

11th MEMBERS' MEETING (Part 2)

Tsukuba (Japan), November 26 - 27, 2000

Conclusions and Recommendations

Conclusioni e Raccomandazioni

Session

Ethical aspects in manufacturing agricultural machines

Leading person: *Richard O. Hegg, U.S.A.*

CONCLUSIONS AND RECOMMENDATIONS

43 experts from 17 Countries, as well as representatives of **FAO, ASAE, AIT and CIGR**, took part in the 11th Club of Bologna Meeting – Part 2 chaired by *R. O. Hegg* (U.S.A), held in Tsukuba (Japan) on the occasion of the XIV CIGR World Memorial Congress 2000, to examine and discuss the following topic:

Ethical aspects in manufacturing agricultural machines.

Introductory key-note reports were prepared by: **Y. Sarig** (*Israel*), **M. Kinoshita** (*Japan*), **A. Scotti** (*Italy*).

Y. Sarig (represented by *R. Hegg*) presented a wide-ranging and extensively documented paper, which started by examining the meaning of the term “ethics” and applying it to the *business* sector, a sector that plays an important role in various spheres of activity concerned with the production and selling of goods, as well as with competition. This concept is also appropriate for agricultural mechanization, in that it involves the manufacturers, the dealers and the extensionists in all the sectors of crop and animal production. There is in fact a clear ethical imperative to manufacture machines that fulfil the needs of different agricultural systems, assuring quality and cost-effectiveness in the performance of the various operations, whilst fully respecting the requisites of environmental protection and operator comfort and safety, as well as addressing the issue of maintenance. A good business deal, therefore, cannot be divorced from the ethical conduct of the party promoting it. In addition, it must guarantee compliance with the anti-trust legislation in force. Despite the fact that, since 1980, in the USA, the vast majority of internationally relevant manufacturers, as well as the national dealers association and the ASAE, have been adopting ethical codes of conduct for their activities, there still remains much to be done to ensure that these codes are implemented at every level and in every country. Hence the proposal that the Club should draft an *Ethical*

Code that singles out 5/10 pre-eminent ethical values to be observed, and which can then be distributed to all the industrial and commercial players, inviting them to comply by adopting it as a code of conduct.

M. Kinoshita, representative of Kubota, analysed the ethical and organisational aspects - internal to the Tsukuba diesel engine and tractor manufacturing plant – necessary for safeguarding the quality of products and improving the working conditions of factory personnel as well as reducing environmental effects to the surrounding area of the factory.

A. Scotti, representative of CNH, recalled how the application of ethical principles in the sector of agricultural machinery manufacturing represents a sort of challenge for the production system, in that it requires achieving organisational objectives and criteria which must be harmonized with the interests of the commercial operators and of the end users. Today, the machinery industry operates within an increasingly complex web of relations, and is called upon to satisfy the different needs of farmers as well the requisites of the various agencies, which regulate the agricultural, industrial and environmental, and workplace health and safety spheres. In addition, it must fulfil the expectations of the agricultural associations, of contractors, of the environmental lobbies, etc. Modern industry must therefore take responsibility for the total functionality and quality of its different products, from the initial production process to the issues concerning the on-farm management and operation of the various machines, and taking into account the socio-economic conditions of the end users of the machines. Citing the United Nations Declaration of Human Rights, he concluded by asserting that the ethical awareness of industry is on the increase, and is no longer restricted solely to production-related aspects, but also takes into account the needs of farmers and of environmental protection.

After hearing the three presentations, and following an extensive and wide-ranging discussion, the participant unanimously agreed to approve the following:

Conclusions and Recommendations

- **Confirm** that the ethical problems in any business - and therefore also in the agricultural machinery sector – are no longer limited to the production sphere. They have to include downstream the trading and marketing sectors and they must also take into account the social, technical and economic needs of the end user, and hence of agriculture and the environment in the case in point.
- **Remark** that the current progressive reduction in the number of manufacturers, brought about by market globalisation, could lead to some distortion of the offer thus confronted with enormous differences - of a social, technical, economic, organisational, pedological, climatic nature – giving rise to major difficulty in interpreting the different requirements, with the risk in some cases of failing to comply with the local anti-trust legislation in force to approve a code of ethics in the various countries.
- **Unanimously approve** that the Club should undertake to draft a *code of ethics* to be distributed in all the countries. It must be adopted as a permanent, compulsory code of ethics to be rigorously respected.
- **Invite** the presidency of the Club to set up a restricted working group of Full Members for drafting the aforementioned ethical code, which shall be presented, discussed and approved at the forthcoming XII meeting, to be held in Bologna from 18th to 19th November 2001.

CONCLUSIONI E RACCOMANDAZIONI

43 esperti provenienti da **17 Paesi**, oltre ai rappresentanti di **FAO, ASAE, AIT e CIGR**, hanno partecipato all'11° Meeting – 2ª Parte del Club of Bologna presieduta da *R. O.Hegg*, (U.S.A.), organizzato a Tsukuba (Giappone) in occasione dell'XIV Congresso Mondiale della CIGR per esaminare e discutere il seguente argomento:

Problemi etici nella costruzione delle macchine agricole.

Sono state presentate relazioni introduttive di: **Y. Sarig** (*Israele*), **M. Kinoshita** (*Giappone*), **A. Scotti** (*Italia*).

Y. Sarig (rappresentato da *R. Hegg*) ha svolto un'ampia e documentata relazione rifacendosi al significato del termine etico e applicandolo al settore del *business*, settore che gioca un ruolo importante in diversi gruppi d'attività concernenti la produzione e la vendita di beni nonché la concorrenza. Tale concetto si attaglia bene anche per la meccanizzazione agricola in quanto essa coinvolge i costruttori, i rivenditori, gli esperti dell'assistenza tecnica e il mondo a valle della produzione vegetale e animale. Appare evidente, infatti, l'esigenza etica di produrre macchine che rispondano alle richieste delle diverse agricolture, assicurando qualità ed economicità nello svolgimento delle varie operazioni nel pieno rispetto delle esigenze ambientali, della sicurezza e del comfort dell'operatore, nonché del problema manutentivo. Un buon affare, quindi, non può essere disgiunto da un comportamento etico da parte di chi lo attiva. Inoltre deve garantire il rispetto delle esistenti leggi anti-trust. Nonostante sin dal 1980 sia stata verificato in USA che la grande maggioranza dei costruttori di rilevanza internazionale, così come le associazioni nazionali dei venditori e l'ASAE hanno adottato codici etici relativi alle loro attività, molto rimane ancora da fare affinché tali codici divengano una realtà a tutti i livelli e in tutti i paesi. Da qui la proposta che il Club formuli un *Codice Etico* che identifichi 5/10 valori etici preminenti da rispettare, diffondendolo poi a tutte le industrie e le componenti commerciali invitandole a con-

formarsi ad esso adottandolo come ordinaria regola di comportamento.

M. Kinoshita, rappresentante della Kubota, ha analizzato gli aspetti etici organizzativi – interni all'impianto di Tsukuba per la costruzione di trattori e motori diesel - necessari a salvaguardare la qualità dei prodotti e a migliorare le condizioni di lavoro della manodopera., avendo sempre cura però di limitare i possibili effetti negativi sull'ambiente circostante la fabbrica.

A. Scotti, rappresentante di NHC, ha ricordato come l'applicazione di principi etici nel campo della costruzione delle macchine agricole rappresenti una sorta di sfida per il sistema produttivo in quanto comporta il raggiungimento di obiettivi e criteri organizzativi che devono essere coniugati con gli interessi commerciali e degli utenti finali. L'industria di macchine opera, oggi, in un contesto di relazioni sempre più complesse dovendo soddisfare le esigenze dei vari agricoltori nonché quelle degli organismi istituzionali preposti ai settori agricolo, industriale e ambientale, della salute e sicurezza dei lavoratori. Inoltre, deve confrontarsi con le aspettative delle associazioni agricole, di quelle dei contoterzisti, di quelle ambientaliste etc. L'industria moderna deve quindi assumere la responsabilità della piena funzionalità e qualità dei vari prodotti, partendo dal processo produttivo sino agli aspetti gestionali e operativi delle varie macchine in azienda, tenendo in considerazione le condizioni socio-economiche dei destinatari cui le macchine sono destinate. Richiamata la carta delle Nazioni Unite sui diritti dell'uomo, conclude asserendo che la sensibilità industriale sui problemi etici è in aumento e non si limita più ai soli aspetti relativi alla produzione, ma considera anche le esigenze degli agricoltori e della protezione ambientale.

Udite le tre relazioni, dopo ampia e articolata discussione i convenuti concordano unanimi nell'approvare le seguenti:

Conclusioni e Raccomandazioni

- **Confermano** che i problemi etici in ogni business - quindi anche in quello delle macchine agricole – non si limitano più ai soli aspetti relativi alla produzione. Essi devono includere sin da principio il commercio e l'andamento del mercato, nonché prendere in considerazione le esigenze sociali, tecniche ed economiche dell'utente finale, nel caso specifico dell'agricoltura e dell'ambiente.
- **Considerano** che la progressiva riduzione in atto nel numero delle aziende produttrici dovuta alla globalizzazione dei mercati, potrebbe portare a qualche distorsione nell'offerta trovandosi di fronte a enormi differenze - di tipo sociale, tecnico, economico, organizzativo, pedologico, climatico – dando luogo a grandi difficoltà di interpretazione

delle varie esigenze col rischio che in qualche caso possa mancare il rispetto della legislazione anti-trust vigente nei vari paesi.

- **Si esprimono unanimi** a favore di un impegno del Club per la formulazione di un *codice etico* da diffondere in tutti i paesi ai fini della sua adozione come regola permanente di comportamento cui rigidamente attenersi.
- **Invitano** la presidenza del Club a costituire un ristretto ed articolato gruppo di lavoro costituito di suoi Full Members per la redazione di detto codice etico da presentare, discutere ed approvare nel corso del prossimo XII ° meeting che si svolgerà il a Bologna dal 18 al 19 Novembre 2001.

