

Teresa Znamierowska *

AN ECONOMIST, AN ENGINEER OR A MANAGER-ENGINEER?

Motto: "Since we cannot be universal and know all that is to be known of everything, we ought to know a little about everything. For it is far better to know something about everything than to know all about one thing. This universality is the best."¹
Blaise Pascal (1623-1662)

This paper aims at concisely presenting some activities that have been undertaken in 1996 and resulted in a new interdisciplinary field of study labelled as *production management and engineering*. In order to understand the validation of those activities, it is necessary to look back and to review.

Keywords: production management and engineering, interdisciplinary field of study, higher education, engineering management, management and marketing, the working group

After the end of World War Two, the restoration of many domains in our destroyed economy was necessary, and also the education of society, at all levels, including academic. This was the responsibility of colleges and universities which were lucky to survive the war, and which were newly established. It was obvious that the profile of education correlated with the then needs, and with those newly emerging, as time went by and the economy grew. The relevant example of those activities was establishing a new faculty at the Wrocław University of Economics in 1954 (then Business College) which was termed the Engineering and Economic Faculty (the title since October 1999). It was a response to a demand by the developing industry for graduates who would be equipped in economic knowledge, and also skilled in engineering and technology, i.e., for engineers-economists. One should emphasize that such interdisciplinary profile of education has been always offered at the Engineering and Economic Faculty.

¹ Blaise Pascal, *Thoughts*, New York 1909, translated by W. F. Trotter, p. 20.

* The Economic and Engineering Faculty, Wrocław University of Economics

Higher education has been organized with so-called fields of study. Their number continued to grow yearly and reached nearly 200 in 1989 (cf. the Annex to the National Education Ministerial order, 24 April 1989, item 107). Among them, in the group of the eighteen economic fields of study, were two labelled as:

- economics and organization of food industry, and
- economics and organization of chemical industry.

The Economic and Engineering Faculty was offering academic programs in the above-mentioned fields of study as the only one in the entire country. No other academic institution, including business colleges and universities of economics, had such studies to offer.

In Poland, 1990 was the year of radical breakthrough in social, economic and political spheres. The systemic transformation has shown the way from a command and redistributive economy towards a market economy. A gradual but dynamic change in the “educational awareness” of students emerged. A new judgment came forward that a higher education as such no longer guarantees a high social rank and employment, thus losing its elite character. A new way of thinking began to take over that “well profiled” studies significantly advance a graduate’s chances in the labour market. As a consequence, more and more young people have been trying to win the battle and become students in the economic, “market” fields. At the same time, there have been less and less interest in technical studies.

Colleges and universities started their functioning based on new legal regulation: the Higher Education Act approved on 12 September 1990. A new body was introduced: the Central Council of Higher Education, which is a representative, elected organ. In agreement with article 42, paragraph 1, item 1 of the above-mentioned act, the Council is authorized to define minimum program requirements and to formulate the names of all fields of studies. The Council was determined to reduce the number of main fields of study and to promote the rank of specializations. This position was validated in the “Commentary” to the Council’s resolution from 20 June 1991 on fields of study. It said among other things:

- *by extending a range of field of study, a narrow specialized education (which now dominates) will be abandoned,*
- *a wide range of field of study presented in a diploma enhances chances of graduates for better employment, especially when demand is rapidly changing. Because a diploma also shows a graduate’s specialization, it is informative enough of the specific studies, without any ambiguity,*

- *specializations become significant in determining the quality of a diploma.*

Notwithstanding furious discussions, frequent and serious protests of academic communities, the number of fields of study has been radically reduced. The catalogue of fields of study approved by the Central Council for the academic year 1991/1992 listed just some 60 disciplines. Their number in the economy shrank from eighteen to four. They were: 1) economics, 2) management, 3) informatics and econometrics, 4) commodity economics. Hence, both fields of study offered at the Economic and Engineering Faculty were cancelled.

The colleges and universities have maintained their choice to assign former titles of disciplines to new fields of study. Students who have already started their education in the former discipline were given the choice of its name to enter in a diploma (a former or a new title). However, those who started to study in the academic year 1992/1993 had no such choice any more.

Enrolment of new students was therefore exclusively for those fields of study which were determined by the Central Council. On the other hand though, according to article 64, paragraph 1 of the Higher Education Act, *basic organization entity of an institution (i.e. a faculty) offers one or more fields of study*. In other words, a faculty which does not have any fields of study is without merit.

