

# Developing a values-based code of engineering ethics

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*When IPENZ decided to revise its code of ethics in 1992, a proposal that it be a values-based rather than rule-based code was put forward by the author. As a new member of the Ethics Committee, appointed because of his public views, his proposal was eventually accepted but only after much debate. This paper discusses the processes and background that was involved in arriving at such a different format, and some of the conflicting views. It also looks particularly at one of the community-focused values: Sustainable management and care of the environment. It discusses the effect of the guidelines associated with these values, and whether they remain adequate, or will need changing as society's attitudes change. Finally the paper looks at whether engineering codes of ethics, even in such a different format, serve a purpose, and if so whether that is now changing.*

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## 1. Introduction

Codes of Ethics, or Articles of Professional Conduct have evolved since the Hippocratic Oath for Physicians around the 5<sup>th</sup> century BC. Over the last 60 years or so, the major professions have regulated their own affairs with varying degrees of outside interference or public scrutiny. This internal focus meant that ethics was often a matter of etiquette as well as a code of professional conduct. Unkind people could even allege it was organised more to shield the professions from outsiders' view rather than as a way to advocate professional responsibility to clients or society.

However, beginning in the 60s and 70s, there was a move to codify professional behaviour and expand its scope, and to eliminate paternalistic views of the public. Coupled with this has been a trend in the 80s and 90s for far greater transparency of actions. This process of social transformation has probably been more pronounced in the engineering profession than any other.

In 1995 the Institution of Professional Engineers New Zealand (IPENZ) introduced a new Code of Ethics, replacing the one previously published in 1964. This Code broke new ground by being based on five key values, related to the perceived public duties of the engineering profession. It was seen as controversial at the time, stimulating both positive and negative reactions. Now there appears to be a general acceptance of its intentions, and apart from an initial modification in 1996 it has remained in place. In February 1999 IPENZ's chief executive told its annual general meeting that there were no plans to modify it in the near future.

## 2. Background

The IPENZ articles of professional conduct published in 1964 comprised 9 articles, largely based on the exhortation "a member shall not...." In 1986 the author - then founding secretary of the newly formed activist group

Engineers for Social Responsibility (ESR) - was asked to present a paper on ethics to the local IPENZ Branch. This talk was entitled "Engineers as moral heroes: Are our ethics good enough?" Initially it was intended merely to summarise and interpret the existing code, which seemed to be a random hotchpotch of clauses. A searching look however concluded that modifications were long overdue. The paper suggested these should include a rearrangement of clauses into logical headings, the removal of gender specific language, and the addition of a new clause - "In all their work (professional engineers) shall recognise their responsibility to the public interest as paramount."

The paper noted that IPENZ's then present code gave the appearance of being self protective, and inward rather than outward looking even as the expectations of society were beginning to demand a different approach. IPENZ was preoccupied with "the standing and reputation of the Institution and the profession" with only "due regard" to the public interest. The paper suggested that IPENZ do three things:

- consider revising its Code of Ethics to emphasise the public interest as a criterion for professional responsibility
- provide a more logical grouping of code clauses.
- consider revising its regulations for the observance of professional standards to cover not only complaints procedures, but also support for members who observed the Code of Ethics, yet risk being penalised.

The talk was subsequently published (Coates 1986) and referred to the Ethics Committee of IPENZ for consideration. As a consequence, the author was eventually appointed - in 1991 - to the IPENZ Ethics Committee, the first new member for several years. The terms of reference for the committee included the responsibility to "keep the Code under review in the light of changing professional and society expectations". By early 1992 little movement or change had been achieved - particularly

around issues relating to obligations to society - despite the support of the then president of IPENZ.

In 1992 the author wrote to the other committee members saying that, "while in 1991 I would have been prepared to accept a compromise position by tinkering with the old code I think that now we would be backward looking to do that", and added, "I feel we need to go back to first principles and look at the whole code from a values standpoint - what values current in the 1990s do we think need to be addressed and promoted in a new code?"

This stand was supported by a former IPENZ President Murray Sweetman who was then chairing the Engineering and Environment Committee. He urged that any new code should fit members "for the needs of the next century and demonstrate engineers' commitment to sustainability and survival of the planet".

The committee was eventually reformed in late 1992 with the continuance of the former chair, and tasked with ensuring that the code would be totally reviewed. An expanded and broader committee was convened with a wider range of ages, gender, disciplines and employment types.

IPENZ's new President, Rob Wilkinson, particularly requested the committee to review the code's adequacy in addressing "private duties, public interest and the common good".