OPENING SESSION

WELCOME ADDRESSES

Osamu KITANI

President of the Organizing Committee of the XIV Memorial CIGR World Congress - JAPAN

The organizing Committee of this meeting is composed by the Full Members of the Club of Bologna in Japan, and on behalf of this organization I welcome you, I thank you very much for coming, in particular Prof. Pellizzi for installing this special meeting for the first time in Japan and also Prof. Stout who strongly support this initiative and UNACOMA who preciously supported this meeting. This meeting and the tour for tomorrow are arranged by the three main companies in Japan: Kubota, Yanmar and Mitsubishi. Obviously I thank them very much for the economic support they gave us. Particularly there is here Mr. Kinoshita from Kubota that we are going to visit tomorrow. I sincerely hope that all of you will enjoy your stay here and could have good fruits from this opportunity. I think that the mechanisation in the world will be more and more important in the future, because of the human being. Young people want to leave rural areas, and to reach the industrialised ones. For this reason I think we need for the future more mechanisation and this meeting represents a hope for the future of mechanisation. Thank you very much.

Valerio TUGNOLI
UNACOMA - ITALY

Ladies and Gentlemen, on behalf of UNACOMA and of our general director Carlo Ambrogi and President Aproniano Tassinari I am honoured to extend greetings to this session of the Club of Bologna which coincides with the XIV CIGR World Congress. Over these past years the Club's work has grown in importance and authority, because of the issues that came up, as well as, the cultural level of every session. Running down the long list of issues discussed in 10 meetings it is very clear the relevance of the themes presented, linked to both developing and developed countries. Several items on agricultural and farm mechanisation have been deeply treated and the Club' Conclusions and Recommendations - reached at the end of each work session - which are the synthesis of the reports and the debate, provide the keys to correctly move in this dynamic sector toward the future. The first of the three separate meetings planned for this year was held in Brazil during the annual conference of the Brazilian Society of Agricultural Engineering on the issue of the transfer of technology in South-America. As usual, the second appointment was in Bologna, during EIMA, and was focused on new technologies and methods for the evaluation of perishable agricultural products for the fresh market. Finally this third session we are opening now - which coincides with the XIV CIGR World Congress - will debate on the stimulating topic of ethical aspects in manufacturing agricultural machinery. On the philosophy of the Club of Bologna it has been several times stressed the idea that the globalisation of the

market raises new problems for the agricultural mechanisation sector, those which have never been considered before as the ethical aspects, or the innovative post harvester technologies. This today meeting is held in a country which has been able to admirably joint it's great cultural traditions with what the market requires, maintaining at the same time a great respect for the nature. This is the issue for this era, the challenge we must face and overcome so that our children and grandchildren will not just have food, but spaces in which to move. Thank you. Have a good work.

Harmon TOWNE
President of ASAE - U.S.A.

It is my pleasure to be here representing the American Society of Agricultural Engineers; I would like to thank the Club of Bologna for the invitation, I look forward very much to this conference. I think that all of us are very aware of the need we will see for the next few years for the increase of the food production. It has been said that in the next 40 years we will consume as much food as what has been consumed already since the beginning of main kind. Talking about increasing production by almost two and an half times, I think agricultural engineers are obviously those people who are going to make sure that we do have enough food to feed the population. For this conference I hope we will go very well in helping to understand which mechanisation will be required in the next few years. Thank you very much; it is a pleasure to be here.

Giuseppe PELLIZZI
President of the Club of Bologna - ITALY

Mister President, Ladies and Gentlemen, dear Colleagues, It is with very great pleasure that I warmly welcome you all to this second part of the XII Club of Bologna meeting, which is for the first time being held outside its traditional venue of EIMA, the Agricultural Machinery show in Bologna. One particularly interesting aspect of this occasion, here in Tsukuba, is that our meeting coincides with the CIGR Memorial World Congress 2000. I also extend heartfelt thanks to the local organisers who agreed to host the meeting, and in particular: to Prof. Osamu Kitani - one of the Club' founders - whose intense activity has contributed to the organisation of the meeting at such a prestigious venue; to UNACOMA as always highly attentive to international issues; and to CIGR, under whose aegis the Club develops its activities. This is a novel experience for us, which we have undertaken in the hope of making the Club's work ever more widely known and appreciated. In fact, during these first 11 years the Club has established and consolidated itself, achieving a twofold objective: firstly, that of

contributing to the rational development of mechanisation at the global level; secondly, that of creating an international group of colleagues and friends, who are prepared to put their skills and experience at the service of a sector in need of rationalisation, and which increasingly demands a planetary approach due to the globalisation of markets that also involves agricultural machinery and all branches of Agricultural Engineering. The issue of a rational agricultural mechanisation becomes - as it has been pointed out by both O. Kitani and V. Tugnoli - more and more important within the new economy and in light of the fact that also recently it has been pinpointed as a possible solution to the current stagnation in the development of agriculture. All this activity, I am very pleased to note, has been achieved thanks to the farsightedness of UNACOMA - the Italian union of agricultural machinery manufacturers - who have spared no effort in ensuring the success of this initiative. I thank them warmly - on behalf of all of us - and hope that also in the future UNACOMA will continue to support our efforts toward increasing internationalisation. Within our field there are new initiatives being prepared, which we have discussed in the Management Committee. I will give you more information about these at the end of the meeting. For the time being, thanks again to Prof. Kitani and his staff, to President Tassinari and Director Ambrogi of UNACOMA, and to all of you to whom I wish a productive meeting and a pleasant stay in Tsukuba. The subject chosen for this meeting (ethical aspects in manufacturing agricultural machinery and tractors) has been suggested by the progressive globalisation of the market and then the entrance in the so-called new economy. These innovations deeply influence the structure of our manufacturers, the need of productive concentration as well as approaches in the world market, dealing with numerous ethical problems. Few years ago the principle of the total quality applied to the manufacturing of agricultural machines and tractors, was introduced. This represented an important step for the market offering better machines, but the definition of how to supply machines really able to meet the technical, economic and managerial requirements of the farmers was not included. The ethical aspects applied to our sector, at present, enlarge this concept becoming more comprehensive and useful for the farmers. The three Key Note reports - we will discuss today - examine this problem from different point of view: Sarig - who unfortunately was not able to attend this meeting - offers a basic report in which the various aspects are attentively and deeply discussed concluding with the proposal of a code of ethics; while Scotti who was not been able to join us due to a sickness and Kinoshita offer a sectorial analysis on the position of the factories for which they work. The problem seems to me very important and has to be more deeply analysed, as I am convinced that it could be very useful to confirm this topic for consideration to our XII meeting in Bologna next year.

Richard HEGG

Leading person - U.S.A.

My speech will be very not long. As Prof. Pellizzi said, I will be giving a presentation from Yoav Sarig who was unable to attend. I would just make some comments initially dealing with the ethical aspects in manufacturing agricultural machinery and I am pleased that we have here today representatives (Mr. Scotti and Mr. Kinoshita) from the agricultural machinery industry, in many cases we might be speaking to scientists, or professors about this topic in the ethical aspect it is easy to discuss and talk about in a broad sense, but to define and bring it into practice to manufacturers has to be quite difficult. That's because many times we have situations in manufacturing over the years, in various countries where you have requirements that have to be made. So there are some legal requirements that have to be put in place in your manufacturing, certainly in safety aspects for example. But the next phase of that is of looking at an ethical stand point, from where some other things should be installed and put in place for manufacturers, for the situation where they are building a piece of machinery that may be used in developing countries for example. In machinery for the developing countries, or power units there might have some other aspects: the space workers, change the social structure within a community, a country; all this have tremendous ramifications and consequences for these countries. From an ethical stand point we have to project what in the past may be and in many cases looking back for engineers in their training in education, we will prepare mostly very well for the technical aspects of building machines: the size, the strength, the durability. But in many cases engineers are not trained on ethically, what is going to be the impact of their design, through the manufacturing process and into their users. Some of these things we will deal with in our discussion today. Probably a challenge for us here in the Club of Bologna is to share in our discussion today what has been done in other countries, in your country, or in your industries, as far as incorporating an ethical standard, or code in your manufacturing process. Some countries, organisations, companies have such codes that are established and in many cases and in many countries engineers are trained, or better informed of a code of ethics they will need to be operating professionally and ethically. At the end of our discussion today we will be able to share some examples of what could be included in the code of ethics, what kind of process that could be put in place. We - as Club of Bologna - could draft eventually a standardised sort of code of ethics. My suggestion will be: if we will be able to share this with various industries, manufacturing associations in various countries, with the idea that it could be extended and formally or informally adapted by various countries and manufacturers. I think this will be a very exciting and very valuable role, a specific role that Club of Bologna could play and have some real results. At this point I want to conclude my comments giving the floor for the reports to Mr. Y. Sarig, Mr. A. Scotti and Mr. M. Kinoshita. I thank you for being here.

SESSION

Ethical aspects in manufacturing agricultural machines

Leading person: *Richard O. Hegg, U.S.A*

ETHICAL ASPECTS IN MANUFACTURING AGRICULTURAL MACHINES

by *Yoav Sarig*

Israel

1. Introduction

According to the Webster's New World Dictionary, *ethics* is defined as a system of morals of a particular person, religion, group, etc. Thus, having to do with ethics means conforming to professional standards of conduct. However, in spite of this impressive definition, many people construe ethics, at best, as a futile parlor game with no right or wrong. Consequently, these people are not convinced that ethics and values should be an essential part of making professional decisions.

Nevertheless, in response to both the interest of the public, the demands of professional accreditation and spurred in part by costly legal settlements, the necessity for moral values considerations in business decision making is becoming recognized and appreciated by both, individuals and organizations. Thus, many centers already exist, which provide a suitable forum for the exchange of ideas on business ethics in contemporary society [1]. These centers promote efforts to foster an ethical framework for the conduct of business and to establish greater cooperation on ethical issues among academic, corporate, Government, labor and public interest groups. In addition, professional ethics is being taught in many universities, where efforts range from single class sessions in courses and other subjects, to full courses [2, 1, 3].