The Economic and Engineering Faculty was placed in a difficult situation because:

- it lost both its fields of study,
- the authorities of the Faculty, supported by the authorities of the University and by the students, did not succeed in reactivating the former fields of study,
- the Central Council did not approve a motion by the authorities of the Faculty to establish a new field of study labelled as “industrial economics and engineering”,
- none of the current disciplines from the catalogue of the Central Council matched the specific, interdisciplinary profile of education at the Faculty.

Under those circumstances the Faculty had just one option: to start offering education in the field “food technology and human nutrition”. It was listed in the catalogue of disciplines approved by the Central Council, and its title was acceptable. However, that decision had a bad impact on the image of the Faculty, because being typically agricultural, it did not reflect the

interdisciplinary character of education at the Faculty. The students used to be focused on organization and management, accompanied by a solid foundation in the domain of engineering and technology. As a consequence, on one hand, gradually there were fewer candidates to enrol, and on the other hand, graduates increasingly protested (including direct complaints to the National Education Minister) as that field of study was entered in their diplomas.

As mentioned before, economic studies and colleges offering them have been booming since the early 1990s. The numbers of candidates exceeded the entrance limits. Especially popular was the field entitled “management and marketing” which was approved by the Central Council for business colleges and universities of economics. However, it was also frequently offered by other universities, technical universities, and particularly, by non-state owned institutions of higher education. Depending on the kind of an institution, graduates were BA, MA or BSc and MSc. Such differentiation of professional titles was justified by the type of an institution, not by the content of studies offered to students. The attractiveness of studies in the field called “management and marketing” was due to the changing needs of Poland’s transforming economy, and to the attempt by young people at meeting those market needs. Our academic community was fully aware that it was essential:

- to gradually adjust a profile of higher education in Poland to that in West Europe,
- to solve the problem of graduates’ dual professional titles in the field of “management and marketing”,
- to make technical studies more attractive,
- and therefore, we vigorously discussed these problems in wide academic circles. There were many proposals and solutions, including the establishment of a new field of study combining management and technology.

Under existing circumstances, the authorities of the Economic and Engineering Faculty found it necessary to retake measures towards the establishment of a new field of study reflecting the interdisciplinary profile of education and adequately labelled. That initiative was presented to the authorities of two faculties at the Wrocław University of Technology: Informatics and Management Faculty, and Mechanical Engineering Faculty. The then dean of the Mechanical Engineering Faculty, Prof. Jan Koch was especially dedicated to the problem and activities to solve it. The joint

planning of a widely projected operation started, and its regular performance followed. Due to space limitations we shall only report the highlights.

In the first half of 1997, a series of meetings were held to discuss the title of a new field of study, education profile, programmes of study, graduate's profile etc. A working label of the field was "engineering management". A research of educational domains typical for Western countries was carried out, and the following fields of study with interesting profiles and labels were created:

- Engineering Management
- Management Engineering
- Technology Management
- Betriebs- und Produktionsingenieur.

The first nation-wide seminar on a new interdisciplinary field of study with a working title of "engineering management" was held on 26-27 June 1997, under the auspices of Prof. Kazimierz Przybysz, Under Secretary of State in the Ministry of National Education. Over 70 persons participated, including rectors, deans, and representatives of many faculties from various colleges and universities, mainly universities of technology in Wrocław, Warszawa, Częstochowa (the Centre of Strategic Studies and Technology Management), Gliwice, Zielona Góra, Kielce, Radom, Gdańsk, Koszalin, Rzeszów, Szczecin, and also from the Academy of Agriculture and Technology in Olsztyn, the Academy of Technology and Agriculture in Bydgoszcz, the Military Academy in Wrocław, and the University School of Physical Education in Wrocław. The seminar was also visited by Prof. Andrzej Hałas, the Chairman of the Development and Organization Commission at the Central Council of Higher Education. Among many speeches there were presentations on education in the fields of study: "engineering management", "management and marketing" at universities of technology, and on the proposed scope of education in engineering and economics in the field "management and marketing". The hosts of the seminar presented a proposal for interdisciplinary studies in management and engineering. Participants in the summarizing discussion emphasized that under a changing economy there is an urgent need for establishing a field of study whose programme would offer interdisciplinary professional instruction, i.e., technical, agricultural or other, along with managerial skills and knowledge. Therefore, a ten-person working group was formed, consisting of professors from various technological faculties (also specialists in organization and management, and from the Centre of Strategic Studies and Technology Management), from the Academy of Technology and

Agriculture in Bydgoszcz, and from the Engineering and Economic Faculty of the Wrocław University of Economics. The working group was given a list of tasks to accomplish, and was obliged among other things to:

