# THE SOCIAL AND ECONOMIC BACKGROUND OF MANAGEMENT IN CONSTRUCTION

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## Abstract

Management is primarily a form of social engineering, an attempt to actively influence human behaviour in the company. The construction company is in a more complex position than any other; its managers often believe that knowledge of engineering and economy is sufficient for successful business operations. Social factors are usually reduced to defining the optimum workload, the work norm.

The aim of this study is social context as a frame and initiator of every technical innovation. Purpose of this work reveals significance of material and spiritual goods as a basis for the social and economic development. These goods are endangered by discontinuity, deconstruction, deregulation, disintegration in the name of some higher goals and interests.

The author writes about the social background of construction, focusing on problems of style in management and how construction companies approach management and initiative. He uses the findings of empirical research in construction companies. Successful management in construction companies must include a programme of teaching social skills. Management style affects the entire culture of work in the company and on the building site.

## Key words

Integration and socialization of engineers; management style; production initiative; social and technical innovation; social aspect of engineering; social engineering

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## 1 INTRODUCTION

I am not competent to write about engineering in all its breadth, however, if the complexity of construction as a whole is to be appreciated its social aspect must be addressed as well. This social aspect is often fraught with misconceptions, vulgarisations and preconceptions that to a great extent result from the mistaken understanding of the concepts "social" and "societal".

In relation to the concept "engineering", the concepts "social" and "societal" are viewed, understood and interpreted as something outside the engineering work process, something that takes place along with the work that is ancillary or supplementary to the work of engineering, states Burger in [1]. The concept "societal" associates conditions in society, a person's position as the consequence of the specific work he/she does and the mechanisms of the protection of social justice.

The concept "social" seems to have broader associations and thus seems more acceptable for use. "Social" associates social life in a firm in the sense of keeping score of work achievements and encouraging new ones, marking important anniversaries and planning leisure, which is a result of work. It is difficult even to imagine any kind of social life in the production process itself. That "portion" of the work process, social contacts in the line of duty, is touched on only briefly when describing an employee's work and assignments, and "social" behaviour is not given much weight. In the example social behaviour is almost impossible to distinguish from technical-technological behaviour (Miller-Form). Sociology too is seen as an addition, something accessory to the serious, specific, precise, and exact, to scientific work, to the technical-technological process.

Many civil engineering students and civil engineers ignore social contacts in the line of duty, to a certain extent rightly so, because in Croatia "duty" was often transformed and adapted to the needs of our specific policy and traditional behaviour pattern. This is one of the reasons why students and engineers who are strongly inclined to the "profession", to technical-technological occupations, avoid being managers. According to Drucker in [2], the isolation and self-isolation of experts in the profession, and managers in management and administration, creates a latent clash that does not make the organisation an "entrepreneurial enterprise". Thus an incompatibility has been produced between "social abilities" and "expertise" in our social context, which can be seen from the views and behaviour of both managers and students. Engineers and students are frustrated in relation to further professional and scientific training at the University.

Students complain that the educational system offers too little practical work (research carried out at the Faculty of Civil Engineering in Zagreb in 1994), and engineers find too great a gulf between theory and practice which makes it more difficult for them to continue their professional development and move ahead in their careers, states Dvornik et al. in [3].

The misconception that results in looking on "engineering" as an autonomous sphere in education and defining the profile of engineer, moves in the range from perceiving engineering as a process in which adequate means are applied to achieve a specific goal, in which the human factor is treated as an asset – as labour, to the simplified perception of engineering as more or less "intelligent and omnipotent" mechanisation, states Habermas in [4]. In this case the technician could be a housewife that uses certain appliances in a certain way so as to achieve a certain goal. Of course, the technical culture of various occupations in the broader social context do not belittle engineering activities, on the contrary, Scandinavian countries may serve as an example of societies in which engineering is understood and developed in all its fullness. The engineer must certainly be aware of the trap inherent in

technical-technological knowledge, which supports him in a feeling of self-sufficiency, isolation or self-satisfaction, and encourages an authoritarian approach among engineers-managers.

The Swedish construction industry and the broader society have adopted a resolute, scientifically-based and well-founded stand whereby they reject any professional and technical-technological knowledge and behaviour that are not socially grounded and that do not open dynamic social relations. The stand that the organisational individuality of a firm, and of a state, emerges from its culture is undoubtedly confirmed through the individuality of societies such as Finland, Netherlands, Switzerland, Austria, Sweden, Norway etc. Countries such as the USA, United Kingdom and Germany, where organisation and engineering in the vulgar meaning of the word dominate over society and culture, reduce the importance of engineering in the sense that we already said.