The field of *business ethics* is of particular interest since it has a role to play in a large number of communities, such as customers, employees, suppliers, competitors and shareholders. Further more, the mobility of employment, capital, products and technology

is making business increasingly global in its transactions and its effects. Business ethics has traditionally been mostly the domain of philosophers, academics and social critics. However, since the mid-seventies and increasingly since, business ethics has been moving more and more to the forefront of social thought. There are now a great number of national and international books, seminars, symposia, professorships, ethics networks, and journals exclusively devoted to business ethics. However, much of today's literature and university courses about business ethics is still not geared toward the practical needs of leaders and managers – the people primarily responsible for managing ethics in the workplace [3, 4]. Current literature is filled with strong arguments for more ethical corporate leadership and the incorporation of ethics in business curriculum, but what is conspicuously missing is the “how to” of managing ethics in the workplace and actually putting ethical goals and theories into practical action.

Manufacturing of agricultural machinery is part of the business community and thus, most of the general business ethics issues dealt with by other sectors are relevant for this one too. However, since this sector is associated with the basic issue of providing food to mankind, some additional ethical problems may be involved, which merit special considerations.

The objective of this paper is to present the concept of business ethics in general, but focus in particular on the specific characteristics of agricultural machinery manufacturing with regard to ethics. In addition, a proposed framework for a code of ethics for this sector will be presented as part of the efforts to foster an ethical framework for the conduct of the agricultural machinery business. The objective of this presentation is not to provide a blueprint for solving every conceivable ethical problem in regard to manufacturing of agricultural machinery. Also, no detailed “Code of Ethics” is attempted. Rather, it aims at presenting some key ethical issues that need to be addressed and discussed in regard to this sector. It is

hoped that within the framework of the Club of Bologna, such discussion and consideration of the issues involved will contribute to the establishment of greater cooperation on ethical issues of agricultural machinery manufacturing among academic, corporate, Government, labor and public interest groups. It is also hoped that subsequently, a specific “code of ethics” could be discussed and proposed for this sector and hopefully adopted by all parties involved, worldwide.

2. Business ethics

2.1. What is business ethics?

The concept of business ethics has come to mean different things to various people. Lack of involvement from leaders and managers in the field of business ethics has, in general, spawned a great deal of confusion and misunderstanding that very often tends to bring up cynicism, righteousness, paranoia, and even laughter. Many leaders and managers also believe business ethics to be a sort of religion because it seems to contain a great deal of preaching. Or, they believe it to be superfluous because it seems to merely assert the obvious: “do good” [5].

Business ethics has been considered intuitively in the past as the ability to know what is right or wrong in the workplace and doing what’s right in regard to effects of products/services and in relationship with stakeholders. However, the “right thing” is not nearly as straightforward as conveyed in a great deal of business ethics literature. In general, there is no clear moral compass to guide leaders through today’s complex dilemmas about what is right or wrong. While in many cases it ought to be fairly easy to choose between the two by relying on principles, business activity often demands that we select from alternatives that are neither wholly right or wholly wrong.

In contrast to some myths about business ethics it is not a discipline best led by philosophers, academics and theologians. It is, rather, a management discipline with a programmatic approach that includes several practical tools. It is, according to [6], the way

to determine responsibility in business dealings and an application of ethics to the corporate community. Managing ethics in the workplace involves identifying and prioritizing values to guide behaviors in the organization, and establishing associated policies and procedures to ensure those behaviors are conducted.

2.2. Why business ethics?

Many people are used to reading or hearing of the moral benefits of attention to business ethics. However, there are other types, more tangible benefits, as well.

Business ethics has come to be considered a management discipline, especially since the birth of the social responsibility movement in the 1960s [7]. In that decade, social awareness movements raised expectations of business to use their massive financial and social influence to address social problems such as poverty, crime, environmental protection, equal rights, public health and improving education. An increasing number of people assert that because business was making profit from using the country’s resources, these businesses owe it to the country to work to improve society.

The emergence of business ethics is similar to other management disciplines. For example, organizations realized that they needed to manage a more positive image to the public and so the relatively recent discipline of public relations was born. Organizations realized they needed to better manage their human resources and so the recent discipline of human resources was born. As commerce became more complicated and dynamic, organizations realized they needed more guidance to ensure their dealings supported the common good and did not harm others – and so business ethics was born.

Business has already been recognized as the dominant social institution in both capitalist and non-capitalist societies. But, with that dominance come special responsibilities and obligations – to the environment, to social integration and to raising the standards of health, education, workplace safety and economic well-being. Business leaders have

the flexibility, adaptability, and many also the willingness to take risks to enable business to contribute to the improvement of society. By embracing business ethics principles they begin a process that identifies shared values, reconciles differing values, and thereby develops a shared perspective on business behavior acceptable and honored by all.

In more general terms, businesses must care about ethics because businesses are part of a human community. On the other hand, businesses can derive various types of benefits from managing ethics in the workplace. Attention to business ethics has already substantially improved society by placing high value on fairness and equal rights; implementing anti-trust laws; organizing unions and establishing laws and regulation regarding racial, sex and age discrimination, to name only a few changes. In addition, ethics programs activate strong teamwork and productivity. Usually, an organization finds surprising disparity between its preferred values and the values actually reflected by behaviors in the workplace. Ongoing attention and dialogue regarding values in the workplace builds openness, integrity and community awareness – a critical ingredient of strong teams in the workplace. Employees feel strong alignment between their values and those of the organization and react with strong motivation and performance.

Ethical principles are often state-of-the-art legal matters. These principles are often applied to current major ethical issues to become legislation. Thus, it's far better to incur the cost of mechanisms to ensure ethical practices now, than to incur cost of litigation later. Also, ethics programs tend to detect ethical issues and violations early on, so they can be reported or addressed before any harm is done. This lowers the risks of potential penalties if an organization was shown to have already made an effort to operate ethically [7].

Ethics programs can also help manage values associated with quality management and strategic planning. Total Quality Management (TQM) includes high priority on certain

operating values, e.g., trust among stakeholders, performance, reliability, measurement, and feedback. Thus, for example, Eastman and Polaroid companies use their ethics tools in their quality programs to ensure integrity in their relationship with stakeholders. Similarly, ethics management techniques are highly useful for managing strategic values, e.g., expand market share, reduce costs, etc. A good example is McDonnell Douglas company, which has integrated their ethics programs into their strategic planning process.

Various empirical studies [8] reveal a positive correlation between ethical conduct in a corporation and job satisfaction. Where top management is seen as giving strong support for ethical conduct, job satisfaction increases together with the degree of employee identification with the corporation. Everything points to the conclusion that a positive reciprocal relationship exists between “job satisfaction” and “ethical conduct”.

Attention to ethics is also strong public relations. The fact that an organization regularly gives attention to its ethics can portray a strong positive to the public and has a direct bearing on effective marketing. To quote Bob Dunn, President and CEO of San-Francisco-based Business for Social Responsibility: “Ethical values, consistently applied, are the cornerstones in building a commercially successful and socially responsible business” [9].

The overall benefits of ethical programs are adequately described by [10]. They explain that: “managing ethical values in the workplace legitimizes managerial actions, strengthens the coherence and balance of the organization's culture, improves trust in relationships between individuals and groups, supports greater consistency in standards and qualities of products, and cultivates greater sensitivity to the impact of the enterprise's values and message”.

3. Major issues related to ethics of agricultural machinery manufacturing

The agricultural machinery-manufacturing sector is unique in the sense that it is involved with the indisputable important task of producing food for mankind. Hence, the responsibilities of this sector carry beyond the obvious commercial considerations. Thus, for example, ethics in this specific case requires that accessibility to its products can not be denied from any individual, organization or a country. Selling a plough, or a grain combine, which are essential for food production, is not like selling military hardware, cars or electrical appliances, where only commercial or political arguments prevail.

While environmental issues are of global interest, agriculture machinery is intertwined with ecological and environmental issues. Agricultural machinery can be both, a contributor to detrimental aspects of the environment (e.g. excessive chemical residues as a result of pesticides and herbicides application; compaction of soils due to the use of heavy tractors, increasing air pollution by the practice of burning plant residues, etc), or be affected by itself by the deteriorating quality of the environment (e.g. excessive wear of tractors because of air pollution; clogging of irrigation system due to polluted water, etc). Hence, as part of their ethics responsibility, but also for their own benefit, the manufacturers of agricultural machinery ought to include in their considerations of performance optimization, the effect of their products on the environment. Thus, for example, recycling and proper disposing of scrap materials is not only good business, but also an ethical one.

Agriculture does not (or at least should not) recognize political borders. Thus, it is of global interest that big manufacturers in developed countries should find the mechanism for manufacturing their products in less developed and less privileged countries. While, admittedly, the issue of intellectual properties is still of major concern in some of the less developed countries and should be dealt with, practice shows that, manufacturing on the spot, is in many cases more economically then selling “of the shelf”.

Thus, ethics and good business motivation coincides.

Because the agricultural machinery-manufacturing sector is associated with providing the necessary tools for the production and preservation of food, the results of any development made by this sector should be universally available

Finally, the agricultural machinery industry should cater to the welfare of the end users – the farmers. Thus, for example, the industry shouldn't only consider issues of performance optimization but also ergonomic issues and other design features to ease the job make it safer and easy to follow.

4. Code of ethics

A code of ethics aims to set a standard against which business behavior can be measured. It combines the description of the highest values to which the company aspires to operate – the “thou shalt’s, with the specification of the ethical rules of operation - the “thou shalt not’s”. In the latter 1980s, the “Conference Board”, a leading business membership organization in the U.S., found that 76% of corporations surveyed had codes of ethics. Among these are already several agricultural machinery manufacturers, such as “Caterpillar Tractor’ Co”, “Deer & Company” and related organizations, such as the Association of Agricultural Computing Companies, Machinery Dealers National Association, American Society of Agricultural Engineers – all in the U.S., to name only a few.

Some business ethicists disagree that codes have any value. Usually, they explain that too much focus is put on the codes themselves, which by themselves are not influential in managing ethics in the workplace. Many ethicists, however, argue that it's the *developing* and *continuing dialogue* around the code's values that is most important.

Occasionally, employees react to codes with suspicion, believing that they relate to values that are (by American tradition at least) “motherhood and apple pie” and codes are for window dressing only. But, when managing a

complex issue, especially in a crisis, having a code can be critical [11].

Numerous codes of ethics already exist, but most are being specific to a single discipline and often to only one country. This is the result of the difficulties in expressing in a single code the concern of different organizations in various countries.