### 3. Approaches to codes of ethics

The legal, medical and accounting professions Codes of ethics have changed over time largely due to changing events in society according to Backof and Martin (1991). The question for the new IPENZ Ethics Committee was whether there had been any corresponding "sea change" in society's expectations of technology. If so, was it sufficient to warrant such a major change of emphasis of the code of ethics as was being proposed.

A key factor in moulding the author's thinking at that time was an article by Robin et al (1989) that proposed a radically different view of ethical codes. It looked at existing corporate codes of ethics and placed them in a four quadrant matrix according to whether they gave low or high specific guidance, and whether they were rule-based or value-based. Most codes fell into the first three of the cells, and none into cell four - i.e. a values based code that gave high specific guidance. These authors, in pondering what a cell four code might look like, said such a code "would be a statement of the company's ethical and social responsible values". It went on to say, "These values could be derived from an evaluation of potential threats and opportunities using both deontological and utilitarian reasoning". However, they warned that "only if the code is used with strong enculturation efforts would it reach the high level of guidance that is part of cell four" requirements.

With the committee having decided to proceed with a values-based code the next question was to determine which values to use. In exploring these, other seminal documents were revisited. For example the Decalogue (or Ten Commandments) from the Hebrew bible, provides short, mainly negative precepts for human conduct, generally covering the sanctity of human life, false testimony, and community-mindedness.

In Plato's virtues, the cardinal virtues were prudence or practical wisdom, justice, temperance or self control, and fortitude or courage. He considered these to be the necessary qualities for good actions, and to be subordinate to the theological virtues of faith, hope and charity which are "God directed". Modern virtues that derive from these are moderation, order, resolution, industriousness, sincerity, and humility.

A general consensus among ethicists summarised in Guy (1985) has developed ten essential values that are central to relations between people.

Caring	Loyalty
Honesty	Fairness
Accountability	Integrity
Promise keeping	Respect for others
Pursuit of excellence	Responsible citizenship

Social values in a profession include knowing (systematic knowledge and the intellect), doing (technical skill and capacity), helping (putting knowledge and work to the service of others) - (Merton 1960).

The idea of having obligations to future generations is a relatively recently expressed value, heralded by a rising awareness of environmental fragility. This was first epitomised by the publication of *Silent Spring* by Rachel Carson (1962). The idea raises questions about how far such obligations should extend, and how optimistic it is to expect future generations to be able to solve problems that present generations have created. Can any so-called "technical fix" be relied on, even partly, to solve the apparently exponentially increasing problems now being created?

Another value thread that runs through all ethical frameworks is that of the sacredness of life. Although originally derived from the idea of a God as creator, the right to life is really the basis for all other human rights, natural and legal, and the foundation for civilised society. There is an implied duty to cherish, preserve and protect human life and to take every means for the relief of suffering. For engineers the notion of "innocent" people has especial relevance, since their work touches many who do not necessarily have the knowledge or awareness to avoid the risks imposed upon them by technology.

Out of these values comes the general value of respect for persons. One of Kant's moral principles was: "Act in such a way that you always treat humanity, whether in your own person or in the person of any other, never simply as a means, but always at the same time as an end". This is a more philosophical statement of the scriptural command to "love your neighbour as yourself". Human dignity and irreplaceability (or uniqueness) means that a human being should not be treated as an object of finite value, to be measured or traded.

It is obvious that societies expect their citizens to accept wide duties aimed at improving their people's wellbeing. Actions towards people fall into the categories of permissible, obligatory and forbidden. It is the former two that a Code needs to address. A code need not repeat general legal duties - but should clarify expectations about issues where there is a choice. The use of the word "inalienable" in various acts and constitutions implies that there are certain rights which are supreme and cannot be forfeited. Here a code can remain silent.

In the early 90s the ideas expressed in the Brundtland report by the World Commission on Environment and Development (1987) were gradually becoming more accepted. The notions of protecting the environment and of sustainability were becoming respectable. A still developing argument is how far to extend this respect for humans, to include non-human life forms such as animals and plants - or the total environment. This was however considered to be too radical to apply to this recent Code revision.