## 2 THE INFLUENCE OF TECHNOLOGICAL DEVELOPMENT ON THE SOCIAL CONTEXT

In earlier times, more than today, the engineer was directly determined and guided from the social context of the firm, but he was also directly and indirectly determined and guided from the broader societal environment. In a process of this kind there is continuity of and interconnections between the social and technical environment. There is no technical environment that is not social too, just as there is no social environment that is not technically determined and defined. Even the most robotised technical-technological process has its social components and characteristics, just as any social environment has its technical standards, technical culture, work techniques and techniques for satisfying its needs. This kind of socio-technical context makes the work and life of engineers significantly easier.

F.A. Hayek considered that typical engineering work includes the centralisation of all relevant knowledge in one head, while typical social problems use knowledge that cannot be centralised in this way. Engineering activities cannot centralise the use of specialised skills and abilities, personal assets important for executing work tasks. Thus, according to Hayek [5], the engineer must apply technological knowledge of a kind that limits both his initiative and his knowledge. It is not until a person acts in society that we talk about entrepreneurship. Speech and entrepreneurship create mutual preconditions. Speech is not monologue but dialogue according to Spengler [6]. Therefore, all social behaviour is technical to a certain extent – otherwise it is not human, social, cultural; just as any technical behaviour and activity is social, otherwise it is programmed, robot-like, alienated – with engineering and technology moving along a path that man and society are not able to control.

## 3 INTEGRATION AND SOCIALISATION OF ENGINEERS

In the mid-20th century P. Drucker emphasised the problem of engineer integration in highly-developed societies such as the United States of America.

“Regardless of their diploma, only a small number of people rightly bear the name of engineer in its original meaning. Professional work is often a routine variation of ready-made recipes…” says Dvornik et al. [3].

“’Born’ leaders start to run away from the machine. Soon all we will have at our disposal will be second-rate talents, the remnants of the ‘great times’. Every major entrepreneur is realising that the spiritual quality of the young generation is decreasing, whereas the outstanding technical development of the 19th century was made possible only by permanent spiritual growth.” according to Spengler [6].

Insisting on technical-technological knowledge that excludes initiative and thinking inevitably leads to routine and stereotype application, but also to the culture of monologue; professionally it leads to an autocratic style of management with emphasis on hierarchy.

Many important inventions were created by gifted amateurs such as Leonardo da Vinci, who were famous engineers and inventors.

"Leonardo was proud of his status of engineer: he even wrote the names of some engineers from the classical age, from Callius of Rhodes to Callimachus of Athens (who made gigantic bronze casts with such skill), as if he wanted to find a place for himself among his ancient counterparts. With a feeling for history, which engineers later lost, he dug through the annals of the past to find a suggestive trace of Greek and Persian engineers…" states Mumford [7].

His feeling for the social fate of an invention saved Leonardo from "creative destruction", J. Schumpeter [8], technical exhibitionism or "professional narcissism". It is important to determine the "real measure", as Livio Dante Porta said in the 1950s. Porta was an engineer who was not lured into competing and into the race in "creative destruction". When diesel and electrical engines, the air industry and all the many other new means of transportation pushed the "steam engine" into museums, engineer Porta invented many new solutions for the steam engine showing that it was superior to the new technical innovations that have so quickly crossed it out. The "steam engine" of the 21st century, which German railways are now ordering, will be faster, lighter, more economical and ecologically cleaner than the diesel engine.

The questions that the "layman" must ask are: in which direction would engineering and technology have developed if most engineers had had the strength and courage to support the perception that innovations and inventions are also subject to the rules of continuity, the basic principle underlying everything?

Only the true creative engineer, the innovator, the artist can discover this principle. What might have been invented in the mid-20th century in the sense of clean energy if most engineers and considerable social potentials had concentrated on innovations using water and steam?

To what measure has modern science in the service of profit rejected the laws of development, and thereby the possibility of finding technical solutions for the social problems of cultures that have disappeared or are disappearing in exchange for "creative destruction".

The following reasons for the un-integrated, un-socialised condition of engineers arise from the educational system, and this should concern experts in general. Our society is an organisational one. Organisations have become the dominant institutions of modern society with a tendency of expanding to all the spheres of social life, even to children's play. Organisation is everything! Perhaps it was R. Michels, with the "iron law of oligarchy", who showed all the danger organisation brings to spontaneity, emotional and social integrity and individual identity, and also to society. He said that organisation necessarily produces oligarchy. The domination of organisation demands unconditioned subjection, fitting in and adaptive behaviour from the individual.

Expert knowledge acquired through education and professional practice is a basic ability. However, knowledge and IQ are not sufficient for outstanding performance – considers Goleman in [9].

When expert knowledge excludes organic solidarity, people usually end in self-isolation or in academic circles, in mechanical collegiality (mechanical solidarity – E. Durkreim). Experts-

managers noticed the limitation of basic abilities and they do not place professional qualities first in ranking the skills of good managers.