Nevertheless, it is possible to present a methodology for assessing an ethical code framework, which comprises the key elements that all codes of ethics should include. Such a methodology has been proposed by an international consortium of scientists assembled in Toronto, Canada, and is known as the “Toronto Resolution” [12]. The Toronto Resolution suggests that codes adopt a Common Preamble, and that while considering common elements to their codes, each discipline should, however, develop its particular code in the light of these considerations.

While the resolution is not specifically targeted towards agricultural machinery manufacturing, it may form the basis for judging the completeness and suitability of other codes, which have been developed by various societies.

4.1. Basic elements of codes ethics

Most of the codes developed are geared primarily at guiding relations among staff. However, Code of Ethics should be far more broader and reflect the interrelationship between various parts in a specific sector.

The following are some basic elements for a more general “Code of Ethics”, developed on the basis of the “Toronto Resolution” and adapted for the specific case of our presentation:

- a code should be adapted as the highest priority policy for governing all current and future actions and procedures, both in dealing with those outside the organization and in the relationships with members and/or employees within their ranks;

- a code should be sufficiently general to encompass the work and behavior of all those engaged in the discipline;
- a code should oppose prejudice with respect to sex, religion or ethnic origin, age, sexual preference, color, or physical or mental disability;
- a code should take into account that, while in general it is difficult to anticipate all the consequences of certain operations, all parties within a certain sector have a responsibility to try to foresee and to keep themselves aware of, the developing applications of their work, and to choose or redirect it accordingly.

When developing a code of ethics the following suggested guidelines should also be considered:

- identify values needed to address current issues in your workplace and decide on the top five to ten ethical values, which are high priorities in your organization;
- announce and distribute the new code of ethics, including wording that indicates that all members of the sector are expected to conform to the values stated in the code of ethics.

5. A proposed code of ethics for agricultural machinery manufacturers

5.1. Preamble

The agricultural machinery manufacturers are not organized, to the best of my knowledge, in a worldwide association with designated rules and by-laws. Nor are there country-base associations. Thus, the first step should be to initiate such organizations. Nevertheless, even before such organization takes place, all members of this sector can, and should make a commitment to quality, innovation and integrity by following the highest standards of ethical conduct. These standards will be embodied in a “Code of Ethics” for this sector, to be followed (after and if adopted) by all members of this sector.

The following is a tentative proposal for a “Code of Ethics” for the agricultural machinery manufacturers sector, to be discussed and considered by the Club of Bologna. It is suggested that, after mutual input of the club members, a final version should be adopted and distributed, worldwide, among members of this sector for their feedback and suggestions for changes, and final endorsement.

5.2. Proposed Code of Ethics

Every code of ethics contains, in general, the obvious common ethics “musts”, such as: “Obey the law”, “Be honest”, “Be fair”, “Be concerned” and “Be responsible”. For a more specific and directed approach **Figure 1** suggests the interrelationship between the various parts which comprise the agricultural machinery manufacturing sector – the “stakeholders” – meaning to include employees, customers, suppliers and the wider community.

The success of this sector depends in large part on the trust that these parts of the “puzzle” have in this industry. Thus, a set of responsibilities should be stated for each one of its components, forming together the comprehensive “Code of ethics”.

6. Conclusions

The modern industry, including that of manufacturing agricultural machinery, must deal, almost on a daily basis, with numerous ethical problems, such as potential conflicts of interest, wrongful use of resources, disputes among employees, mismanagement of contracts and agreements, etc. Thus, a business ethics framework is needed as a management tool. This framework can be defined by a set of rules – known, as the “Code of ethics” to which all members of the sector must adhere. Following this code of ethics is not only morally justified, but it can render the industry a lot of benefits.

The agricultural machinery industry, although not a big enterprise in some countries, can also benefit by formulating adopting and enforcing a specific code of ethics. The

proposed guidelines for such a code should serve as the first step towards achieving this goal.

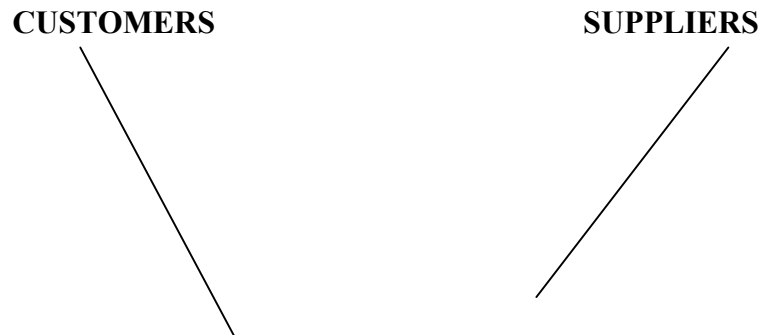
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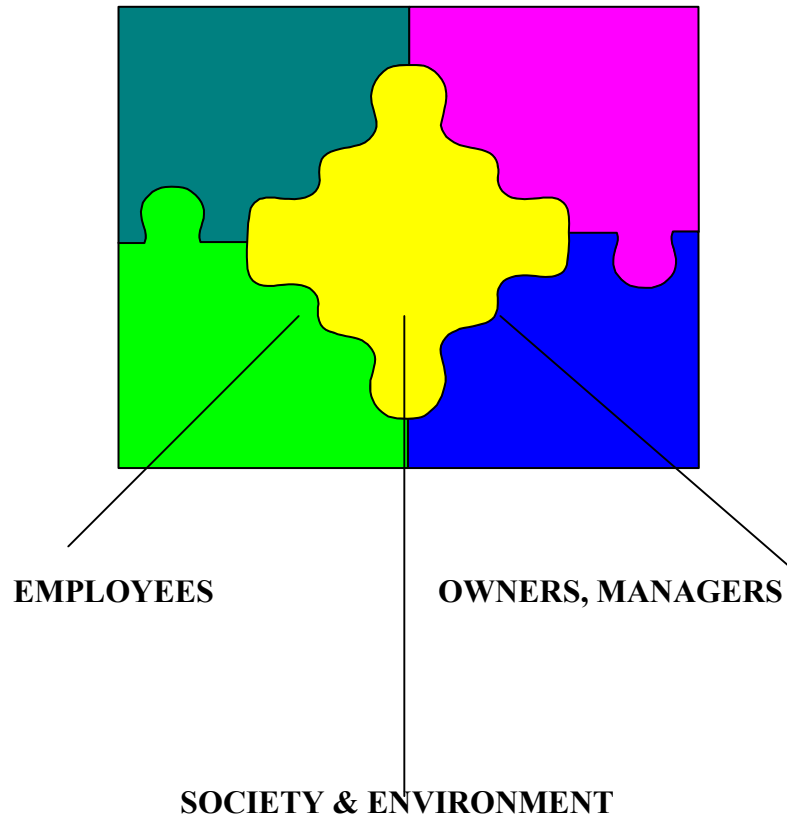
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Figure 1 - Schematic of Code of Ethics “Puzzle” for the agricultural machinery manufacturers, encompassing all parties concerned





ETHICAL ASPECTS OF AGRICULTURAL MACHINERY PRODUCTION

by *Alessandro Scotti*

Italy

1. Preamble

Agriculture may be considered man's first stable occupation after hunting and gathering fruits at random, when he settled to cultivating and harvesting the crops of the soil. This agriculture and the need for food gave birth to the first rudimentary tools, the ancestors of mechanisation. These tools were later made by blacksmiths and craftsmen until the arrival of the "factory" which marks the passage from an agricultural to an industrial economy. This was a drastic change, both in society and in technology, and with all its implications over the centuries, led to the current stage of evolution, i.e. the "new economy" or the era of global communication and information in real time.

2. Introductory remarks

The relationship between ethical principles and the practicalities of production is a complex subject which has acquired an ever-greater importance over the years. Ethical principles present a sort of challenge to the production system because they set objectives and organisational criteria which may conflict with strictly commercial interests. Nonetheless, in recent years there has been a greater integration of ethics and business strategy, as can be seen from the blossoming of a whole sector of literature devoted to this subject.

Two principal causes have brought this about. The first is the greater public attention which is now directed to issues concerning sustainable development, the social responsibilities of business and how

commercial interests "should" perform in the social context. The second is the recognition that there is often a substantial meeting of ethical and business interests, which is why ethical conduct has become a valuable factor in evaluating companies and products.

In the near future, the progressive trend towards an economy of outsourcing, which will even affect traditional production sectors generally prone to 'integrate' all the stages of production, will give increasing importance to the performance reliability and ethical qualifications of both companies and individual professionals.

3. Ethical problems in relation to agriculture

More than almost any other, agriculture is the sector which expresses and interprets the relationship between "nature" and "civilisation" since its function is to manage natural resources and harness them so as to achieve economic and social objectives. Essentially, agriculture creates a second "natural world", and for this reason its objectives, methods and results must be subjected to a re-evaluation in ethical terms.

Agricultural mechanisation has a fundamental part to play in the process of "domesticating" nature, not only because it represents substituting manual or animal labour with mechanical means, but because historically it marks the start of new methods of agricultural and allied sector development, introducing principles of rationalisation and industrialisation to the primary activity.

Sicco Mansholt, one of the most important and authoritative Commissioners of the European Community, was the first to coin the description of agriculture as an "industry like all the others", meaning that in terms of commercial rationality, finance, efficiency and competitiveness and most of all, in management, agricultural enterprises should adopt the same principles as industry in order to be successful.

It is self-evident that agricultural mechanisation has been a determining factor in improving working conditions for those involved in agricultural production. The changes in the amount of labour required have meant that there is greater freedom to engage in activities which are not strictly tied to agriculture. These changes have improved social conditions and, above all, have released intellectual energy to be devoted to the impreditorial aspects of optimising both farm organisation and production. In fact, it is mechanisation which gave the stimulus to transform that agricultural farm of fifty years ago from a "home consumption" enterprise into a real business, buying technical equipment and machinery externally and launching itself upon the market.

According to [1] "it is mechanisation which has not only made more accurate work possible but has also released capital by removing the need for animals to provide power, thus freeing the land from the need to produce forage crops and making it available for other crop production to be sold on the market."

4. New horizons in the world of agriculture and some ethical reflections

Recent economic developments and social changes have brought about an ever-widening spectrum of conflicting demands. The traditional concept of the agricultural economy has been replaced by "agricultural economies" which take account of the specific differences of the varying geographical areas and their individual development patterns. The very markets themselves are in continuous evolution according to their orientation and customer needs.