#### 4. Choices for IPENZ code

The previous IPENZ code, had it been categorised, would have fallen into four sections, although not given any particular order of importance. By 1991 there were indications that obligations to society were important - but still not enough to take first place:

- Professional life
- Obligations to society
- Relations with clients and employers
- Relations with other members

For a new approach the author initially suggested four values as an overarching framework for a new code:

- The preservation of life
- The preservation of the planet's environment (sustainability)
- Improving the quality of life for humanity
- Enhancing professionalism

These formed the basis for initial discussions by the new committee. Early Committee discussion then added a fifth value relating to the profession's responsibility to safeguard and enhance the body of technical learning. It was called "scientific heritage" for want of a better term at that stage. There was still a reluctance to put them in any order of precedence as above, and the current code (Appendix 1) preserves that determination to avoid a hierarchy of values. The author does not agree with this approach, and sees it as abdicating responsibility on the relative importance or hierarchy of values.

The code was to be a multi-level code. Each value was to be explored and draft code clauses prepared to highlight the detailed areas for compliance - Canons and Tenets, or Principles and Guidelines as other codes have called them. However the aim was for the detailed clauses to provide objectives rather than prescriptions - analogous to the New Zealand Building Code which allows with standard means of compliance with its clauses, but still has room for justifiable innovations. The new Code was also to be given a new and prominent place in the rules of IPENZ, with a new section dealing specifically with Ethics.

#### 5. Process

The process for arriving at a final Code was to allocate each value or principle to teams of two or more committee members who developed lists of explanatory guidelines. These draft lists were then open for comment by other members of the committee.

An early difficulty was to decide whether the code clauses were to be enforceable rules, or less specific exhortations, but interpreted as "case law" over time, if necessary by

ethics compliance (rather than disciplinary) hearings. The author's view is that it was important that the clauses be quite specific, rather than vague statements. Where society's values were still changing these would inevitably be redefined by peer review through ethical hearings. During the course of the committee's deliberations other ethics code drafts appeared, such as the November 1992 FIDIC Code of Ethics. These generally still seemed to be inward looking codes, and made the committee even more aware of its own innovative ideas.

The final five values chosen to create the code were:

- Protection of life and safeguarding people
- Sustainable management and care for the environment
- Community wellbeing
- Professionalism, integrity, and competence
- Sustaining engineering knowledge

An overall set of basic statements was developed around these five values, with these in turn expanded in guidelines beginning "Members should..."

The discussion over clauses brought back to the committee by those tasked with dealing with each value was wide ranging and vigorous. The chair, Neville Beach, in his letter of submittal to the IPENZ President said, "the final code...is a consensus view arrived at over a long period and many meetings...and probably does not represent any Committee member's view of the perfect Code but it is one they can all live with". It was however, immense progress over 12 months and even allowing for the compromises made, a very forward looking document was produced.

Comment was sought from IPENZ Members by publishing a final draft in NZ Engineering in 1993. Although only a few comments were received relative to the total membership, these ranged from the those calling it an excellent document, to those suggesting that IPENZ was "constructing some very high ground against which lawyers can see us silhouetted against the sky". Most comments were on matters of detail in the wording, or provided useful additions. Consulting engineers were particularly vociferous about perceived additional responsibilities, and issues of protecting the confidentiality of client's information. In general most applauded the idea of the five values chosen, but differed over the material covered in the supporting guidelines - its content and descriptiveness.

In late 1993 the draft Code was submitted to a Code of Ethics review group, that included eminent IPENZ members, as well as significant people from the wider community. These included Dr Helen Hughes, Parliamentary Commissioner for the Environment, Professor Lloyd Geering, an emeritus theologian, Lady Jocelyn Keith, Wellington School of Medicine, and David Russell, chief executive of the Consumers Institute. By 1994 the draft Code was still being tinkered with by the IPENZ Council and its chief executive, and had by then been subject to minor redrafting at least twice. A legal opinion had also been obtained that focussed on the enforceability of the proposed Code, making the point that it would be the rules or guidelines that would be enforceable, rather than the more general preambles of intent.

A new draft of The Institution of Engineers Australia Code of Ethics was also received, for parallel consideration. But by this time the Committee felt it had done its job and should disband, leaving future progress to the new IPENZ president and chief executive. The Code was eventually formally adopted in 1995. Yet in 1996 still another redraft was under way to cater for dissent, particularly relating to the concerns of consulting engineers. The final present Code is in Appendix 1.

## 6. Society-focused values – sustainable management

Of the three values dealing with obligations to society – Protection of Life and Safeguarding People, Sustainable Management and Care for the Environment, and Community Wellbeing – the question of sustainability deserves further comment.

The Code's final version aims to encourage engineers to do three things - to use resources sustainably, to minimise environmental impacts, and also to give due consideration to the social and economic benefits. The final guidelines however are in the author's view minimalist at best.

