criteria for judging the news value of potential news items. They have absolutely no community obligation to risk liquidation through presenting the views of self interest groups. They therefore select items which will appeal to large numbers of people. Media organisations conduct their own market research and have the compelling feedback given by readership/ sales/ programme popularity. They know what makes news; and it is often the sort of material that special interest groups do not want publicised. The media are all too familiar with people wanting

publicity for their own ego gratification. The desire of engineers to have their views publicised simply because they are engineers, would certainly fall within this category.

5.2 Pre-existing Attitudes Towards The Profession

To get free publicity, it is first necessary to bring about a change in pre- existing attitudes towards the profession so that people will want to hear what engineers have to say. This means discovering how to get people to change their personal attitudes.

The problem can be approached in two ways. One is to change public attitudes to coincide with what the profession wants. The other is to change attitudes within the profession so that either public attitude ceases to be a cause of concern, or the profession changes so that it merits a better public image. Possibly both may be necessary.

There has been public pressure for the latter. Engineers are also starting to recognise the need for it. A survey was undertaken by Professor Hollis Peter and Bert Cunnington on behalf of the I.E.Aust. Task Force on Manufacturing. It was reported in the Commonwealth Department of Science and Technology publication 'Work and People' (1980).

> "Engineers were reported as recognising very clearly that they were less equipped in the area of human relations skills and knowledge than was necessary to enable them to carry out their jobs better."

The need for human relations training was also pointed out by Webb (1977), who said that engineers should now be:

> "better equipped to face the imperatives of today and not professional men made indecisive because of their fears of community repercussion.... the engineer, by the very nature of his profession and the 'deficiencies of his training', is most affected and least capable of understanding the changed attitudes of people to their environment."

Webb also pointed out that changes were required in attitudes to social issues within the profession. He wrote:

> "A 'deep rethink' is required by the engineering profession as to what is and what is not ethical behaviour in the many ways engineers are involved in environmental manipulation....many professional men are no longer able to act with complete integrity for fear of being listed as 'difficult' or 'stirrers' by large private and public professionally dominated institutions."

The profession paid the price for its narrow, technical approach during the Tasmanian Dams issue, which achieved the biggest amount of free publicity the profession has ever received.

In its essence, this is no different to what has been happening to other professions. The environmental issue points towards a requirement for changing attitudes within the profession. This may not be easy, but it is certainly the cheapest alternative.

5.3 Personal Contact

There can be no escaping the fact that engineers personal contact with other people must have determined attitudes towards the profession in the first place. This carries with it the important implication that our public image is completely determined by the way we are ourselves. If we wish to change our public image, then we are left with no alternative other than to change ourselves.

Before embarking on such a course, we need to know that we can break the negative feedback loop between media coverage and pre- existing attitudes. It appears we have the potential to break this loop because we are constantly in contact with other people. A rough, quantitative estimate of the number can be made. Reisman (1981) reports that the number of friends an adult has lies between two and thirty, averaging at fifteen. The number of close friends an adult has varies between one and twenty seven, averaging at six. Forty one percent of the close friends are likely to be kin.

There are 45,000 engineers in Australia. If we therefore assume that engineers friendship circles average at fifteen, and that ten of these fifteen are non engineers, then there are 450,000 people in the country who have an engineer as a friend or relative. In other words, one in thirty Australians personally know an engineer. However, friendships change over time because of personal change, transfers and other reasons. Therefore, the number of people considered as friends over a professional lifetime is likely to be several times this number.

Further, engineers deal with people every day, and so the number of people they are in constant contact with is likely to be several times the half million figure. However, Brier (1984) points out:

> "Traditionally engineers have kept a low profile. They do not relate directly to individual members of the public as do other professionals such as lawyers and doctors, but tend to work in groups, maintaining contact directly with only a small sector of the community."