Due to this evolution, the mechanisation industry today finds itself operating within ever more complex relationships. If once upon a time its prime relationship was more or less exclusively with the farmer, today it has to deal with institutional organisms directing agriculture, industry, the environment and health, with political matters, with research institutes, with

consumer groups, with unions, environmental movements and with groups taking an active interest in specific subjects.

The themes of environment, diet and affluence are ever more pertinent to agriculture as the trends in EEC policy show by assigning a plurality of functions to the primary sector. The agricultural machinery industry is required to contribute in putting these widely shared policies into effect. On one side there is the maintenance of high levels of productivity and an adequate return for farmers and on the other, the conservation of natural resources and improvement of quality standards for the consumer.

Such policies as the defence of the environment, land protection, retention and rejuvenation of rural populations in the countryside, the entry of women into agricultural management functions, can all be brought to fruition with the contribution of highly developed and specialised mechanisation.

"One modern aspect of the innovations in particular - writes [1] - is the containment of the effect on the environment from production processes, or rather it is the research for "gentle" as opposed to "aggressive" technology or the heavy use of industrial methods of the recent past."

"Quite rightly, the environment has become an important factor - states [2] in economic and social policy decisions. For example, it is likely that the unrestrained process of urbanisation through which we have lived will revert to a return to green. The growth of part time work in which profit cannot be the determining factor" ... "these very agricultural machines have evolved and are continuing to evolve very quickly indeed, all aimed at specialisation, at meeting all the world requirements which are ever more diverse and diversified".

5. Ethical principles in industrial production with particular reference to agricultural mechanisation

As with the other industrial sectors, agricultural mechanisation is experiencing ethical difficulties tied to the product characteristics and production system. Some ethical principles, which are now recognised as being component parts of business culture, appear more obvious and binding in the particular area of agricultural mechanisation.

If we place the manufacture of agricultural machinery in relation to its objective, it is worth emphasising how at the outset of its history, mechanisation was understood as “motorisation”, that is a simple substitution for animal and/or human labour with mechanical output, and that those days were a long way from imagining operator comfort, let alone emission and soil compaction reductions as an image of ecological compatibility.

Evolution of agricultural machinery design is not just a result of applying new technology in manufacture - electronic controls, robotisation of various operations etc. - but bears witness to a cultural maturity which has increased the industry’s attention over time to the needs of the operator in terms of function, safety and ergonomics.

These days, design draws its inspiration from integration with the component supplier and takes other requirements suggested by various groups (distribution network, farmers, contractors) into account at the planning stage.

5.1. Modern industry must take responsibility for the functionality and quality of the product produced. Systems for certification, monitoring procedures and product verification are set up for this purpose. Such responsibility grows in accordance with the purpose of the product. In the case of agricultural machinery, this is a strategically important instrument for obtaining our essentials such as food and basic raw materials, and the major companies in this sector have obtained international certification, such as ISO 9000.

5.2. The company takes responsibility not only for the product, but also for the production process choice of materials, design

criteria, production organisation, working conditions). This aspect has become more important today as the old “Taylorist” production model, which aimed at maximum rationalisation of work in the factory taken as the place where all operations were concentrated, has been superseded by more flexible systems.

The processes of outsourcing some phases of production should make the company take on responsibility for this very outsourcing, for example for working conditions of the employees in emerging nations who are often not protected in terms of human or workers’ rights.

In this context it is interesting to note the introduction of the “Sa 8000” certificate, instituted in 1998 on the basis of the requirements of the Declaration of Human Rights, of the International Labour Organisation and by the United Nations’ Charter on the Rights of the Young, which guarantees that the work process to produce a particular product respects an international ethical code.

This principle particularly involves those industrial sectors which produce complex machinery, agricultural mechanisation among them, which often requires assembly of parts and sub-assemblies that have been produced separately.

5.3. Industry must also take responsibility for the “on-going” effects of the technology it produces by developing methods of evaluating wear on materials, the life of a product and possible impact on the environment and public safety.

Evaluation of the impact on the environment has now become part of, and fundamental to, the development phase of a new product since reduction of the effect on the ecosystem is a definitive feature of modern mechanical and electronic technology. An example of this is precision farming which is more than just a system, but a real network of systems. It is only in its early infancy but it will bring a significant revolution in agriculture. The use of a variety of machinery (tractors and related implements, machinery for harvesting and

soil treatment), all equipped with technologically advanced electronic management systems in an interconnected real time network, will bring an increase in agricultural productivity and reduce the negative impact on the environment.

One interesting ethical aspect is that improvements in technology are made on all mechanical products regardless of their final destination on the market. No differentiation is made in terms of quality between those products for the most developed markets and those for the poorest economies. These are now suffering less and less in terms of pollution, exploitation of resources, safety at work, whilst receiving the benefits of increased productivity.

5.4. Socio-economic considerations in the context in which the product is produced, developed and *marketed* also take on an ethical importance because they involve principles of social stability and integration with the other manufacturing sectors which are fundamental to the smooth development of the economy and to co-operation between the sectors. At a social level, industry must be capable of managing the changes in the production system so as to defend principles of social stability and the dignity of the worker.

“We are passing from a climate in which social rights of workers in the employment market had an almost universal acceptance - declares [3] - and were protected by solid and lasting regulations, to a climate in which workers’ rights seem to be fading away under commercial pressures and other demands. Whilst the factory becomes a place of loyalty, the employment market becomes a place of uncertainty, fragmentation, differences in class, race and sex, and a place without basic universal rights”.

Putting policies into place within a company for professional re-qualification and personnel training is an important contribution in maintaining employment and therefore in maintaining social stability. This makes it an undertaking of an ethical nature.

Development in company communication, adhering to ethical criteria of truth, coherence and coincidence between “image” and “reality” is another ethical challenge for the agricultural mechanisation industry which needs to improve its own network of communication.

5.5. Taking account of the customer as a person instead of just as a “user” leads to development not only in the efficiency of the machine, but also in its ergonomic, safety and operator comfort qualities. Led by the automotive industry, this is the field in which the agricultural machinery industry has perhaps made its most visible and solid progress, even amongst the general public.

The most obvious example of this in agricultural machinery is the cab which, although it has been on the market for many years, has improved its operator protection features greatly during the last decade. It has been improved in many ways, not only does it protect the operator from possible roll-over, but also from external pollution thanks to ever more efficient air conditioning systems, providing protection from poisonous chemicals due to the so-called “Spray Ready” cabs which have recently been introduced onto the market. These provide air pressurisation and filtration sufficient to protect the operator’s health to a reasonable level. Noise at the operator’s ear has also been notably reduced and has reached levels at which this organ of the human body can be considered protected. This positive trend will most certainly continue in the future.

As far as the overall comfort of the operator is concerned, we should not forget the suspension systems on one or both vehicle axles and cab suspension, plus a diversity of ergonomic features such as electronic functions like various types of semi-automatic and fully automatic transmissions replacing the mechanical clutch, semi-automatic engagement of 4-wheel drive and diff-locks, wheel slip control and automatic work cycles which can be programmed for operation on the headlands. All these systems, usually electronic, were initially seen by the market as being “useless gadgets” and were greeted

diffidently. However the operators were not slow to realise how great a contribution such improvements made both in increasing efficiency in cultivation work as well as reducing needless work and fatigue for them. This has lessened the amount of physical and mental effort needed, freeing the driver to concentrate his attention on more fundamental requirements of the task, i.e. the cultivation.

6. Conclusions

Industry's sensitivity to moral problems is certainly increasing in modern society and attention is ever more directed towards aspects which were previously only given slight attention from an ethical point of view.

This greater sensitivity can be seen both as regards the human society, as well as towards the well being of the individual customer. Among the ethical aspects of the society, it must be remembered that the Company no longer just has an ethical responsibility for production which it manages directly, but now has a wider responsibility for the whole manufacturing process including, for example, those areas which are outsourced. It has an equal responsibility for the lifetime of the product. Such factors such as environmental impact are taken into consideration depending upon the various product uses. Amongst those ethical aspects concerning the customer, the growing consciousness of the need to safeguard the operator should be emphasised, not only those aspects which are more obvious, i.e. protecting his physical well-being, but also those which were taken as less important a little while ago, such as improvements in the farmer's social conditions and reduction of physical and mental stress.

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ETHICAL ASPECTS OF MANUFACTURING AGRICULTURAL MACHINERY

by *Mikio Kinoshita*

Japan

1. Introduction

KUBOTA, founded in 1890, started as a manufacturer of metal casting. Its business continued to diversify for 11 decades, and KUBOTA now integrates five Consolidated Divisions. Those fields in order of business volume are:

- Farm & Industrial Machinery;
- Pipe and Fluid Systems Engineering;
- Environment Control Plant;
- Housing Materials & Utilities;
- Cast Material Products.

The 2000 product items manufactured under these Consolidated Divisions comprise the KUBOTA brand today. KUBOTA is proud to have specialized in the construction of social infrastructure and living facilities through its corporate history. This means that the company has always worked to improve people's quality of life for 110 years.

The Farm & Industrial Machinery Consolidated Division of which I am in charge, manufactures KUBOTA's agricultural machinery. Its sales approximates to 40% of the company's total sales, which is over US\$ 3,000 million. Number of personnel is 5,600. The 5 major businesses under this Consolidated Division are:

- Farm Machinery (including Tractors);
- Construction Machinery;
- Engines;
- Vending Machinery;
- Electronic Equipped Machinery.

Its three manufacturing facilities are sited in Sakai (Osaka Pref.), Tsukuba (Ibaraki Pref.),

and Utsunomiya (Tochigi Pref.). This report is based on what is practiced at the Tsukuba Plant. A tour of the plant is scheduled tomorrow, November 27th.

KUBOTA Tsukuba Plant was founded in 1975 as a tractor and diesel engine manufacturing facility. In the beginning of this year, it has achieved a one million accumulated number of tractor production. The facility specializes in tractors of 20 to 50 HP for rice-field agriculture, mainly for domestic markets.

In the following, I will focus on two of the "Ethical Aspects" of Tsukuba Plant and will thereby give an idea of KUBOTA's viewpoint and goal regarding this issue. The two aspects are:

- preserving the plant's natural surroundings;
- upgrading the workers' working environment.