At issue in this area is really the power of engineers to influence decisionmaking on matters where sustainability is pitted against economic growth. According to Beder (1999) the tendency of economic thinking is to incorporate the environment into the system, rather than the system into the environment. In her view sustainable development really means a continuation of "business as usual".

By making engineers take into account the social and economic costs and benefits of avoiding adverse environmental effects arising from their work, the Code has tried to deal with these issues. But the Code itself became watered down during the comment and redrafting phases.

The Code as originally conceived did have a clause linked to currently accepted definitions of sustainability - "to ensure the ability of future generations to exist at a similar or higher level of quality of life". In the final version this was diluted to "minimise any adverse environmental impact ... of technology for both present and future generations".

The problem lies in balancing sustainability with expediency, both of which are processes and philosophies rather than ends in themselves. There will always be trade-offs specific to each case. The difficulty that any code has is in trying to be specific about issues that require principles broad enough to allow lateral thinking, and alternative approaches.

The problem with introducing concepts such as sustainable management into codes is less about exactly what that entails, than about how much engineers are (or should be) involved in decisionmaking. Should they be merely objective providers of advice, or should they take a more directorial or advocacy approach?

## 7. The future for codes

Why do certain groups have codes? The usual answer is that they are professionals, and wish to be self regulating associations or centres of excellence. With the growth of corporate codes of ethics, this exclusivity no longer exists. Codes are increasingly seen as part of the transpar-

ency and honesty that is expected of any organisation dealing with its stakeholders - both public and internal.

Ethical codes do not develop in a vacuum - they are sensitive to events within society, and to changing value systems, including statutory frameworks. For example the Commerce Act forced the removal of anti-competitive clauses from earlier codes.

It has been said before that those who really need a Code of Ethics, will not benefit from one. The vast majority of members of professional associations behave ethically automatically without any coercion. Present day Codes seem to be moving away from regulatory documents into the inspirational and motivational areas.

Whilst the need for discipline within a profession still exists, a growing question with modern codes that are responsive to societal obligations is "What happens to those who obey the code, but are penalised?" There is now a need for processes to support members who choose to uphold some of the more public benefit oriented clauses. This is being matched by so-called "whistleblower" legislation under consideration.

In time the professions may well find their own codes being used by public interest groups to challenge further those professionals who are perceived not to have gone far enough - for example in mitigating adverse environmental effects.

## 8. Conclusions

There are several points that arise in the exercise of radically changing a professional code.

- It takes time - in this case over 10 years from first mooted the case for change.
- Too great a change encourages reactionary responses, retrenchment and results in delays.
- One must distinguish between the principle of compromise, and the compromise of principle - a matter requiring wise judgement.

Despite these factors, the changes have now been in place for several years, and seem to be operating satisfactorily. Whether they actually achieve one of the principle objectives of improving the performance and image of professional engineers, only time will tell.

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# Appendix 1. Institution of Professional Engineers New Zealand Code of Professional Ethics

*This version of the IPENZ Code of Ethics - approved by the Board to take effect from 1 November 1996*

The respect which society accords the engineering and technology professions is earned and maintained by its members demonstrating a strong and consistent commitment to ethical values. These commitments are additional to the obligations, which every member of society is required to observe, such as obeying the law, and reflect the additional responsibility expected of all professionals.

It therefore follows that the Institution must maintain an appropriate Code of Ethics, to publish it for the information of the public and to enforce it impartially. This Code must be responsive to the changing expectations of both society and the profession and the global standards to which the Institution subscribes.

The Code of Ethics is based on the five fundamental ethical values set out in the Rules of the Institution. The Code is a set of principles to guide members in achieving the high ideals of professional life. To assist in the interpretation of the Code, guidelines are set out below for each Code clause.

These guidelines, which do not form part of the Code, are not exhaustive - they are offered as a guide to the understanding and intentions of the Code. They should be read with the Code as a whole and given a free and liberal meaning. They range from exhortations to excellence to prescriptive directions as to what constitutes ethical professional behaviour. Members will find in the Code and the Guidelines assistance in deciding the proper response to most of the situations they will meet in their professional life. In the final analysis the judgement of the member's peers as to what the 'reasonable professional' would have done faced with the same situation and applying the same Code will prevail. This is another reason why members should discuss any ethical problem that troubles them with senior members of the Institution. The Chief Executive would be pleased to assist in arranging this.