Considering all the factors above, and exercising a liberal amount of judgement, the number of people in Australia within the influence of an engineer is likely to be of the order of one to two million people, say ten percent of the country's population of 15.75 million (ABS, 1985).

That is ample to effectively break the negative feedback loop, provided engineers, en masse, make noticeable personal changes. Having established that this is possible, we need to look at the existing attitudes and character type of engineers to determine what personal changes may be required.

6   ATTITUDES OF INDIVIDUAL ENGINEERS

Some idea of the attitudes of engineers can be gained from the public statements some leaders of the profession have made, and from the little media coverage the profession has received.

Sandeman (1981) quotes Sir Phillip Baxter, the former chairman of the Atomic Energy Commission as saying:

> "I would say that they (environmental movements) have had almost no impact on the profession....In my view engineers have always been the number one environmentalists. They have always balanced the effect of an operation on the environment with its benefits to society."

9

This is a cavalier reaction, indicating a "we've always been right" attitude. This attitude has not been atypical within the profession. Indeed, it is an attitude I have previously held myself. Engineers have derived much of their self esteem from being able to get their way with material things; why should people be any different?

Professor Lance Endersbee in his presidential address to the 1981 Institution Conference said that the profession needs to be defended against anti technology attitudes apparent in the education system, the media, and in politics. The emphasis here was on defence of the old established attitudes, rather than gaining an understanding of the new. Sandeman noted that Endersbee's call had wide support within the profession. He continued:

> "The image problem was crystallised for many engineers by the recommendations of the Tasmanian Hydro Electric Commission to dam the Franklin and Gordon rivers....The Commission was accused of 'tunnel vision' by Professor John Burton.... the former chairman of the Federal enquiry into Lake Pedder....Burton accused the engineers of focusing on the least cost solution and failing to present the Tasmanian Government with properly researched alternatives.

> But the profession has changed. The majority of consulting engineers have had the experience of preparing or producing an environmental impact statement, or have been involved in compiling reports in association with one. Government engineers have been made aware of environmental guidelines."

He also mentioned the "Ing" proposal:

> "The proposal has met with a lot of resistance, but has been debated seriously. It is a symptom of how earnestly some engineers are examining their role...and their image."

These attitudes must indicate that certain character traits are prevalent within the profession. To understand the attitudes within the profession and to understand how they might be changed, it is therefore necessary to consider the nature and character of engineers.

7   THE NATURE OF THE 'PRODUCT' TO BE MARKETED

Goshen (1969), an associate professor of both the Center for Management Studies and the Department of Psychiatry of the School of Medicine at the Vanderbilt University, has surveyed the personality and character type of engineers. Although his work is now quite old , the job the profession does has not changed (even though methods have) and therefore the character type selection is not likely to have changed very much either. He wrote:

> "Many occupational groups and professions have acquired reputations in the public eye for being peopled with individuals who posses definite sets of character traits.... In order for the members of a profession to be made up largely of a particular type of character, there must be effective screening devices which attract people with certain characteristics and sift out those who exhibit other types of traits. These screening devices must be highly selective on the basis of personality, so that certain kinds of personality are rewarded and others are discouraged."

In his survey of engineering students Goshen found that:

> "The influence of parental attitudes and cultural backgrounds was conspicuous in their general social orientations. Education seemed to have only limited impact on these attitudes. As a result, they could hold onto obsolete folklore notions which were in direct conflict with the technical knowledge they were acquiring without their being aware of the conflicts resulting.... Seldom did they view the maturation process as one requiring the development of a new set of values."

Goshen goes on to list the characteristics of practising engineers, as determined in his surveys. Some of the characteristics observed are:

* "engineers exhibited conservative, conventional behaviour in their personal lives, their work, politics, religion, fraternal affiliations, dress and manners....Consistent with these traits, they were inclined to seek consensus for their authority, to fear originality, and to distrust deviations from tradition.

* (Engineers) were likely to be regarded by others as highly respectable, but as restrictive and confining to their wives and children.