2. Ethical aspects of Tsukuba Plant

2.1. Preserving the plant's natural surroundings

Today, the world is suffering from environmental changes brought about by various types of air pollution causing acid rain and global warming. In this situation, the role that we as manufacturers must play in saving the environment from further deterioration is not a small one. The focus is on the preservation of natural surroundings of production facilities.

In January, 1996, Tsukuba Plant was recognized as a facility conforming to the ISO 14001 Environmental Management System. Soon after, the principles of environmental management at this plant were standardized as Tsukuba Plant Environmental Policy - a policy towards the preservation of its surroundings.

Tsukuba Plant Environmental Policy:

- eliminate polluting factors in all stages of production and services - purchasing, product processing, waste disposal,

recycling and repair. Establish a general plan of environmental improvement from a long-term perspective such that would permanently minimize the influence of polluting factors. Upgrading the production system and improving the material used, are some examples;

- establish a control standard conforming to the national and/or regional regulation. Make sure that practice always meets the standard;
- set goals and make plans for achievement. Check and evaluate regularly;
- enhance worker's awareness toward the preservation of the plant's natural surroundings;
- act as a member of the community by supporting and taking part in environmental preservation activities;
- let the public know of this Environmental Policy.

It goes without saying that the validity of a policy depends on whether the achievements can be assessed in terms of numerically targeted goals. The following is this year's goal for Tsukuba Plant.

Tsukuba Environmental Preservation Goal for the 2000 Fiscal Year:

- cut down on energy consumption causing global warming, air pollution, and acid rain. The amount of electricity, oil, and town gas consumed must be reduced 1% to that of the previous year. Engines of delivering vehicles coming into the site must not be idling;
- minimize industrial waste. The amount of paper consumed, and the amount of dirt, wastewater, and chips from processing lines must all be reduced respectively ranging between 5 and 30% to that of the previous year.

There are two more measures taken that I believe are worth nothing in addition to those just mentioned. They are:

- stop the use of TCE (trichloroethylene) and other toxic chemicals;
- carry out environmental accident drills.

Next, I will comment on the upgrading of workers' working environment.

3. Upgrading the workers working environment

As a leading manufacturing facility of tractors and engines, KUBOTA Tsukuba Plant features automated and labor-saving production lines, minimizing excess workload and maximizing safety and hygiene around the workplace. At the same time, we have always tried to meet customer demands, by changing the system from mass production to diversified production, by raising the accuracy and improving the functions of our products. As a consequence, highly complex assembly lines emerged on the production scene.

In order to meet the high levels of technical demand and realize an ideal working condition at the same time, a new computer-aided worker support system is now devised. I would like to elaborate on this in the following.

3.1. Tsukuba's Production system for a safe and clean working environment

- Automated lines for sheet metal welding and painting processes. This minimizes workers' exposure to welding fumes and organic solvent. Water-soluble paint is used in the base-painting process.
- On the main assembly, laborsaving investments for large and/or heavy parts assembly, and high-momentum bolting. This reduces workers' physical strain.
- Streaming inter-process logistics of large and/or heavy parts. Tsukuba Plant has an in-house automated monorail system for carrying transmission units,

engines, and tractor cabins around the work floor.

3.2. OHSAS 18001

OHSAS 18001 was established in April, 1998 as Working Safety Management System. It is now administered by the British Standards Institution and other firms and organizations. But in the near future it is said to become ISO 18001. Meeting this standard means not just reaching the targeted figure. The real focus is on how the management system was realized - in other words, how the organization and the procedure for making it work, was designed and implemented. Tsukuba Plant is now put under evaluation. And if it passes, it will become a certified ISO 18001 plant by the end of this year.

In June, 1994, Tsukuba Plant was given the ISO 9002 for its significant quality system. And in January, 1994, the ISO 14001 for its significant environmental policy. When it receives the OHSAS 18001, or, the ISO 18001, the three systems of quality control, environmental preservation and worker safety management will together be an integral part of Tsukuba Plant's management.

4. Conclusions

We are now in the starting point of a new century. Around us are such issues as air pollution and global warming, exhaustion of natural resources, over-population and poverty, food shortage - these are all urgent matters waiting to be solved. And the solution lies where man finds a way to live in harmony with nature.

The ultimate goal cannot be attained only by the power of one nation, company, or individual alone. However, it is my conviction that there must be a role we as manufacturers of agricultural machinery can play in these difficult times.

Agriculture and natural environment is closely related to each other. After all, farming is impossible without good earth and the supporting environment. In other words, the blessing of nature is the true premise of our business. We should never forget this fact

and keep our environmental activities running.

As the person in charge of KUBOTA's Farm & Industrial Machinery, I hope there is something in what was said that would be a hint for the main discussions of this Conference.

DISCUSSION

Richard O. HEGG

Thank you Mr. Kinoshita for your very good presentation and certainly a very good view of what your plant is doing from working safety stand point and environmental stand point. It shows a very good description of the commitment that your company has made and probably at this time what I would like you to is if you have some questions right now for Mr. Kinoshita we would have that discussion about ten minutes in the way to install an other computer here for the other presentation, so if you have thoughts or comments, please direct them to Mr. Kinoshita.

Lawrence CLARKE

FAO

Just a question for Mr. Kinoshita. We – as FAO – we work very much primarily in developing countries and we realised that for manufacturers like your-self there is very often a conflict between the necessity to maintain sellers and to compete with other products in market. In many developing countries there is no the legislative framework in place, which controls the standard of the equipments, imported into those countries. There is a temptation by companies to cut costs; so that the machinery we are selling will become competitive and very often it is environmental safety aspect of the machine, which suffers for that. I realise it is a quite difficult question to answer, but I would be very interested to hear what Kubota's policy is regarding the expo products in relation to competitive products, how to maintain competitiveness with the need to deliver safe products.

Mikio KINOSHITA

I can tell you, for example, our practice concerning farmer's safety. In our country we need ROPS (Roll Over Protective Structure). Most part of the Developing Countries does not want rops, because of costs. I would like to mention our policy to keep our competitiveness in Developing Countries, but I can't.

Lawrence CLARKE

I guess that in this forum we cannot pursue this grade of depth because it is in its-self point for discussion for our meeting. I certainly understand the position of the manufacturers, because they are driven by the need of share and it is of course difficult in a competing market to reach this.

Mikio KINOSHITA

Considering your previous question, applied for example to engine emissions. Your question should be: what is Kubota policy concerning engine emissions for tractors exported in Developing Countries? Is it right? Many countries have their own regulation as you know and Japan too has one. I can't say that regulation needs as to have an equal point of requests because countries, or regulations needs are different. Now U.S.

has the strictest regulation; our company regulation is rather soft, but we are now shipping engines, which meet the more strict regulations for the emissions. About engines, making different type of these is not so economical.

Yoshisuke KISHIDA

JAPAN

Mr. Kinoshita you pointed out about environmental question and employees' safety. Do you think you have other points related to the ethical aspects?

Mikio KINOSHITA

My response is: what's ethic? It has many meanings. I just focused on manufacturing point of view about ethics, but in general it is a very big subject concerning also human being.

Hermann AUERNHAMMER

GERMANY

Mr. Kinoshita you gave us a lot of interesting information. You talked only about Tsukuba's plant. Are the targets you mentioned the same for the other two plants, or do you have one top plant where you try to establish new standards, to apply then to the others?

Mikio KINOSHITA

The last case. The Tsukuba's plant is the most advanced in that sense, so once we build up some concept, then we try to spread to other factories in 2-3 years. So that Tsukuba's staff will transfer ideas to the others.

Kyeong Uk KIM

KOREA

It is just a comment, but I think there are several cases on which we can talk about the ethics. Machinery manufacturers toward society, or consumers, or nature or other manufactures. So I think that the speaker has primary focused on environmental aspect. Do you have such a code for each area of consumers, of employees for example, and so on?

Richard HEGG

Would you kindly give us an example of what you cited before as "a code for environment".

Mikio KINOSHITA

I do not think that I have to cover all the points of view. Make me a question, for example what are we doing for consumers.

Richard O. HEGG

I think you explained you have an environmental code of ethics for your plant. Is it a code for the whole company, or the whole division?

Mikio KINOSHITA

If you mean total Kubota corporation I would say no.

Pierre ABEELS

BELGIUM

My question is directed to Mr. Kinoshita. It was a real sincere confession of what happens in Kubota here in Tsukuba. Due to some figures you point in your speech how do you believe that 1% less of electric consumption within the plant is a really contribution to the improvement of quality. Because normally in an industry when you improve something you need more energy, if you put one more computer you need some more energy. So don't you transfer the problem of quality environment and so on to other sectors outside the company, while you win 1%?

Richard O. HEGG

I guess this is one of the specific examples. If you are going to add something, you have more energy to put in, and therefore, from an environmental standpoint how do you justify saying that you are reducing consumption making your environmental better. Considering the example of choosing robots, using a robotic plant for doing your painting, it gives some benefits from a health standpoint for the workers, but investments in energy may be more intensive. How do you make the decision of going to robotics instead of using the workers? May be Mr. Hoki do you want to answer this question.

Makoto HOKI

JAPAN

Instead of answering this question I would like to put one comment on the question raised by Mr. Abeels. I think that when you improved technology you do not necessary increase the energy consumption. One of the technologies we should be considered is the energy saving technology; if you apply it you can reduce the consumption and you can improve living standard. We should be quite clear about this before discussing. We are here to reduce energy consumption in many senses, so I don't think Kubota Company is just interested in energy, increasing technology, but I hope Kubota Company will be interested in energy saving technology also.

Bill STOUT

U.S.A.

I want to congratulate Kubota Corporation for the video we just saw. I think it's the approach, which talks about the relationship between human beings and the environment, is exactly the kind of thing we need to see a lot more over. Some people have the opinion that corporations are big, nasty organisations that have no concern for people and for anything except the profit motive. Unfortunately the whole profession of agricultural engineering often is put in the same box with companies who just think on profit. I think we all need to think about this. We must learn to talk about what we do in terms of the economic, social and environmental benefits to people. We must learn to put

people first. It's people that we are serving. Companies have to make a profit, I support that, but as we talk to the public, not only from a company point of view, but also from a professional agricultural engineering point of view, we must talk about people. Now I have a question for the speaker: do we need a code of ethics? Yes. But let's be realistic: that code of ethics must be beneficial to the participants in head, nobody is going to agree to a code of ethics unless they perceive that there is some advantages to them. So we want to approach the discussion of code of ethics? Ok, but let's be realistic, it's got to have a benefit for the people we expect to use it. How can we develop a code of ethics that will infect be perceived by all the individuals in a company we aspect to use it?

