Ethics in the building process

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Déontologie dans l'acte de construire

Ethik im Bauprozess

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SUMMARY

Two problems in which the ethic component plays an important role are taken as an example of the importance of ethics in the building process. The first problem concerns intangibles in the decision process based on cost-benefit analysis. The second problem is related to the transfer of knowledge obtained from lessons gained by experience. Efficient information feed back systems should be implemented at international, national, regional and local levels. An important stimulus for this implementation should be gained through the recognition of the moral obligation related to it.

RESUME

L'importance de la déontologie dans l'acte de construire est mise en évidence dans deux groupes de problèmes. Le premier concerne les constantes dans le processus de décision basé sur une analyse de coût-bénéfice. Le second problème se rapporte au transfert des connaissances acquises par l'expérience. Un système de transfert d'information doit être établi aux niveaux international, national, régional et local. L'engagement moral de toutes les personnes concernées pourrait être un pas important dans cette direction.

ZUSAMMENFASSUNG

Anhand zweier Problemkreise wird die Wichtigkeit der Ethik im Bauprozess aufgezeigt. Das erste Problem betrifft den Einbau unfassbarer Werte in den auf Kosten-Nutzen-Analysen abgestützten Entscheidungsprozess. Das zweite bezieht sich auf den Austausch von aus Erfahrung gewonnenem Wissen. Funktionsfähige Austauschsysteme sollten auf internationaler, nationaler, regionaler und lokaler Ebene aufgebaut werden. Ein wichtiger Anstoss hierzu wäre die moralische Verpflichtung der Beteiligten.

1. INTRODUCTION

In every professional activity there is a moral component. Ethical aspects should be present when formulating technical problems and deciding on their solutions. This is the case in the building process and concerns all participants:owners,authorities,designers, builders, users, etc; all phases: planning, design, execution,use; and also activities related to the building process: research , guidance, information, control, etc.

Building problems are usually solved by considering technical aspects only, seldom complemented by economical and social con - straints.

This note calls attention to the need of further including ethical considerations in the decision process related to building.

2. ETHICS IN COST-BENEFIT ANALYSIS

Promoting and planning is the first phase of the building process. Cost-benefit analysis is an usual technique to inform decisions on planning. Several alternatives being considered, a simple economic rule to guide decisions consists in comparing costs and benefits and choosing the solution in which the ratio of costs and benefits is minimal.

The application of this rule brings us face to face with different types of difficulties.

Costs and benefits are distributed in time. In order to make them comparable they should be converted to values at a common time origin. This problem is usually solved by assuming a discount factor.

Costs and benefits are seldom deterministic: A probabilistic approach has to be used to represent them. Decision rules are thus usually based on the optimization of expected values.

In most cases the simple formulation in monetary terms is unsatis- factory. The concept of utility allows to rationalize decisions according to a scale of preferences.

However, the most important criticisms to basing decisions simply in cost-benefit analysis derives from the criteria usually adopted to compute costs and benefits, particularly due to the exclusion of ethical aspects often referred to as "intangibles" [1] .

The border between aspects that may be expressed in monetary terms and intangibles is undefined. The identification of intangibles is a first step to their consideration. However although being identified in most cases they are excluded from cost-benefit analysis.

Another difficulty in the comparison of costs and benefits derives from the fact that these usually refer to different groups of people [2] . Every undertaking benefits given groups in Society and increases risks to other groups. Thus equity problems in the distribution of benefits and risks have to be considered. Often this equitative distribution involves social, political and ethical problems.

In order to include in the design process the consideration of the interests of all people affected, Meseguer [3] introduces the concept of ambient-adequacy. It is suggested to modify present human requirements in building by considering that these should apply not only to direct but also indirect users (which are direct users of nearby construction) and the community.

This way of seeing the problem only gives partial satisfaction to our objectives. Adequate solutions have to be obtained by the explicit consideration of ethical principles.

Optimization techniques being used as a basis of decisions, the basic aspects of justice should be included from the very beginning in the formulation of both objective functions and constraint inequalities [4] .

3. LESSONS FROM EXPERIENCE

The need to feed back knowledge gained in building experience to guiding information related to design, execution, maintenance and repair is generally recognized. Even so the mechanisms necessary to this transfer are not satisfactorily established. This general

statement applies to the different levels at which this feed back should be implemented: international, regional, national and local.

Conflicts of interests are one of the reasons why convenient transfer mechanisms are difficult to implement . An international code of ethics, dealing with collection, interpretation and diffusion of information gained from experience would be a useful tool to overcome present difficulties.

Information on errors usually affects the prestige of those who have committed them. What are the limits of the moral obligation to inform about errors and their consequences?

On the other hand, which are the limits to inform about a successful technique the dissemination of which would benefit mankind, but from which someone is taking direct profit?

In this context the code of ethics of the American Society of Civil Engineers [5] deserves being quoted.

Fundamental Canon 1 reads. "Engineers shall hold paramount the safety, health and welfare of the public in the performance of their professional duties".

The guidelines to function under this canon are:

"a. Engineers shall recognize that the lives, safety, health and welfare of the general public are dependent upon engineering judgments, decisions and practices incorporated into structures , machines, products, processes and devices.

b. Engineers shall approve or seal only those design documents, reviewed or prepared by them, which are determined to be safe for public health and welfare in conformity with accepted engineering standards.

c. Engineers whose professional judgment is overruled under circumstances where the safety, health and welfare of the public are endangered, shall inform their clients or employers of the possible consequences.

d. Engineers who have knowledge or reason to believe that another person or firm may be in violation of any of the provisions of Canon 1 shall present such information to the proper authority in

writing and shall cooperate with the proper authority,in furnishing such further information or assistance as may be required.

e. Engineers should seek opportunities to be of constructive service in civic affairs and work for the advancement of the safety, health and well-being of their communities".

The specific aims of this code of ethics may justify the mixing up of fundamental natural laws and natural rights with professional aspects of approval of drawings and conformity with standards.

An efficient feed back system of information is of fundamental importance to the progress of building. Those who cannot identify the errors of the past are going to repeat them in the future.

3. CONCLUSIONS

Two cases in which the consideration of ethical aspects would be of paramount importance for obtaining adequate solutions of general technical problems are presented.

It is advocated that the clarification of ethical rules should guide in many other aspects related to quality assurance.

REFERENCES

1. NELSON C. and PETERSON S.R., A Moral Appraisal of Cost Benefit Analysis. Issues in Engineering, Journal of Professional Activities, Proceedings of the American Society of Civil Engineers, Vol. 108, nº EI 1, January 1982.

2. ROWE W.D., Acceptable Levels of Risk for Technological Under - takings. Introductory Report, Colloquium Ship Collisions with Bridges and Offshore Structures, International Association for Bridge and Structural Engineering, Copenhagen 1983.

3. MESEGUER A.G., Buildings or Persons? A Missing Basic Requirement. Introductory paper, IABSE Workshop "Quality Assurance within the Building Process", Madrid, April 1983.

4. MELCHERS R.E., BAKER M.J. and MOSES F., Evaluation of Experience Introductory Notes, IABSE Workshop "Quality Assurance in the Building Process", Rigi, June 1983.

5. AMERICAN SOCIETY OF CIVIL ENGINEERS, ASCE Code of Ethics Amended. Civil Engineering, p. 67, November 1976.