To the opinion of J. K. Galbraith that great organisations remain the same even after the departure of great individuals-experts we would nevertheless add that great individuals become great in "great communities". The time of such communities is behind us and that is why Goleman in [9] asserts that future generations will be increasingly less emotionally intelligent.

## 4 THE STYLE OF MANAGEMENT IN CONSTRUCTION AS A SOCIO-ECONOMIC FACTOR IN PRODUCTION

There is a general opinion that the civil engineer, the building site manager, is the beginning and the end of the production system, the man who manages a mass of semiliterate, semiskilled, half-trained workers, and people with a traditional life style. „Muddy shoes", slags, manuals, slackers, bumpkins, yobs, drunks, shirkers and many other derogative names are used for construction workers. Globalisation has added an ethnic characterisation: Bosnians, Rumanians, Turkish, and members of other smaller ethnicities.

This kind of general picture gave rise to the myth that existed on Swedish construction sites, that the site manager must be a „Rambo". The Rambo myth is not only the product of a culture developed by the construction company; it also reflects the views held in the broader social context. The Rambo-type site manager must be strong, independent person who can do everything alone; he influences language on the site and creates a rough way of communication, states Sundsvik in [10].

The situation in Croatia, where workforce mobility, especially in construction, has not stopped and where there is hardly any process of selection, has made most engineers-managers feel that they are heroes, stress-resistant, capable of discovering and solving all problems.

In the narrower and wider Swedish social context it took a long time to change beliefs about construction site. The specific social and technical organisation of the construction company emerges from the work process, which is a conglomerate of different ways of production.

Another specific feature of the construction industry is the building site, and all this creates the foundation for the preconceptions and the reality of the construction company. These include the specific work position and work role of workers, the social status, methods of recruiting labour, mostly from traditional communities, the farming activities that most construction workers continue to perform in addition to their main occupation, workforce fluctuation to other activities or other construction companies where the workforce is socially and technologically more stable. Many construction workers acquire internal qualifications without any formal education. A significant section prefers work on the building site to other activities because they have the feeling that they are free.

The general policy of the state, social conditions and international relations has resulted in an orientation to cheap labour. The companies and construction managers who „adopted" this policy threaten typical engineering work, an orientation to technique, skill, expertise and the optimum use of human potential. This policy did not stop labour mobility, on the contrary, wild migrations, occasional employment, moonlighting and so on increased. According to Stanic [11], under such conditions the style of management is autocratic, unlike on the building sites in developed countries where labour mobility was stopped in the 1970s, and if it does take place it is highly selective.

In the early eighties the suitability of autocratic management in construction operations was disputed in Sweden. „Our research showed that to make companies more efficient and capable of surviving on the market, which has become very competitive, it is necessary to change the style of management on building sites“, states Sundsvik in [10].

Among other things, the new rules include the participation of construction workers in planning production, making positive use of worker's knowledge and experience in developing new methods and equipment. To enable the realisation of this new approach construction workers got permanent employment and social conditions on the building sites were improved.

An important aspect of Sundsvik's research [10] into construction operations in Sweden shows knowledge of the essence of management. The project concentrated on the reasons for the lag in social dynamics, on identifying operative forces and rules of development. Another essential result is that „rational planning cannot under any circumstances lead to a stabile structure, because the balance of forces keeps changing“, states Popper in [12].

We must stress that it is almost impossible to separate profession from management in the construction industry, especially on building sites, because of the specific socio-technical organisation of work. „The good engineer-manager differs from other good managers because of his ability to simultaneously use the principles of the engineering profession and the skill of organising and channelling resources, people and project“.

In Croatia and in Croatian construction companies the advent of privatisation and the general economic policy emphasise intermittent employment, employment by contract or according to the job in hand as a type of modern capitalist business. The effect of this approach is leading to the disintegration of construction companies and societies.

## 5 THE EXPERIENCES OF NORWAY AND SWEDEN

In Sweden and Norway technology and society is not a subject of research in themselves. What are studied are their interrelations, the social effects of a given technology, the influences of social values and social needs on the development of technologies. This interaction is researched on the macro and micro social level from the technical, economic, sociological, political and cultural aspect. The approach has the function of preserving and affirming national identity, preserving the cultural heritage and their enhancement and development. Culture should be more accessible to all the members of a community regardless of where it belongs culturally and ethnically.

Almost at the same time, in the late 1980s, two similar research projects were launched in Norway and Sweden: Technology and Society in Norway and Technology and Social Change in Sweden.