Egil BERGE

NORWAY

I agree with the point raised by Mr. Stout that the code should be beneficial, but I put a question. You apply the code of ethics whenever it increases your profits and otherwise you forget it? Sometimes it has a cost and if you are not willing to take the cost when necessary, you by-pass the problems. Sorry but that are the facts.

Lawrence CLARKE

I support very much what Mr. Stout said. A response specifically to this ethic question, it is very hard to do. I believe that companies will respond when they will see that they are at the same level, when they will see that no company has advantages because of one particular code of ethics, but they are all working together. The question is the achievement of that. I think the progress made over the last 10-15 years is because of the incorporation of national standards together into international standards, which are accepted by the consumers, by national Governments and by companies. Therefore I believe the idea of the Club to establish a working group is going to be a very fascinating but complex task. It means that the club is going to draft a code of ethics which is achievable by the industry, which is acceptable by the national Governments to put in place as legislation and it is also acceptable by the consumers.

Gajendra SINGH

AIT

Rather than moving to ethics on a global level, I want to say that there are numbers of extensions in the design of agricultural machinery which are not being used in developing countries and which are really in the interests of the operators to make the work safer, to meet this first point will be through a forum like the Club of Bologna. If we can extend the adoption of those extensions into developing countries, like, for example, ROPS mentioned before, this will make the work for agricultural workers, or agricultural users safer. I think that the great number of accidents in our countries is due to the fact that manufacturers want to keep the costs down, because normally in developing countries life is cheaper. I don't believe that this is a

kind of negligence or ignorance: the life of human being is the same wherever. So, if a forum like this can help us, making the Governments and agencies concerned in the condition to apply some of these standards especially related to the human safety, this would improve quite a lot the living standard.

**Axel MUNACK
GERMANY**

What for me was missing this morning is the idea of sustainability. I'm wondering what is the relation between what we were thinking about ethical aspects and sustainability. I think that we have to start pointing out that there are economical, ecological and social aspects, which are sustainability indicators. Since that agricultural production processes are part of the environment, we have to think over sustainability indicators. We don't have to create every thing new, because sustainability indicators are pursued by the OECD, or by some other organizations and we can also include these aspects into what we are compiling as ethical code. Concerning benefits, I think that there are two aspects to consider. Ethical aspects in manufacturing agricultural machines point in the sense of the production process, even if the manufacturer has to be realistic asking him-self if his products will be really used by someone. So we have to look to the products, the benefits they give to the farmers, to the environment and so on. We have seen in the presentations that in the production process many things have been learnt, as for example in Germany the manufacturers have learnt to combine economical and ecological aspects, so that today environmental protection in factories is usually also beneficial from the economic point of view. Could someone give his thoughts about sustainability, can sustainability be considered as of the ethical aspects?

Egil BERGE

Let me first said that I want to congratulate with the Kubota Company for their presentation. I agree on the fact that the Club will try to produce a code of ethics; obviously it will be not always easy to do. One point mentioned during a presentation was that the producers suppliers of machinery should also think about the consequences of the end use, in terms of how it could affect the sustainability, the environment and so on. I give you an example: the use of nuclear power which is very important in the energy supply for a lot of countries; everyone knows that it can be used to develop a nuclear bomb, but not necessary the knowledge about nuclear can be just badly used.

Giuseppe PELLIZZI

I completely agree with Mr. Munack, because I think that the problem is mainly a problem of design. We need to design a machine that has to be appropriated to the requests and at the same time to the needs of the farmer. Every factory can produce what it wants, but the question is that we need to know what's the problem of production. I mean that first of all it is a problem of design, but also a problem of education: we

need to give the possibility to consider if this machine is really closed to the needs of the farmers.

Yoshisuke KISHIDA

I want to make a comment on what was said before by Mr. Singh. The Club of Bologna has to announce some kind of guidelines, but at the same time we have to be realistic about the real conditions we work in. For example we can consider safety aspect, because the quality of work is very important for the life safety. For example, here we drink this bottle of water, which is the most expensive in Japan and in other parts of the world people is suffering because he can't get good water every day. This means that we have to establish a sort of international code of ethics, but to apply this code to each country we need real considerations by each country, we need some studies on that.

Richard O. HEGG

That's a very good point you raised, I suggest to one of you if you have considerations on that to write down them and then we will collect all the papers and the group working on for the next year, will have some material.

Giuseppe PELLIZZI

I just want to underline that when the Management Committee decided for this subject, it considered that in the last 10 years a lot of industries disappeared, so in view of the globalisation may be that we can have in front of us theoretically only one industry that can produce what it wants. The need to have a code of ethics is to help farmers, which are not strong enough to find a production closer to their needs.

**Abdullah KAMARUDDIN
INDONESIA**

I think that the code of ethics that the Club wants to create should be simple, universal, and measurable in the sense that it could be punished if not correctly followed.

**El Hassan BOURARACH
MOROCCO**

It seems to me that we stressed a lot of on environment and I want to make you think about the relationship between manufacturers and also the relationship between engineers. There are many aspects regulated by industrial priorities, but we need an ethical code to regulate manufactures and consumers in Developing Countries, because they haven't enough knowledge and they can't defend their interests; organisation like the Club of Bologna can do this. I think that we can go over on what has been done in standards, because we have rules; but as for these standards also for the code people who doesn't apply it will be punished, or rejected by the market.

Richard O. HEGG

You mean that as engineers we will have more influence on the manufacturing industry?

El Hassan BOURARACH

Yes of course, between the manufacturers and also between engineers. I have a responsibility in front of my engineer's community when I do a work, behind manufacturers there are a lot of engineers and if these people will be tied by a code it will be better.

**Jaime ORTIZ-CANAVATE
SPAIN**

We have to better define our goal. We have mainly talked about human safety and environment. I think we should also include animals. In this code of ethics we should consider first human being, second animals and then environment. In Europe we have a directive for machinery which define how to build machinery and it is concerned mainly also with safety. My proposal is to treat inside the code also animals and environmental protection.

Richard O. HEGG

This is a new point of what we discussed before, any comments to the inclusion of animals and environment in the code?

Yoshisuke KISHIDA

Do you want to include the animal well-fare subject? Sorry but, I can't understand.

Jaime ORTIZ-CANAVATE

You have a milking machine and safety on that is related to the human being management, but it could be not also closed to the well-fare of animals. We have to look not only for the safety of human that is using the machine, but also for the animal.

Kyeong Uk KIM

I think we are talking of two types of code: engineers code and manufacturers code, but to develop this code we have to go toward the consumers, the society or the nature. Before develop the code by the Club, I think that first we have to think on a specific area considering more details and then move to an other area. First I think may be a code of ethics for manufacturers toward the society, or the environment and then next year may be we can talk about the code toward the consumers. If we talk of these two aspects together may be difficult, because there are too many things to discuss on and to consider creating an ethical code.

Richard O. HEGG

I think you raised a good point and I want to tell you again to write down your ideas, or suggestion that will be very useful for the work group.

**Irenilza DE ALENCAR NÄÄS
BRAZIL**

I want to congratulate the Management Committee for raising this very important topic; we really need an ethical code because all around the world you have to treat your neighbour as you would like to be treated. To draft a code is very important but not just for the

machinery manufacturers, but also for the engineering system design and procedures. If you start from a broader view then you can go considering specific aspects. How are we exactly going to get some levels within the code? Are we going to do that, or are we going to by-pass that? Are we going to raise only the question, or also some replies? I'm really scared by that. I tell you an example. In Holland, Canada and U.S, for instance, they rejected our pig production because of our low level regulation in animal production. I want to say that also education is a key world for all this, because we have to train our students in adopting this code in the future. The market also will strongly support the introduction of a code of ethics, for example in a supermarket, as consumer, you want exactly to know where a product comes from, well I think it will be the same whit machinery.

Yoshisuke KISHIDA

I generally agree with this statement, but considering for example safety in standards, my question is: "How can we apply the standards to each country, step by step?" Every company has to survive getting profit, so people who require some kind of machines compose the manufacturers work toward the market. In particular countries people want very cheap machine, as Mr. Singh said before, and sometime without any safety devices. If the market requires these kinds of machines, some manufacturers have to supply to this need; this is the real condition I think. Of course, we have to do regulation, but how, is my question. I think step by step. To study this strategy is very important for the discussion: how can we apply this ethics code to each country where the economic conditions and the market are so different.

Irenilza DE ALENCAR NÄÄS

What I mean is that we should come up with a very good code of ethics. It may not be applied in all cases, but it will be proposed as the finest and then we will try to adapt to the different situations that will come. I agree on the fact that there will be very peculiar situations, but I think the solution will be just to adapt the code to each case.

**Jan PAWLAK
POLAND**

I would like to point one thing concerning the importance of proper information, which is made, in great part, by the advertisement. If it is not completely honest it is difficult for the user to make the most reasonable machine choice. The effect of this is that the efficiency of your farm machinery will not be high and also in the future the farmer will have problems in using that machine. For the machine producer the result may be the lost of client. So, talking about ethics, we should also taking into consideration this aspect of the problem. It may happen that good machines work under bad conditions if the user is not correctly prepared. The information should be honest and if necessary not very optimistic just to sell more, because

in the future there will be problems also for the dealers.

Peter SCHULZE LAMMER
GERMANY

I would like to remember that we - as engineers - we don't work in a free way, but formulating such a code, we are depending on a numbers of influencing factors that we can't change. We should formulate not only requirements which rule ourselves in our ethic, but try to formulate as a prefix code of ethics what we are depending from, so something like requirements for Governments or factors which are influencing the engineers work in agriculture. We can work only under responsibilities, which formulate our code of ethics if we have the context to work within. I think we have to formulate conditions under which we can consider the responsibilities.