* Philosophically, they were inclined to view reality with the premise: 'What is, is right'....This viewpoint militated against change.

* A common allegation was encountered from others that engineers use their experience to prove that something would not work or could not be done rather than being challenged to find new solutions.

* Another widely discussed reputation was that they were 'perfectionists'....This took the form of being highly critical of others. Coupled with this, paradoxically, was a high level of sensitivity toward being criticized themselves - something likely to be provoked by their tendency to be critical of others. Defensiveness, therefore, was a marked characteristic.

* They were apt to personalize and take a proprietary interest in their work, their ideas, etc....they were seldom objective, even though their arguments were founded on what they often referred to as logic.

* Their lack of awareness of other people's individual attitudes and backgrounds was demonstrated by a particular type of communications failure....they would tend to plunge immediately into the intricacies of their subject....thus failing to develop cooperation.

* Their interest in control made, on one hand, for orderliness and dependability, but on the other hand often took the form of seeking to dominate others. Their success in mastering mechanical systems would not infrequently reinforce their confidence in mastering people. Consequently, they were constantly encountering frustrations and disappointments over the resistance or indifference on the part of other people in yielding to this domination.

* They characteristically expressed indignation when it was observed that they were responding to events or to the opinions of others, which was contrary to their self image."

Does anybody else see themselves in some of these observations?

8   CHANGES REQUIRED

The underlying characteristic of Goshen's observations is the desire to be right. This can be illustrated with reference to the environmental movement. The strong dislike we took to the movement may have had little to do with lack of concern for the environment. It may have had more to do with coming up against an opposing group who also wanted very badly to be right. The opposing views were very different, indeed irreconcilable. However the underlying motivation of both groups was exactly the same; to be right, to be seen to be right, to be esteemed by others for being right, to protect their own interests, and to justify themselves, their existence, and their egos.

While it is absolutely necessary for us to be right in matters of structural design, it does not follow that we must necessarily be right in our opinions on anything else. We are not trained in areas outside engineering. A case could be made for saying nothing on any other area, for the ethical reason that it is outside our area of competence. This is, of course, a ridiculous proposition, and the community is expecting a broader view of all professionals. However, a little more humility about our views on other matters would not go astray.

There is little more that needs to be said about Goshen's observations. Realising and admitting a problem goes half way towards solving it. However, some measures which would support changes in these characteristics would be:

* Acquiring effective public verbal communication skills.
* Learning how to present press releases in an attractive way which is interesting and stimulating to non-engineers.
* Including human relations and personal development content in undergraduate courses.
* Including environmental training in undergraduate courses.
* Attending human relations and personal development courses after graduating.
* Overcoming our fear of the media and our reluctance to 'sell ourselves'
* Being open and available for media enquiry, and making the effort to think from the point of view of the reporter or the public. We need to build our image as servants of the public "who make things happen, who solve problems, who save money, and who have answers."(Thompson (1985)).
* Actively portraying ourselves as protecting the environment while still providing the built environment necessary for people to live.

9   THE ROLE OF THE INSTITUTION

The Institution has great difficulty reacting quickly and appropriately to moral and social issues affecting engineering projects when there is public controversy surrounding them. It is the author's view that this occurs because many of the old values commonly held within the profession are no longer appropriate, and there has not yet been sufficient time for new, more appropriate values to achieve general acceptance within the profession.

However, leadership in personal change has the biggest impact when it comes from the top. Support for Brian Lloyd's proposal to rationalise the organisation of engineering bodies would be a good place to start.

10   CONCLUSION

The elements which determine the profession's public image are media coverage, pre- existing attitudes and personal contact. These areas have been analysed and the position of other professions have been considered. The nature and character of the engineer have also been examined. The conclusion is that a change in the profession's image can come only from individual members of the profession making personal changes in attitude, and becoming less attached to having the right opinions in areas outside engineering. Various measures which would support such changes were suggested.

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