- *prepare a draft motion to the Central Council to establish and to register a new interdisciplinary field of study under the working label of Engineering Management,*
- *consult a motion with concerned authorities of respective faculties, and after due consideration of all notices and proposals to prepare a final version of the motion,*
- *send a motion to the Central Council (cf. A seminar on a new interdisciplinary field of study “Production management and engineering”).*

The above tasks were accomplished during the last four months of 1997. First, the title “Management and Engineering” for a new field of study was agreed upon as more appropriate. Next, the draft motion discussed and approved by the participants of the working group was sent to rectors of universities of technology, economics and agriculture, and to the deans of some faculties from these institutions. They were asked to relate to the proposed title of the field of study, to the content and form of the motion, and to possibly support the initiative. Eventually, the working group received fifteen answers with the full support of the initiative. They also included alternative proposals of the title such as: “Management and engineering”, “Management and organization”, “Engineering and management”.

On 17 December 1997, a consultative panel of the Higher Education Central Council convened to deliver an expert opinion on the motion prepared by the working group and on another one, prepared at the Faculty of Production Engineering, the Warsaw University of Technology, which had been submitted to the Central Council before. The meeting, led by Prof. A. Halas, was attended by Professors: D. Strahl, J. Lichtarski, J. Krysiński, R. Nowicki, J. Bendkowski, I. Durlik, J. Koch, T. Znamierowska, and dr. H. Chrostowski. After a long and emotional discussion, the title “Engineering and management” was finally approved as the field of study was expected to be significantly technically inclined. In compliance with the conclusions of the meeting, the working group prepared a final draft motion to include a new field of study called “Engineering and management” to the official register of disciplines. That document consisted among other things in the corroboration of the new field of study, the initial postulates for a study plan framework, programme minima, personnel requirements, and costs of education (a cost index $k_1 = 2.5$ on a 3-point scale had been proposed). The

motion was endorsed and signed by Prof. A. Baborski, the rector of the Wrocław University of Economics, and by Prof. A. Mulak, the rector of the Wrocław University of Technology, and was sent to the Higher Education Central Council on 26 January 1998.

However, the chapter of business colleges at the Central Council rejected the motion. Under those circumstances, the April 1998 attitude of the rectors conference of business colleges towards the establishment of a new field of study labelled as “Engineering and management” became particularly important. We shall quote it in full as it is crucial: *On 30 April 1998, the rectors of business colleges reached a common standpoint on a field of study in engineering and management in their institutions. The rectors believe that in view of a common practice of economic disciplines being taught at institutions of technology, and also because of the need for defining an education profile at the Engineering and Economic Faculty of Industry (the then name of the faculty) at the Wrocław University of Economics, it is indispensable to establish Engineering and management, a new field of study. Therefore, the rectors support the endeavours of economic and technical chapters to establish such a field of study.* The above opinion, signed by Prof. A. Baborski, the Chairman of the Rectors Conference of Business Colleges, was sent to the Chairman of the Commission on Development and Organization of the Central Council. Eventually, the motion to establish a new, interdisciplinary field of study was approved. The Higher Education Central Council voted on 18 June 1998 to add a new, 95th position into the catalogue of disciplines, called “Production management and engineering” (resolution 240/98). The rationale of that decision read: *A new field of study “production management and engineering” is interdisciplinary and noticeably technically inclined. The study programme covers economic, managerial and technical disciplines. The structure of the main, i.e., technical disciplines in the so-called programme minimum enables a detailed adjusting of their programmes to the requirements of various technical specialities. Thus, by establishing a field of study in production management and engineering the Central Council responds constructively to all motions and postulates put forward by technical and economic communities in Poland.*

The subsequent stage of action was dealing with a project of the so-called programme minimum for the field of study in production management and engineering (later it was referred to as teaching standards, and now, as education standards). With a letter signed as DNS-1-0143/9/HC 99 of 21 April 1999, the Under Secretary in the Ministry of National Education, Prof.

Jerzy Zdrada has nominated a seven person group, with Prof. Jan Koch as its Chairman. The author of this paper was also a member of the group. It held working meetings, discussed various propositions by its members, and also related to conclusions from consultations at their own universities. As a consequence, on 12 July 1999, a draft programme minimum for full master studies in production management and engineering was sent to a vice-director in the Science and Higher Education Department of the Ministry of National Education. That draft was favourably assessed by the Ministry, and the group was awarded a Minister's Prize.