Horia BEGHES
ROMANIA

I have a short answer for Mr. Pawlak concerning the problems of ethics for manufacturers. When one sells machines in other countries I think he is obliged to test his machines considering the local conditions where the machine will be really used. There are specialised bodies in every country, which are accredited to test these machines according to some directive standards, or other requirements. In Romania for example, there are bodies, which can test machines also from the security point of view, or quality point of view, which is very important too.

Jaime ORTIZ-CANAVATE

In farm machinery there are some specific standards to establish the safety, like the frame for tractors. In general in Europe, we follow the directive for machinery, which says that concerning safety the responsibility concerns only the manufacturer, who must have a booklet to give to the user correct information for a proper use. This directive is in use from 1989, so we can use this directive as a base for our code of ethics, not making exactly the same, but just try to use parts of it to have a general orientation.

Giuseppe PELLIZI

This is an additional reason for preparing a code of ethics.

Richard O. HEGG

Of course, but what you are describing it's a requirement in the European Union and what we want to make is something more worldwide.

Rafael DAVILA
VENEZUELA

There is a part in the market, which is composed by dealers. We have to consider that they may not like the code of ethics, if obliged to respect it, for this reason I think it will be good to include them.

Makoto HOKI

I think that one of the standards required from developed as well as Developing Countries are to identify the energy saving technology and the energy consumption technology. This kind of information should be given and placed in our manual.

El Houssine BARTALI
MOROCCO

I want to thank for the presentations we had. My comment and my question are related to the design of the code of ethics in order to see how beneficial it can be, particularly for the Developing Countries. We all know that there is a need to increase food production particularly in D.C. and in addition we have protect the environment. One way to solve this is of course with the use of appropriated agricultural machinery and for farmers in Developing Countries we have to know that there are a lot of social aspects to be considered in deciding which appropriate machinery we have to propose. This social dimension needs to be taken into account in this code of ethics and we should find out which is the best way to do that. Nowadays in order to achieve the agricultural development you have to take into account in a proper manner the social conditions of the farmers.

Gajendra SINGH

I want to point out again that in Developing Countries mechanisation is growing very fast. What is happening is that all these people are learning how to operate with these machines and many of these operators don't take any precaution. Even during the learning, there is not sufficient capacity at government level to train operators - sometimes just few days, sometimes just few hours on basic principle of operating in safety - and many of them learn by making very serious mistakes. Of course for the market it is better to maintain the cost low, but I think that these safety features, which require protecting the life, should not be compromised. Let me make an example. In Europe and western world it is an accepted design feature that the moving parts are covered, but in developing countries it is still an option. Unfortunately the bureaucracy in Developing Countries is always very slow and it compromises a lot the progress, they don't see the importance, or the urgency of these requirements and regulations.

Harmon TOWNE

I certainly agree with what Mr. Singh said, the problem we face, as manufacturers, is that we would like to have a sort of incentive in order to do this. Unfortunately, as Mr. Stout said earlier, if we have companies, which will not subscribe the code of ethics and will not have limitations, they will probably be able to send products at lower costs, if compared to those companies, which will accept and apply the code. So there has to be a sort of incentive built into the system, so that all companies are forced to say "I must do so or I will not be able to do business". This is one of the challenges this group will face.

Abdullah KAMARUDDIN

I want to response to Mr. Singh about the duration of training. I think training will last necessary years. It will be good if manufacturers can put into their promotional programmes budgets for these trainings, but may be also the local Governments or the society can do that.

**Luigi BODRIA
ITALY**

I would like to underline the point raised by Mr. Singh that seems to me the first real point related to ethics. Ethics is not a thing that may have payback from the economic point of view; we can't give a money value to it. Our code must clearly state that it is not ethic to sell machine to people who haven't sufficient background to properly and safely use it. Concerning benefits, looking for example at the quality standards of ISO 9000, there are not really economical benefits, but now all the companies and producers want to be certified, because they must do this. We will arrive to produce a good code of ethics, which will be applied voluntary by the producers.

Richard O. HEGG

Before leaving I ask you again to write down now with your name your ideas, or questions in order to collect them and let the group use, just one or two things you would like to see included in a code of ethics.

**Oleg MARCHENKO
RUSSIA**

I fully support the idea that we need to have a code of ethics for agricultural machinery, it may be a code for all the participants of this process: producers, dealers, consumers, etc. Let me make an example. We had in Russia our plants with very big infrastructures and thousands of people. Every plant had very good kindergarden, schools, and hospitals for local people. Government put much money in this social aspect, to support people. What we have now? Are our plants now subdivided for small enterprises?

Egil BERGE

I fully support what Mr. Towne said before and I can tell that it is not just a problem linked to the agricultural machines, but also for example, to the transportation: those who are able to make transport in a cheaper way, are getting more profits. I recommend to make a code of ethics to be used first of all as a reference, then we have to think also to how this code will be implemented in all the different countries around the world, may be also that not every country would implemente it.

Jaime ORTIZ-CANAVATE

This is a comment about what Mr. Marchenko said before. It is very good what you referred us, but I think it is just linked to a general social security and it has not to be specifically applied to agricultural machinery production.

Gajendra SINGH

I like to add that in many Developing Countries there is not a strict regulation, which could limitate the number of licences to operate with machinery. Considering for example a farm area: there is a great number of tractor drivers who do not have driving licences and who use tractors without safety features. I think we have to consider ethics not just from the manufacturers side, but also from users side too. This particularly is an educational issue referred to people, but also to governmental agencies.

Kyeong Uk KIM

I think that sometimes it is very difficult to distinguish between ethical and not ethical issues. To develop the ethics code we will clearly state what the manufacturers should do and what they should not do, because we can't include everything in the ethics code.

Hermann AUERNHAMMER

I think we have to divide this code of ethics into two parts, especially from the point of view of manufacturers. On one side we have the input factors: energy, materials, members, for which, I'm really sure, there are still some existing codes available that we just don't know. On the other side we have the products, which influence consumers, society and environment, and among these three there is the education. I think that we have to consider the fact that there are some codes we just don't know, so why don't collect them and bring to the next meeting, to have an idea to start from?

Richard O. HEGG

This is a good point, in fact if you know some codes of ethics used in your country, for example for manufacturers, please write down in your paper. I think this is the best moment to collect useful ideas and thoughts.

Osamu KITANI

What we should do, in my opinion, would be more toward the future, not just for the present. We have to think for our children, but particularly for our grandchildren.

Lawrence CLARKE

Throughout the discussion I have detected a certain ambiguity between ethics and standards. Are we talking about standards, or are we talking about ethics, because they are two different things with two different approaches. If we look at the standards side we know that it is very difficult, they are no equal all around the world. If we are looking at ethics, this will be something we will publicised among our engineering colleagues all around the world, it is like an ethical standard to which all of us try to conform to, as the doctors have. In conclusion I think all this will have a great impact upon the activities of the private sectors, because of the arguments we have referred to this afternoon.

Chang Joo CHUNG
KOREA

This has been really a good working session for me. Referring to what was said before about exiting codes in the different countries, I think that in order to make recommendations, or guidelines from the Club, everyone should study in depth the situation in his own country and make a summary. Then we will be able to discuss on this problem.

Irenilza DE ALENCAR NÄÄS

It is quite late, but I want to make a comment on what Mr. Auernhammer said. He commented that we should bring up some codes that still exist. I want to tell you an experience we made in Brazil. We have a confederation of all the engineers, architects and agronomists. We are trying to write a code of ethics as well from nearly a year and up to now what we reasonable found, as reference was the Ten Commandments and the ethics of the medical doctors. This last one because they are strongly obliged to follow their code of ethics, otherwise they will have very serious legal problems and the commandments because if you don't follow them you will have a bad future. I'm joking, but the point is that the subject is too narrow. Environment, social, economic are the areas where the code will be applied to, but when we say ethical aspects in manufacturing agricultural machines it is very narrow.

Richard O. HEGG

That's a good point you raised. Now we have the last person who wants to speak then we will conclude this session.

Bill STOUT

References to the medical code of ethics has been made couple of times, but I want to make me sure that everybody in this room knows that engineers have a code of ethics too, it seems to be forgotten. In U. S. if you are a registered professional engineer you are bound by certain code of ethics. As we develop something specific for farm machinery manufacturing we have to take a look at the medical, engineering statements and whatever else exiting. We don't start from zero.

Richard O. HEGG

Let me make a couple of comments. My impression is of a general agreement on the proposal we should have a code of ethics. It should be addressed specifically taking into account differences between developing and developed countries, it should be something simple, achievable, acceptable, linked to the economic, social and environmental aspects. Before you go out you can write on your paper your comments, including what you would like to see in a code of ethics and if there are other codes of ethics you know about and that can be used as reference materials, or sources. The group who will provide a draft for the next Club of Bologna meeting could use all that. Thank you very much for coming.

Giuseppe PELLIZZI

Dear Colleagues thank you very much for this discussion. You have on your table the draft of the Conclusions and Recommendations. Reading them, please take into consideration that we will enlarge them to the dealers, animals, educational problems, developing countries and standards, to be able to cover all the requests you made during the discussion. The second thing is that I suggest a study group chaired by Yoav Sarig from Israel and composed by Richard Hegg, Axel Munack, Irenilza De Alencar Nääs, Gajendra Singh and Lawrence Clarke. This group has to provide a general draft of code of ethics for the next meeting on November 2001, taking into consideration that there are two different things: the internal problems of the manufacturers and the external problems. We don't take into consideration the internal problems because they are not directly linked to the ethical aspect. Of course, if you are interested in being informed step by step, you can ask Mr. Hegg, or Mr. Sarig to send you the progresses achieved. As you can see you have also among your papers a text titled "Guidelines for the technology transfer in Developing Countries". Last year in Bologna we discussed this problem with three reports and the impression I had was that the ideas were not clear, so the effort we have tried to do is to define something, in particular the different types of industrial co-operations, where the joint-venture is the maximum level. Please read these guidelines and if you want send me your comments in order to improve this document that I should like to distribute all around the world and include in the proceedings of the Club. A final information is that we have decided to stop with the Country Reports, so all the people that have co-operated sending us the updated country report, please stop; I thank deeply all of them. I think we can conclude this session now. Thank you very much for coming and for your co-operation.

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Egil Berge	NORWAY	<i>Invited</i>
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