The basic research fields in the Norwegian project referred to (Stanic [11]):

- Value aspects
  - development of general technological culture)
- Field of innovation
  - Technological-innovation processes and their social impact
  - Organisation of technological research
  - Technological policy and controversy
- Fields of use
  - Technology at work

- Technology during childhood
- Technology at home and in everyday life

Technology and Social Change – Sweden, three basic fields (Stanic [11]):

- Technological development and cultural factors, especially everything connected with the educational process
- Technology in industry and society. The emphasis is on changes in industry, e.g. the problem of power structure, choice of technology, manner of production, relation between technologies, especially IT and changes in work and business organisation
- The local social communities and technological development. The individual, family and local community are analysed in technological development

Financing structure in 1983 in Norway (Stanic [11]):

- Expenditure for humanistic sciences – 9.3 million kroner
- Expenditure for sociological research – 135 million kroner
- Expenditure for research in agriculture and fishing – 82 million kroner
- Expenditure for medical research – 53 million kroner
- For natural science and technological research – 1,377 million kroner

It is interesting to compare the investment, for example, in sociological and medical research – and to establish a correlation between the results obtained.

The distribution of resources for general scientific development in faculties and research fields in 1986-87 in Sweden was:

- natural sciences – 1,019 million kroner
- technical sciences – 808 million kroner
- medical sciences – 1,703 million kroner
- agricultural and veterinary sciences – 399 million kroner
- sociological sciences – 395 million kroner
- humanities – 280 million kroner
- other – 290 million kroner

According to a law from 1984, the humanities and sociological sciences were given special importance in Sweden's research policy for guiding the development of the technologically structured society of the future. At that time the financing for university institutions that engage in humanistic, sociological and art activities increased.

Sweden developed a highly selective approach to accepting labour from other countries. The key criterion for employment is professional qualifications and social abilities, states Sundsvik [10], with the introduction of lasting employment and permanent employee training and upgrading. Especially at universities, there is an accent on eliminating the predominance of market, profit, state and hierarchy.

The main departments in the CHR Michelsen Institute in Bergen are set aside for the natural sciences and technology, and the rest are devoted to economics and sociological sciences. Industry finances 85% of all the activities and the state 15%. Cooperation between faculty and the institute is increasing. The teachers, for example, work at the institute one day a week, and more and more students prepare their diploma works by cooperating in research projects. In 1983 Norway introduced the title of doctor of engineering science (DEng) in addition to doctor of science (DSc).

University researchers may retire at will between the ages of 67 and 70, and if they continue in research work they are granted a special stipend, states Stanic [11].

## 6 CONCLUSION

Innovation is always and in the first place socially founded, even when the innovator acts in a "sterile" environment. Regardless of the innovator's degree of socialisation, the innovation is socially anchored; otherwise it is not an innovation ("creative destruction"). If social innovations are ignored or belittled for the benefit of pragmatism, innovation becomes increasingly technical and produces social effects that become social ballast. These two worlds of social and technical innovation, if they are separate, diverge and annul one another. Social innovation must be a regulator, a foundation for technical innovation. In confirming the importance of social innovation and its influence on technical innovation, P. Drucker gave the example of engineer A. Borsig as the first builder of engines in Germany. Borsig came up with the idea of a Meister (master), a highly skilled, respected and experienced worker who would run a workshop with a large degree of independence. Drucker's example reveals very many interesting regularities:

- Despite the mechanical solidarity of guilds, teachers and governmental bureaucracy, a system of entrepreneurial organisation as an example of social innovation is breaking through;
- Organisation and management encourage or discourage the engineer from innovating, especially or above all in the social contest, thus the impression of continuity or discontinuity in the emergence of innovations, and also in the work of the firm;
- The main problem of contemporary organisation is the integration and socialisation of engineers into the business organisation;
- Innovation in the real sense, even if it is "purely" technical, is always secondary and derives from primary, social innovation;
- Innovation, although it has the appearance of an individual act, is essentially a social act;
- Successful firms, their organisational individuality and organisational culture, are the product of understanding and realising innovation as a dynamic social relationship, thus continuity as a law in the appearance of innovation;
- The emotional and social intelligence of the complete staff, and especially of the engineers and managers, is a prerequisite for great achievements.

Separating technology from society and treating them as separate subjects of research separates sociologists and technologists, engineers and social scholars. Segmentation leads to study of the segment, a part of something that for this very reason is no longer reality; it does not lead to the establishment of truth. To treat "reality", therefore the whole, in the dynamic and not only in the static sense, by shaping inter-relationships, is a scholarly approach. Thus D. Ruelle is right when he says that fashion does not play an important role only in sociology. Finally, science is left with nothing after it has satisfied the capital-relationship, profit to the level of "self-actualisation" in the segments of living in the consumer society.

This component becomes a source for survival and for the illusion of the autonomy of "science and the scientist".

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