## **1. PROTECTION OF LIFE AND SAFE-GUARDING PEOPLE**

**Members have a duty of care to protect life and to safeguard people.**

*Guidelines*

To satisfy this clause you need to:

- 1.1 Give priority to the safety and well-being of the community and have regard to this principle in assessing duty to clients and colleagues.
- 1.2 Be responsible for ensuring that reasonable steps are taken to minimise the risk of loss of life, injury or suffering which may result from the work or the effects of your work.
- 1.3 Draw the attention of those affected to the level and significance of risk associated with the work.
- 1.4 Assess and minimise potential dangers involved in the construction, manufacture and use of your products or projects.

## **2. PROFESSIONALISM AND INTEGRITY**

**Members shall undertake their duties with professionalism and integrity and shall work within their levels of competence.**

*Guidelines*

To satisfy this clause you need to:

- 2.1 Exercise initiative, skill and judgement to the best of your ability for the benefit of your employer or client.
- 2.2 Give engineering decisions, recommendations or opinions that are honest, objective and factual. If these are ignored or rejected you should ensure that those affected are made aware of the possible consequences.

In particular, where vested with the power to make decisions binding on both parties under a contract between principal and contractor, act fairly and impartially as between the parties and (after any appropriate consultation with the parties) make such decisions independently of either party in accordance with your own professional judgement.

- 2.3 Accept personal responsibility for work done by you or under your supervision or direction and take reasonable steps to ensure that anyone working under your authority is both competent to carry out the assigned tasks and accepts a like personal responsibility.
- 2.4 Ensure you do not misrepresent your areas or levels of experience or competence.
- 2.5 Take care not to disclose confidential information relating to your work or knowledge of your employer or client without the agreement of those parties.
- 2.6 Disclose any financial or other interest that may, or may be seen to, impair your professional judgement.
- 2.7 Ensure that you do not promise to, give to, or accept from any third party anything of substantial value by way of inducement.
- 2.8 First inform another member before reviewing their work and refrain from criticising the work of other professionals without due cause.
- 2.9 Uphold the reputation of the Institution and its members, and support other members as they seek to comply with the Code of Ethics.
- 2.10 Follow a recognised professional practice (Model Conditions of Engagement are available) in communicating with your client on commercial matters.

### **3. SOCIETY AND COMMUNITY WELL-BEING**

**Members shall actively contribute to the well-being of society and, when involved in any engineering project or application of technology, shall, where appropriate, recognise the need to identify, inform and consult affected parties.**

#### *Guidelines*

To satisfy this clause you need to:

- 3.1 Apply skill, judgement and initiative to contribute positively to the well-being of society.
- 3.2 Recognise in all your work your obligation to anticipate possible conflicts and endeavour to resolve them responsibly, and where necessary utilise the experience of the Institution and colleagues for guidance.
- 3.3 Treat people with dignity and have consideration for the values and cultural sensitivities of all groups within the community affected by your work.
- 3.4 Endeavour to be fully informed about relevant public policies, community needs, and perceptions, which affect your work.
- 3.5 As a citizen, use your knowledge and experience to contribute helpfully to public debate and to community affairs except where constrained by contractual or employment obligations.

### **4. SUSTAINABLE MANAGEMENT AND CARE OF THE ENVIRONMENT**

**Members shall be committed to the need for sustainable management of the planet's resources and seek to minimise adverse environmental impacts of their engineering works or applications of technology for both present and future generations.**

#### *Guidelines*

To satisfy this clause you need to:

- 4.1 Be committed to the efficient use of resources.
- 4.2 Minimise the generation of waste and encourage environmentally sound reuse, recycling and disposal.
- 4.3 Recognise adverse impacts of your work on the environment and seek to avoid or mitigate them.
- 4.4 Recognise the long-term imperative of sustainable management throughout your work. (Sustainable Management is often defined as meeting the needs of the present without compromising the ability of future generations to meet their own needs).

### **5. PROMOTION OF ENGINEERING KNOWLEDGE**

**Members shall continue the development of their own and the profession's knowledge, skill and expertise in the art and science of engineering and technology, and shall share and exchange advances for the benefit of society.**

#### *Guidelines*

To satisfy this clause you need to:

- 5.1 Seek and encourage excellence in your own and others' practice of the art and science of engineering and technology.
- 5.2 Contribute to the collective wisdom of the profession and art of engineering and technology in which you practice.
- 5.3 Improve and update your understanding of the science and art of engineering and technology and encourage the exchange of knowledge with your professional colleagues.
- 5.4 Wherever possible share information about your experiences and in particular about successes and failures.