The minimum programme requirements for master studies in production management and engineering were published in the Official Journal of the Ministry of National Education (No 2, item 2, of 20 June 2000) as Annex No 2 to the Resolution No 25/2000 of the Central Council from 23 March 2000. It is worth emphasizing that only minor revisions have been made in Part I. General requirements, Part II. Graduate's profile, and in Part VI. Recommendations.

The initiative to establish an interdisciplinary field of study in production management and engineering has proved totally relevant. It has steadily grown in popularity, and enrolments boomed in more state-owned and in private higher education institutions. At present, it is taught in some 40 institutions, among others, at the AGH University of Science and Technology, at 15 universities of technology (various faculties), at the Cracow and Lublin Universities of Agriculture, at the University of Zielona Gora, and at the Maritime Academy in Szczecin. A survey conducted by the Ministry showed that in the 2003/2004 academic year the field of study in production management and engineering ranked third with the largest increase of student numbers (the increase was 5,500 students). During 4 years, from 1999/2000 to 2003/2004, the number of first-year students in this field of study increased by 250 percent.

The interdisciplinary field of study in production management and engineering was also appreciated and highlighted in a 2002 document of the National Education and Sports Ministry entitled "Development strategy of higher education in Poland until 2010". The part "Structural changes in higher education" says among other things: *Establishing and teaching interdisciplinary fields of study should be emphasized, with various linkages between institutions contributing to such transformation.*

That was the history. What is the present?

According to the anticipation by the Central Council, the establishing in 1998 of a new field of study in production management and engineering was

supposed to meet the expectations of technical and economic communities in Poland. That was the case considering that this field is taught at many universities.

Nevertheless, for over a year, the academic community has been struggling with many problems. Below, only some of them are listed whereas the full account is too wide and complex. Many these problems also concern the field of study in production management and engineering.

A vision of the European education area – the Bologna declaration recommending a two-tier system of study, the need for new education standards, etc. – all these matters require revolutionary changes. But it is well-known that education – beginning with elementary and ending with higher education – prefers evolution rather than revolution.

Considering that:

- efforts towards modification of education standards have been finalized after many months gaining the positive recommendation of the Central Council for further legislation stages,
 - as late as 19 February 2007, draft standards for 1st and 2nd tier studies were published by the Central Council in the Internet; moreover, as regards the field of production management and engineering, their form and content are significantly different from the former ones,
 - education in many fields of study which used to be single master studies now will have to be organized as a two-tier system,
 - according to the postulate by the Ministry, the education in the 1st tier system is to begin on 1 October 2007,
 - the currently introduced education standards will have to be verified or replaced with a new admission system (cf. *Szerokie plany* 2006),
- one may reasonably claim that we are immersed in a virtual reality.

REFERENCES

- Mikluch-Duchiewicz, L. (ed.), *Seminarium poświęcone nowemu interdyscyplinarnemu kierunkowi studiów "zarządzanie i inżynieria produkcji"* [A seminar on a new interdisciplinary field of study "Production management and engineering". Proceedings]. Publishing House of the Wrocław University of Technology, Wrocław 1997.
- Minimalne wymagania programowe dla studiów magisterskich. Kierunek: zarządzanie i inżynieria produkcji* [Minimum programme requirements for master studies in production management and engineering], „Dziennik Urzędowy Ministra Edukacji Narodowej” No 2, 2000, p. 7.

Rozporządzenie Ministra Nauki i Szkolnictwa Wyższego z dnia 13 czerwca 2006 r. w sprawie nazw kierunków studiów. [Ministerial order on naming the fields of study], "Dziennik Ustaw" No 121 item 838, 2006.

Strategia rozwoju szkolnictwa wyższego w Polsce do roku 2010 [Development strategy of higher education in Poland until 2010], Ministry of Higher Education and Sports, 2002.

Szerokie plany [Wide plans], "Forum Akademickie" No 12, 2006, p. 3.

Uchwała Nr 240/98 Rady Głównej Szkolnictwa Wyższego [Resolution No 240/98 of the Central Council of Higher Education], "Dziennik Urzędowy Ministra Edukacji Narodowej", No 6, 18 June 1998, p. 16.

Ustawa z dnia 12 września 1990 r. o szkolnictwie wyższym [Higher education act], "Dziennik Ustaw RP" No 65 item 385, 1990.

Zarządzenie Ministra Edukacji Narodowej z dnia 24 kwietnia 1989 r. [Ministerial order], "Monitor Polski", No 14, item 107, 1989.

Received: April 2007